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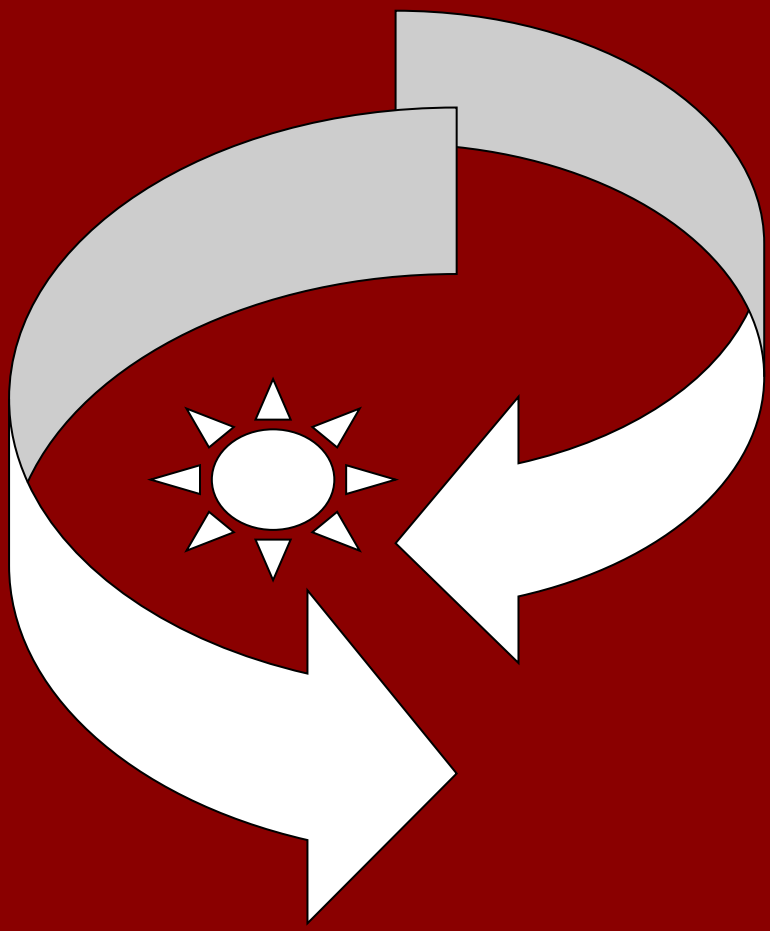

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Jurnal Perspektif Pembiayaan dan Pembangunan Daerah (The Journal of Perspectives on Financing and Regional Development) is reffered to be a forum for the delivery of scientific thought and analysis in the field of economics especially related to financing and regional development for faculty staff, researchers, alumni, students and broad community. Starting from Volume 6 No. 1, this journal is published into six times a year (originally published four times a year). The editor receives articles that have unpublished yet in any media, either inside or outside the country. The online version of this journal is available at http://online-journal.unja.ac.id/JES

Jurnal
Perspektif Pembiayaan dan Pembangunan Daerah
(Journal of Perspectives of Financing and Regional Development)

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Editor's Note

Since Volume 6, Issues 2 (September – October 2018), the Journal of Perspectives on Financing and Regional Development has been nationally accredited with SINTA (Science and Technology Index) score of S2, based on the Decree of the Director General of Development and Research Enhancement, Ministry of Research, Technology & Higher Education of the Republic of Indonesia, Number 10/E/KTP/2019 concerning the Ranking of Scientific Journal.

In Volume 7 Issue 2, 2019 is presented thirteen articles that come from Universitas Jambi (Indonesia), Insitut Teknologi Bandung (Indonesia), Universitas Patimura (Indonesia), Universitas Iqra Buru Maluku (Indonesia), IPB University Bogor (Indonesia), Universitas Sulawesi Barat (Indonesia), Universitas Sumatera Utara, (Indonesia), Sivas Cumhuriyet University (Turkey), Jimma University (Ethiopia), Wolaita Sodo University (Ethiopia).

Hopefully in the next issue can be presented articles with issues and from more diverse circles.

Happy joy reading

Editorial

Determinants of smallholder teff farmer's chemical fertilizer technology adoption in Southern Ethiopia, in case of Gena District in Dawro Zone (Heckman Two-Stage Model)

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Abstracts

Increasing technology adoption among smallholder farmers has a big potential to uplift living standards of poor through increasing production and consumption pattern. The objective of this study was analyzing determinant of smallholder teff farmer's chemical fertilizer technology adoption and its intensification in Southern Ethiopia, in case of Gena district in Dawro Zone. The study used data from 180 respondents from four selected teff dominant *kebele*s of Gena districts in Dawro Zone, through structured questioner. The descriptive statistics and Heckman two stage econometric methods were employed to analyze data collected from sampled household. The significance of coefficient of inverse Mill's ratio (λ) indicates the presence of selection bias and the effectiveness of applying Heckman two stage model. In the 1st stage of probit regression results of study show that the adoption decision of chemical fertilizer use were driven by factors such as farm size, size of family, family labor, education, access to credit; access to information, distance to near market place. In the second stage, the intensification of chemical fertilizer application was influenced by membership to cooperative, availability of extension service, access to credit, size of farm land, size of family member, family labor, educational status, sex of head. The policies which expand the accessibility of credit service, dissemination of productive agricultural technology information, and creating opportunity of education for farm house hold has potential to increase the chance of chemical fertilizer adoption decision and strengthen the level of adoption among smallholder farmers.

***Keywords**: Gena, Heckman two stage, Smallholder, Technology adoption*

JEL Classifications: D04, D12, D22, D90

INTRODUCTION

Agriculture plays an important role in economic growth, enhancing food security and poverty reduction in most of developing world. Smallholder agriculture is identified as a vibrant development tool for achieving Millennium Development Goals, one of which is to split the people suffering from extreme poverty and hunger by 2015 (World Bank, 2008).

The Smallholders considered more than 80 per cent of the world's estimated 500 million small farms and afford over 80 per cent of food items consumed in a large part of under developed world, contributing significantly to poverty reduction and food security

(UNEP, 2013). They harvest foodstuff and non-food products on a small scale with inadequate external inputs, cultivating field and tree crops as well as livestock, fish and other aquatic organisms. However majority of smallholder farmers relies on traditional methods of production and this has lowered the level of productivity. For instance, over 70% of the maize production in the majority of developing countries is from smallholders who use traditional methods of production (Muzari, Gatsi & Muvhunzi, 2012). These farmers generally obtain very low crop yields because the local varieties used by farmers have low potential yield, most of the maize is grown under rain-fed conditions and irrigation is used only in limited areas, little or no fertilizers are used and pest control is not adequate (Muzari, Gatsi & Muvhunzi, 2012; Shao, 1996).

Increasing agricultural productivity is critical to meet expected rising demand and, as such, it is instructive to examine recent performance in cases of modern agricultural technologies (Challa, 2013). Agricultural technologies include all kinds of improved techniques and practices which affect the growth of agricultural output (Jain, Arora & Raju, 2009). According to Lavison (2013) the most common areas of technology development and promotion for crops include new varieties and management regimes; soil as well as soil fertility management; weed and pest management; irrigation and water management. By virtue of improved input/output relationships, new technology tends to raise output and reduces average cost of production which in turn results in substantial gains in farm income (Challa, 2013). Adopters of improved technologies increase their productions, leading to constant socio-economic development. Adoption of improved agricultural technologies has been associated with: higher earnings and lower poverty; improved nutritional status; lower staple food prices; increased employment opportunities as well as earnings for landless laborers (Kasirye, 2010). On the other hand, non-adopters can hardly maintain their marginal livelihood with socio-economic stagnation leading to deprivation (Jain, Arora & Raju, 2009, 2009).

In low income countries, improving the livelihoods of rural farm households via agricultural productivity would remain a mere wish if agricultural technology adoption rate is low (Ajayi, Franzel, Kuntashula, & Kwesig, 2003). A new farm technology adoption has direct effect on the farmer's income resulting from higher yields and prices (Ibrahim, Mustapha & Nuhu, 2012). Therefore, it is necessary to adopt the recognized agricultural technologies so as to enhance production as well as productivity and thereby the living condition of the rural poor. The procurement and distribution of agricultural inputs more particularly high yield varieties and chemical fertilizer have been the central solution to enhance crop production and productivity so as to improve the living standards of farm households. This thought is crucial for countries like Ethiopia whose people heavily rely on subsistence farming. In line with this idea, different literatures were review regarding to the amount of agricultural inputs which have been applied to increase the production and productivity of teff in Ethiopia. For instance, the study by Engdawork (2009) identified that teff productivity depends on good weather condition and use of appropriate technologies (fertilizer, improved seed, and herbicide) with the recommended rate and time.

However, the adoption of productive technology very low with smallholder farmers and it is varying from farmer to farmer based on farmer's skill and external factors. This is similar with the report made by international finance corporation, to whom the adoption level of improved technology vary widely among smallholder farmers depending on their ability to invest in production. For example, the fertilizer adoption is near zero in some African countries, while it exceeds 500 kg per hectare in China and Egypt (IFC, 2013).

The adoption of more efficient farming practices and technologies that enhance agricultural productivity and improve environmental sustainability is also varying from place to place in Ethiopia. In central part of the country, there is relatively good practice but in peripheral part there is very low adoption resulting low productivity and stagnant life of farm family. This articulate the need for investigation to analyze demographic, socio-economic and institutional factors hindering the smallholder farmers technology adoption in crop potential area like Gena district of Dawro zone in south nation nationality and peoples regional state. Contrasting to its natural endowment, the crop commercialization in area was the lowest relative to other areas in South nation nationality and people's regional state (JICA, 2012). This show its low productivity resulted from low application or improper application of improved technology. In addition, there was no research has been done concerning the hindering factors of their low technology adoption. Hence, it needs empirical analysis to verify the factors responsible for low status of chemical fertilizer adoption in study area. Therefore, this study was designed to identify demographic, institutional and socio-economic factors that determine the smallholder teff farm house hold chemical fertilizer adoption decision and extent of adoption.

LITERATURE REVIEW

New technology adoption is a decision-making process in which an individual passes from first knowledge of an innovation, to forming an attitude toward an innovation, to a decision to adopt or reject, to implementation of new idea, and to confirmation of the decision (Ray, 2001). Agricultural technology adoption states to the decision to use a new technology, method, practice, etc. by a farmer (Feder, Just & Zilberman, 1985). On the other hand, extent of technology adoption is defined as the level of adoption of a given technological package among user (Nkonya, Schroeder & Norman, 1997). The expansion of new agricultural technology application has increased agricultural productivity, contributed to overall economic growth, and reduced food insecurity and poverty in developed and some developing countries (Bandeira & Rasul, 2005; Cornejo & McBridgje, 2002).

Different research on technology adoption across various region witness that demographic, institutional and socio-economic factor affects the farm house hold decision to adopt new technology and its intensification. Using panel probit and bivariate probit model in Malawi, Holden & Lunduka (2012), found that households with more livestock endowment and off/non-farm income were applying significantly more fertilizer on their plots, showing the importance of wealth for accessing fertilizer. According to Ermias (2013), the farmer's adoption decision and intensity of use of improved sorghum varieties were positively influenced by irrigated farm size, tropical livestock unit, farmers' perception of yielding capacity and taste preference for improved sorghum varieties while active labor ratio, distance from farmers training center to home, proportion of sorghum farm from the total cultivated land and farm size had negative and significant influence on both the probability and intensity of adopting improved sorghum varieties.

Moreover, Kapalasa (2014) examined the significant influence of demographic, socio-economic and Institutional factors such as age, access to extension services and distance to the nearest market of the household on farmers' decision to adopt and intensity use of improved soybean varieties. This study also found the negative influence of age of family head on the probability of adoption of new technologies. Bayissa (2014), applying double-hurdle model in East Wollega Zone examined that both adoption and

intensity use of improved teff were positively and significantly influenced by sex of the household head, farming experience, participation on crop production training, educational level, yield superiority and maturity period of new varieties but the distance to the nearest market place had negative influence on the adoption and intensity use of improved technology.

METHODS

Description of the study area

This study was take place in South nation, Nationality and people's regional state Gena district of Dawro Zone, in South Nations, Nationalities, and Peoples' Regional state (SNNPR). Dawro zone lies in between 6^0 36' to $7^0$21' north latitudes and $36^0$68' to 37^0 52' east longitudes. The Gojeb and Omo Rivers circumscribe and demarcate Dawro from northwest to southwest in a clockwise direction. Dawro shares boundaries with Konta Special Wereda in west, Jimma in northwest, Hadiya and Kambata-Tambaro zones in northeast, Wolayita zone in east, and Gamo-Gofa zone in southeast. It has eleven administrative district and one town administration. The political center of the zone is Tarcha, which is located in 486 km from south western of Addis Ababa through Jimma road, and 282 km from Hawassa.

The climatic condition of the Gena district divided in to thee including Dega, Woina-dega and kola. Agriculture is the predominant economic activity in the Gena district. Crop and livestock production is the main household activities and the basis of subsistence in district. Rain fed mixed farming is practiced in all parts of the district i.e. livestock husbandry and crop production entirely practiced and irrigation (flood) farming practiced in very few area. Due to agricultural dependence on rain water, many crops are planted during rainy seasons (meher). The dominant cereal crops like maize, teff and wheat produced in meher season and collected from October to December. Major crops produced in the area include maize, teff, wheat, barley, sorghum, pulses, enset etc.

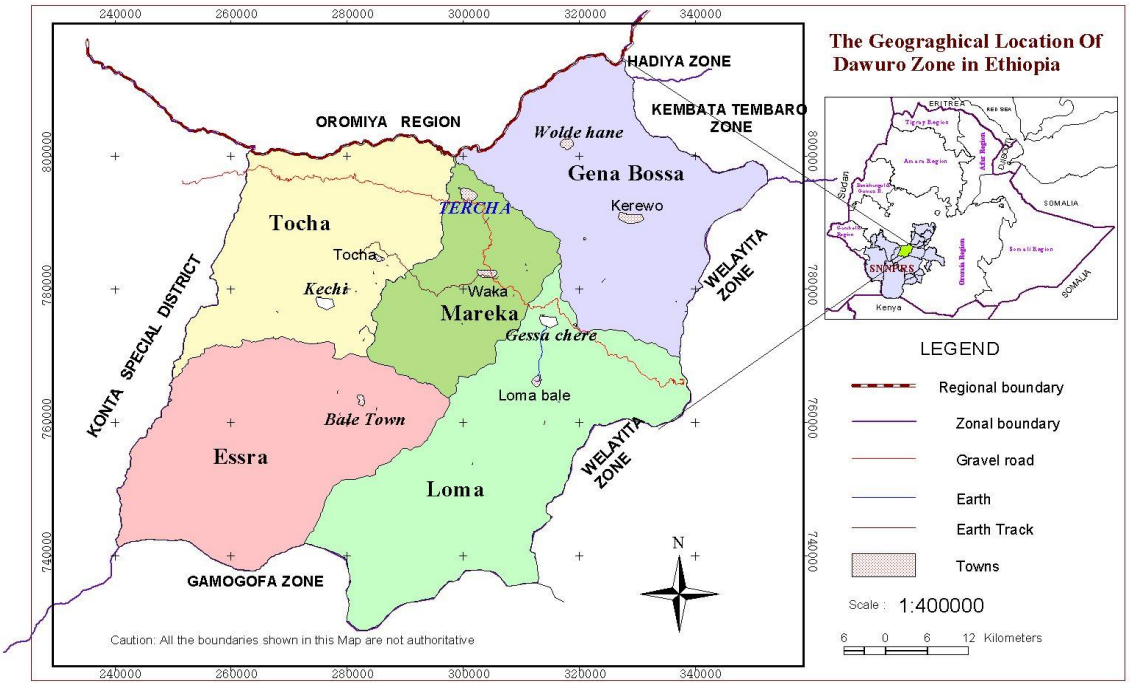

Figure1. The Location of Gena district in Ethiopia

Research strategy

In this inquiry, both quantitative and qualitative research strategies was employed. The quantitative strategy used to investigate the data that was collected using structured questionnaire from 180 sampled farm household heads. The qualitative research strategy used to analyze data that was collected using the unstructured interviews with local traders; rural experts; *kebele* administrative body; and consumers to capture supplementary information and to observe the validity of information's from household survey.

Research design

The cross-sectional (survey) research design was applied in this study. Accordingly, demographic, socio-economic and institutional data related to chemical fertilizer application status of smallholder farm family was collected for the harvest year of 2018/19 and analyzed through econometric and descriptive methods.

Sample size determination

The samples for this study distinguished according to the formula for sample size determination for finite population given by Kothari (2004) as shown below;

$$n = \frac{z^2.p.q.N}{e^2(N-1)+ Z^2.p.q} \quad \text{.....(1)}$$

Where:

n = stands for estimated sample size,

E = the allowable error;

N = number of population under the study;

p = sample proportion of successes;

q = 1 – p;

z = standard variate for given confidence level (as per normal curve area). It is 1.96 for a 95% confidence level.

Assuming confidence level 95.5%; N=1262; e = 0.02; z =2.05; p = 0.02 and q = 1-0.02 we can have the following:-

$$n = \frac{(2.05)^2\times0.02\times(1-0.02)\times1262}{(0.02)^2\times(1262-1)+ (2.05)^2 0.02\times(1-0.02)} = \frac{103.9496}{0.5867} \cong 177 \quad \text{.....(2)}$$

Hence, 177 respondents rounded off to 180 to enable the distribution of the sample in to four selected *kebele*.Based on the size of farm household in each *kebele* these 180 potential respondentswere designated.

Table 1. The list of selected *kebele*s and sample size in each study site

Selected site	No. of farm household in *kebele*			Sampled respondent
	M	F	Total	
Dilamo	308	22	330	45
Baza-Koysa	379	23	402	58
Wozo-Hylata	222	30	252	35
Denba-Gena	264	14	278	42
Total	1173	89	1262	180

Source: survey data (2018/19)

Methods of data analysis

In this study the descriptive statistics such as mean, standard deviation, percentages, frequency, t- test, Chi-square and graphs were used in analyzing the data. Furthermore, it was assumed that smallholder farmers who cultivate teff may or may not apply chemical

fertilizer in teff cultivation. Therefore, the dependent variable in this model is discrete consisting of two outcomes, yes or no. In this case, the use of Ordinary Least Square/OLS technique for such variables poses inference problems, and thus not appropriate for investigating dichotomous or limited dependent variables. In such circumstances, maximum likelihood estimation procedures such as logit or probit models are generally more efficient (Gujarati, 1995).

Several investigators used different models for analyzing the determinants of technology adoption at farm level. Various adoption studies have used Tobit model to estimate adoption relationships with limited dependent variables while the others used double-hurdle model. However, it is conceivable to use Heckman's (1979) two step procedure in case of anticipated problem of selection bias in the sample. Selection bias was anticipated in this study because among the representative not all households are believed to participate in fertilizer adoption due to individual problems.

The Heckman two-step selection model allows for separation between the initial decision to adopt technology $(Y > 0\ versus\ Y \leq 0)$and the level of their application. The model uses in the first step a probit regression to assess the probability of decision to adopt and in the second step uses ordinary least squares (OLS) to determine the intensity of adoption (Green, 2007) and the method correct sample selection bias. This technique used in order to control the selectivity bias and endogeneity problem and to obtain consistent and unbiased parameter estimates (Green, 2007). In selection model procedure, sample bias is determined by the relationship between the residuals of the two stages (stage 1 and stage 2). Estimates are biased if the residuals in the stage 1 and 2 are correlated. Similarly, Stage 1 does not affect stage 2 results if the residuals are unrelated. Positive and negative correlations between residuals are indicated respectively, by positive and negative mu (μ) values, which is the correlation between error terms of two regression model.

The first stage Heckman two step or the probit model that analyze the factors determining the probability of chemical fertilizer adoption decision specified as:

$$pr(Y_{1i} = 1/x_{1i}, \beta_{1i}) = \Phi\big(f(x_{1i}, \beta_{1i})\big) + \varepsilon_i \quad \text{..... (3)}$$

Where;Y_{1i} is an indicator variable that is equal to unity for chemical fertilizer user households;Φ is the standard normal cumulative distribution function; x_{1i} is variable that affect adoption decision and was described in table 3.2; β_{1i} is a coefficient to be estimated. The variable Y_{1i} takes the value 1 if the household use chemical fertilizer and zero otherwise. This can be shown mathematically:-

$$Y_{1i}^{*} = \beta_0 + \beta_{1i}X_{1i} + \varepsilon_i \quad \text{..... (4)}$$

Where; i = 1, 2, 3…….n

$$Y_{1i} = \begin{cases} 1\ if\ Y_{1i}^{*} > 0 \\ 0\ if\ Y_{1i}^{*} \leq 0 \end{cases} \quad \text{.....(5)}$$

Y_{1i}^{*} is a latent variable of marginal utility the farmer's get from adoption of chemical fertilizer input,

β_0 is Constant term,

ε_i is error terms in the first stage model assumed to be normally distributed with zero mean and constant variance (σ^2).

In the second stage parameters can consistently be estimated by OLS by incorporating an estimate of the inverse Mills ratios denoted as λ_i from probit regression model as additional explanatory variable as specified bellow:-

$$Y_{2i} = \alpha_0 + \alpha_i X_{2i} + \mu_i \lambda_i + v_i \quad \text{..... (6)}$$

Where:
Y_{2i}= is the quantity fertilizer applied per hector,
X_{2i}= implies the explanatory variables influencing the level of chemical fertilizer applied shown in table 3.2,
α_0 = is the Constant term in OLS regression model,
α_i = is the Parameters to be estimated in the second stage,
λ_i = is the inverse mills ratio computed from first stage estimation,
μ_i = implies the Correlation between first and second stage error terms or corr (ε_i,v_i),
v_i = is the error terms in the second stage.

According to Heckman (1979), the IMR (λ_i) is a variable for controlling bias due to sample selection. This term is constructed using the model in the probit regression (first stage) and then incorporate into the model of the second stage (OLS) as an independent variable. It can obtained:-

$$\lambda_i = \frac{\phi(\beta_0+\beta_{1i}X_{1i})}{\Phi(\beta_0+\beta_{1i}X_{1i})} \quad \text{.....(7)}$$

Where, $\phi(.)$denotes the standard normal probability density function and $\Phi(.)$ denotes the cumulative distribution function for a standard normal random variable.
But the value of λ_i is not known, the parameters β_0 and β_{1i} can be estimated using a probit model, based on the observed binary result. Then the estimated IMR calculated as:-

$$\widehat{\lambda_i} = \frac{\phi(\widehat{\beta_0}+\widehat{\beta_{1i}}X_{1i})}{\Phi(\widehat{\beta_0}+\widehat{\beta_{1i}}X_{1i})} \quad \text{..... (8)}$$

Hypotheses and justification of explanatory variables

One of the important parts in this section is to specify and hypothesize the dependent and explanatory variables that were used in the model. Regarding to its definition, measurement and hypotheses of variables, which was used in our model, summarized in the Table 2.

Table 2. Explanation of hypothesized effect of explanatory variables on chemical fertilizer adoption and its intensity

Variable	Nature of variable	Variable definition and measurement	Expected effect
Fertilizer adoption decision	Binary	1 if household use chemical fertilizer, 0 otherwise.	
Quantity of fertilizer applied	Continuous	Fertilizer in kg per hector	
Age of the farm household head	Continuous	Age of the household head in year	-/+
Farm size	Continuous	Farm land size in hectare	+
Household labor	Continuous	household labor force or number of family in working age	+
Size of family	Continuous	number of family members	-
Distance to the market	Continuous	Distance from selected farm household to the market place in Km	-
Sex of farm head	Dummy	sex of farm household head (if female=1, 0, otherwise)	-
Educational status of the household head	Dummy	Educational status of the household head(1 literate, 0, otherwise)	+
Participation in nonfarm activity	Dummy	participation in nonfarm activity(if have =1,0, otherwise)	-/+

Variable	Nature of variable	Variable definition and measurement	Expected effect
Road condition	Dummy	Road condition to nearby town (if Good=1, 0, Otherwise)	+
Membership of cooperative	Dummy	Households membership to coope-rative (if member Yes=1,0 Otherwise)	+
Access to extension	Dummy	Access to extension agent support (if have access Yes=1, 0 Otherwise)	+
Use of credit	Dummy	use of credit (having access=1, 0, otherwise	+
Access to information	Dummy	access to new technology adoption skill (having inf. =1, 0, otherwise)	+

Source: Authors hypothesis (2018/19)

RESULT AND DISCUSSION

Descriptive analysis

Out of total sample of 180 smallholder teff farm household, 135(75%) participated in adoption of chemical fertilizer in their cultivation, while the remaining 45(25%) were no practicing fertilizer technology. Table 3 illustrate the mean, minimum and maximum age of head, size of land ownership, distance to market center, number of family and family labor for total survey, fertilizer adopter and non-adopter in comparison.

The descriptive statistics result for continuous variable (Table 3, t-value) show that there was no statistically significant difference between fertilizer adopter and non-adopter concerning age of head, family size and distance to local town or market place while there was significant difference in land holding and handiness of family labor. This demonstrates the importance of family labor force and arable land whether the household to adopt or not to adopt productive technology.

Table 3. Description of continuous variables

Variables	Participant(N=135)			Non- participant (N=45)			Total (N=180)			t-value
	Mean	Min.	Max.	Mean	Min	Max.	Mean	Min.	Max.	
Age of HH	47.22	26	82	47.02	28	75	47.17	26	82	0.0955
Size of land holding	3.03	1	5	2.29	0.5	5	2.84	0.5	5	3.5251***
Size of family	7.4	3	13	7.68	4	13	7.47	3	13	0.7219
Size of active family	3.54	1	8	3.07	2	10	3.42	1	10	1.8941**
Distance to local town	8.47	6	13	9.29	6	13	8.68	6	13	2.8332

****, ** and * imply statistically significant at 1, 5 and 10% respectively.*
Source: Own survey data (2018/19)

Table 4.summarizes frequency, percentage and level of influence of dummy variable. Accordingly, there was statistically significant difference between fertilizer adopter and non-adopter in education level of head, membership to cooperative, affordability of credit and access to information. On the other hand, the difference between chemical fertilizer adopter and non-adopter is not significant in gender, obtaining extension service and participation of off-farm activity.

Table 4. Description of dummy variables

Variables		Participant		non- participant		
		Frequency	Percent	Frequency	Percent	t-value
Had female headed family	Yes	16	11.85	17	37.78	(4.0448)
	No	119	88.15	28	62.22	
The family headed was literate	Yes	70	51.85	3	6.67	5.7966***
	No	65	48.15	42	93.33	
Participate in non-farm activity	Yes	28	20.74	8	17.78	0.4282
	No	107	79.26	37	82.22	
Have member to cooperative	Yes	47	34.81	6	13.33	2.7813***
	No	88	65.19	39	86.67	
Have access to extension	Yes	123	91.11	39	86.67	0.8576
	No	12	8.89	6	13.33	
Have access to credit	Yes	49	36.30	5	11.11	3.2689***
	No	86	63.70	40	88.89	
Have access to information	Yes	45	33.33	1	2.22	4.3325***
	No	90	66.67	44	97.78	

****, ** and * imply statistically significant at 1%, 5% and 10% respectively.*
Source: Own survey data (2018/19)

An econometric estimation results

In this sub-section, Heckman two stage selection analyses is executed to identify the household-level demographic, socio-economic and institutional factors that determine the decision of smallholder farmers to adopt or not to adopt chemical fertilizers in the first stage by applying probit regression. In the second stage the conditional estimation/OLS method was used to investigate factors that influence the level of their adoption.

However, before running the regression analysis, the diagnostic tests, such that, the existence of multicollinearity and the problem of heteroscedasticity of variables included in the model are needed to be checked both for the continuous and discrete explanatory variables. According to Gujarat (2004), when the values of VIF approach to infinitive there is serious problem of multicollinearity, while if VIF is below 10 there is no much problem. In this study all the computed value of VIF for explanatory including IMR variable was blow five. Therefore, there is no evidence of multicollinearity problem in our model. The data were tested for heteroscedasticity using the Breusch-Pagan test (Wooldridge, 2012). The Breusch-Pagan test evaluates the null hypothesis of a constant variance in the data. The Chi-square value results of STATA output were presented in appendix--. Accordingly, the null hypothesis of a constant variance was not rejected implying absence of heteroscedasticity in survey data.

Factors determining smallholder teff farmers' chemical fertilizer technology adoption decision

Table 5. shows the probit regression and marginal effect of probit outcomes of factors that influence the likelihood of small teff farmers' technology adoption decision. The models constructed with 13 independent variables and out of these 8 variables are significantly determining the adoption decision with hypothesized sign. These variables include size of farm land, size of family, availability of family labor force, education status of household head, accessibility of credit service ; access to modern technology information, distance to near town and nearby road condition significantly affect the teff farmers' technology adoption decision. Whereas, age of household head; participation in off-farm activity; sex of household head; membership to farm cooperative and access to

agricultural extension service insignificantly but all variables with expected sign influence the technology adoption decision.

Table 5. Factors that determine teff farmers' chemical fertilizer technology adoption decision – Probit model result

Variables	Parametric estimation			Marginal effect		
	Coefficient	Std. Err.	*z*	Coefficient/dF /dx	Std. Err.	P>|z|
Age of HH	-.000669	.0114707	-0.06	-.0001013	.0017342	0.953
Size of farm land	.2833829	.1361792	2.08	.0429217**	.0222735	0.037
Size of family	-.20539	.0697466	-2.94	-.0311087***	.0125296	0.003
Size of family labor	.314829	.1209661	2.60	.0476846***	.0194406	0.009
Distance to nearby town	-.2330726	.0856155	-2.72	-.0353016***	.0151054	0.006
Sex of HH	-.3871656	.3162718	-1.22	-.0692904	.068749	0.221
Education status of HH	1.030386	.376136	2.74	.1425391***	.0579773	0.006
Off-farm activity	.0719233	.3476857	0.21	.0105712	.0498617	0.836
Road condition	-.6056992	.3149832	-1.92	-.0938703*	.0544667	0.054
Membership to coop.	.1774871	.3801732	0.47	.0255694	.0523672	0.641
Access to extension	.4178456	.4081969	1.02	.0790363	.0929736	0.306
Access to credit	1.035122	.4084254	2.53	.122643**	.047505	0.011
Access to input technology info.	1.753076	.6617307	2.65	.1691507***	.0460535	0.008
Constant	1.845224	1.087742	1.70	-	-	-

Number of observation = 180; LR chi2 (13) = 81.33; Probability > chi2 = 0.0000
Log likelihood = -60.56; Pseudo R2 = 0.4017
****, ** and * imply statistically significant at 1, 5 and 10% respectively.*
Source: Survey data (2018/19)

As specified in Table 5., the marginal effect report of the probit regression provides the probability that a farm household able to adopt technical input particularly chemical fertilizers in their teff production.

The farm size of respondent was positive and had statistically significant influence at 5% level on the adoption of chemical fertilizer input. The marginal effect result indicates that a farmer, who has one additional hector of arable land, would increase the likelihood of teff farmers' chemical fertilizer adoption by 4.29 %. This result is in line with the argument of Nowak (1987), which claimed that larger arable land ownership enable farmers to have more flexible in their decision making, greater access to discretionary resource, and give more opportunity to adopt new farm practice. This is due to the fact that availability of more arable land enable farmers' to allocate more land to produce teff crop leading increment in output and the rise in output widen the chance of farmers' more income and the increment in family income enable farmers to widen the understanding and use of new technology.

As hypothesized, distance to the nearest town was found to be negatively and significantly influenced the probability of adoption of chemical fertilizer adoption decision at 1% significance level. Holding other variables constant, a kilometer increase from farmers' residence to near town leads 3.5% reduction on the likelihood of adoption of chemical fertilizer on teff cultivation. This implied that the longer the distance between farm basis and the market place, the lower will be the probability of adoption of fertilizer input. Farmers who dwell around town or local market center might have more chance to

access information about new agricultural technology and input. Moreover, nearness to market place reduce the transportation and other transaction costs out lied in search for fertilizer input and then reduce cost of production than those farmers who are in distant location. This finding is similar with Susie (2017), Bessir (2014) and Debelo (2015). According to their finding an increase in distance from market center increases transaction costs related to the sale of farm output and purchases of critical input that would reduce farmers' motivations to engage in agricultural production activities using improve technologies.

In the same genre, the nearby road condition found the expected negative influence and is significant at 10% level, on the probability of adoption of chemical fertilizer in teff production. Keeping other variables constant, compared with farmers who have good roads on the spot, those farmers who have no accessible road infrastructure reduce the probability of chemical fertilizer adoption by 9.5 %.

As expected, the availability of family labor force have positive impact on likelihood of teff farmers' chemical fertilizer adoption at significance level of below 1%. The marginal effect verify that the availability of one more active person in family increase the probability of chemical fertilizer input adoption on teff cultivation by 4.67 %, holding all other factors constant. This finding is consistent with the results of Beshir, Emana, Kassa, & Haji (2012), which reason out that improved farm practices are labour intensive and hence the household with relatively high labour force uses the technologies on their farm plots better than those with little labour force in family. In contrary, the size of family is negatively related with the probability of fertilizer adoption at 1% level of significance. A one additional person in family member results, 3.11% decline in likelihood of farm household fertilizer adoption. The large family is expected to consume the higher quantity of crop compared to small family, causing smaller amount of marketable surplus with low level of family income.

As hypothesized, education level of household head was found to be positively and significantly influenced the probability of adoption of chemical fertilizer input in teff cultivation. Holding other variables constant, as compared to illiterate farmers the probability of adoption of fertilizer input in teff production for literate farmers would increase by 14.25 %. This indicates that the educated farmers are more confident to adopt fertilizer input in their cultivation than those who are illiterate. Farmer with formal education have better ability to obtain information's about productive input and new technology of production relative to uneducated one. Education also increase decision making ability of farmers based on identified information of cost and benefit. This result is consistent with work of Bayissa (2014) and Leake & Adam (2015), they forwarded that having education increases the probability of adoption of new agricultural technology by farmers.

As expected, access to input market information has shown positive influence on likelihood of teff farmers' fertilizer technology adoption decision at 1% level of significance. Keeping other variables constant, farmers with accessibility to input market information have 16.91% better opportunity to adopt chemical fertilizer than those with insufficiency of information. Accessible information increase farmers chance to adopt technology because it enables farmers to make right decision how to apply and increase productivity with minimum probability of risk.

Access to credit service also positively determines the probability of teff farmers' fertilizer technology adoption at 5% level of significance. Keeping other variables fixed,

availability of credit service encourage the likelihood of household fertilizer technology adoption decision by 12.26 %. This result was consistent with finding of Ogada (2013), which reason out that accessible credit solve the smallholders problem created due to their low saving ability to purchase relatively more expensive technologies like inorganic fertilizer. Hence, the accessibility of credit enables farmers to purchase inputs like improved seed, fertilizer, which increase output through productivity increment. On the other hand, accessibility of credit solve farmers cash problem that hinders farmers to purchase chemical fertilizer at early period of crop collection in which there was no sufficient market or low price for agricultural output. Therefore, farmers who have availability of credit service are more likely to adopt chemical fertilizer than without credit.

Factors determining the intensity of teff farm household technology adoption

The Heckman model in the second stage estimation identifies the factors that determine the intensity of chemical fertilizer adopted using the OLS model. The coefficient of inverse Mill's ratio /Lambda is significant at 5% level. The significance of Mill's ratio discloses the presence of selection bias and the effectiveness of applying Heckman two stage models due to its ability to handle the selection problem. The positive sign of lambda reflects that the error terms in the adoption decision model and selection equations are positively correlated.

Table 6. reveals that the regression results of variables that affect the level of technology adoption among smallholder farmers. Out of 14 explanatory variables size of farm land, size of family member, the number of family labor force, educational status of house hold head, membership to cooperative, availability of extension service, access to credit, sex of head and lambda significantly influence the intensity of technology adoption, while age of house hold head, the existing road condition, participation in off-farm activity, availability of input information and distance to the nearest town place insignificant to influence the level of adoption.

Table 6. Results of the second-stage selection estimation (intensification of technology adoption)

Variables	Coefficient	Std. Err.	***t***	P>| ***t*** |
Age of HH	.0078799	.0069553	1.13	0.260
Farm land size	.2404788***	.0683283	3.52	0.001
Size of family	-.1033396***	.0395494	-2.61	0.010
Family labor	.1871805***	.0652871	2.87	0.005
Distance to near town	-.0596027	.0492811	-1.21	0.229
Sex of HH	-.4295681*	.2439408	-1.76	0.081
Education of HH	.4842824**	.1938138	2.50	0.014
Participation in off-farm activity	-.1551343	.1817373	-0.85	0.395
Road condition	-.0074408	.1632477	-0.05	0.964
Membership to coop.	.468811***	.1653608	2.84	0.005
Access to extension	.5587541**	.2618734	2.13	0.035
Access to credit	.575232***	.1705756	3.37	0.001
Access to information	.2800549	.1785002	1.57	0.119
Mills lambda	.7250642*	.369385	1.96	0.052
Constant	1.314168*	.6838175	1.92	0.057

Number of observation = 180; Censored observation = 45; Uncensored Observation = 135; R-squared = 0.4124; Adj R-squared = 0.3439; F (14, 120) = 6.02; Prob> F = 0.0000
****, ** and * imply statistically significant at 1, 5 and 10% respectively.*
Source: Survey data (2018/19)

Analogous to the first stage result, size of land holding, family size, size of house hold labour, educational status of family head and availability of credit service determine both adoption decision and intensity of adoption significantly with expected sing. Moreover, level of household head education and availability of credit service have the expected positive effect on level of fertilizer adoption at significance level of 5% and 1% respectively. The size of family and household labor force determine the intensity of fertilizer adoption by 1% significance level and have expected negative and positive influence on intensity of adoption respectively. One additional person in family deteriorate the use of fertilizer by 0.10kg, while one more active labor to family enhance the use of fertilizer by 0.19kg, holding all other variables constant. Size of land holding also found positive and significant influence on the level of fertilizer adoption at 5% level. A one hector increase in land holding increase fertilizer applied by 0.24kg, keeping other variables constant.

As expected, being member to producer group has positively and significantly influences the intensity of fertilizer adoption at 1% level. Membership to group empowers farmers to obtain on time productive technology information and minimize transaction costs both on production process and output marketing through creating group sharing of cost and benefits. This finding is similar with Sebatta, Mugisha, Katungi, Kashaaru & Kyomugisha (2014), they reason out that working in group creates collaboration among the farmers and enable them to access market information and sharing of best experiences together. Access to extension services is also shown expected sign and statistically significant at 1% level. This suggests that households, who had access to extension programs support, are more likely to intensify chemical fertilizer adoption on their teff cultivation than without contact.

Regarding the effect of the remaining variables, access to information, off-farm income availability, distance to town and age of head were statistically insignificant to influence the intensity of fertilizer with expected influence but nearby road condition shown unexpected negative sign.

CONCLUSION AND POLICY IMPLICATION

Conclusion

A remarkable improvement in agricultural Productivity in majority of developing countries in late 1960s resulted from agricultural Transformation agenda including of agricultural research, extension services and rural infrastructural development that basically underline the role technology adoption among smallholder's farmer in increasing production was vital. Technological change in agriculture comprises of introduction of high yielding variety of seeds, fertilizers, plant protection measures and irrigation. These changes in agricultural sector augment the productivity per unit of land and bring about rapid increase in production to tackle the severe problem of poverty. In Ethiopia, even though some progress has been recorded over time, the use of agricultural technologies special chemical fertilizer is found at its low level. To this end, this study was conducted with the aim of investigating the institutional, demographic and socio-economic factors that influence the adoption decision and extent of chemical fertilizer among smallholder teff farmers. Accordingly, the descriptive statistics and Heckman two stage econometric methods were employed to analyze data collected from sampled household. The significance of coefficient of inverse Mill's ratio (λ) indicates the presence of selection bias and the effectiveness of applying Heckman two stage model.

The adoption decision of chemical fertilizer use was driven by factors such as size of farm land, size of family, availability of family labor force, education status of

household head, accessibility of credit service; access to modern technology information, distance to near town and nearby road condition. While the intensity of chemical fertilizer application was influenced by membership to cooperative, availability of extension service, access to credit, size of farm land, size of family member, the number of family labor force, educational status of house hold head, sex of head.

Policy implication

In light of these findings, Membership to a farmer group or cooperative being a crucial factor in enhancing the farmer technology adoption, it is suggested that policy makers should promote collective action among smallholders because it eases access to production, technology diffusion and marketing information as well as cheaper inputs. Moreover, the policies which expand the accessibility of credit service, dissemination of productive agricultural technology information, and creating opportunity of education for farm house hold has potential to increase the chance of chemical fertilizer adoption decision and strengthen the level of adoption among smallholder farmers.

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Exploring the bi-directional relationship of stock return and sustainability performance through the sustainability risk lens (case of Indonesia)

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Abstract

Sustainability investing has been evolved significantly since the last decade. The inclusion of social, environmental, and economic dimension into the portfolio screening criteria is stated as an essential strategy to increase the firms' financial performance. However, previous empirical evidence has gained a mixed result on this issue (i.e. positive, negative, and insignificant). This study contributes to the discussion by offering result on the heterogeneous effect of sustainability performance to the stock return, specifically through the sustainability risk lens. Sustainability risk is related to firm sustainability concern of not being able to perform in a "sustainable manner", thus related directly to the inefficiency within the firms, as well as the firms' idiosyncratic risk. Uniqueness contribution of this study is by offering the analysis in a disaggregated ways (i.e. separately examines the relationship between each sustainability performance dimensions and stock return), within portfolio level. Using large size of cross-sectional data (more than 400 companies over two years span of time) covered all non-financial sectors listed in the Indonesia Stock Exchange (IDX), we are able to confirm the notion of heterogenous sustainability performance within Indonesian firms. We also found evidence on the positive direction of an increase of social and economic performance to stock return. Meanwhile, environmental sustainability performance shows the contrast direction.

Keywords: *Financial Performance, Indonesia, Sustainability Investing, Sustainability Performance, Stock Return, Sustainability Risk*

JEL Classification: G11, G32, M14, Q56

INTRODUCTION

The trends of sustainability investing have been growing nowadays aligned with the increased concerns of of investors on companies' essential ESG issues. Sustainability investing, or socially responsible investing (SRI), often are stated interchangeably with the concept of Corporate Social Performance (CSP), Corporate Social Responsibility (CSR), or Shared Value (SV). In this paper, we define the concept of sustainability investing as the way of investing with screening methodology focused on not only the financial performance but also on the social, environmental and economic performance of the firms. Related to this definition, we used the term of Sustainability Investing (SI), rather than Corporate Social Performance (CSP), Corporate Social Responsibility (CSR) or Socially Responsible Investing (SRI).

The screening criteria in SI focused on two ways, firstly refer to positive screening whereas tilting the portfolios selection to the most responsible ones, and secondly, refer to a negative screening whereas directly excluded firms with the least responsible performance from the portfolios selection process. In this way, theoretically, SI may be able to decrease risk from the portfolio, by carefully selecting firms with better performance. In this sense, SI could increase the portfolio Sustainability Performance (SP), and along with that decrease the sustainability risk. Consequently, in this study, we will use the term SP afterwards to represent the Sustainability Performance of the firms, rather than CSP or CSR.

Research on the relationship between sustainability and financial performance, specifically on portfolios performance returns, has been mixed. Fulton, Kahn & Sharples (2012) noted on the ability of firms with higher CSR performance to exhibit market outperformance. However, further strategy to completely "dispose" controversial firms from the portfolio, has yielded negative results against the market.

Fulton, Kahn & Sharples (2012) result are aligned with the findings of Statman & Glushkov (2009). In their research, Statman & Glushkov (2009) stated on the negative aspect of social sustainability investing, that are more expensive, rather than the traditional investing. They confirmed the superior performance of firms with higher CSR scores. However, the gains are shunned off with the cost of excluding the negative CSR-related stocks.

The controversies related to the topic further move to the focused on negative screening criteria(s) only and definite screening criteria(s) only. Fabozzi, Ma, & Oliphant (2008) confirmed the dominance power of controversial stocks to overpower the market. Their result was strengthened with further evidence gained by Hong & Kacperczyk (2009), that stated on the extreme performance of sin stocks as an antagonistic result of ethical investors behaviour. In their study, they stressed the direct the effect of "carefully excluding" the sin stocks in their portfolio screening criteria resulted in higher performance of the sin stocks itself. Positive screening criteria focus on the implication of the inclusion of firms with higher social responsibility scores to the portfolios screening process. The previous study by Dravenstott & Chieffe (2011) found evidence on the superior performance of high-socially-responsible-stocks portfolios in defeated the market.

Regarding the notion of the relationship between SI and Firm Risk, or CSR and Firm Risk, Boutin-Dufresne & Savaria (2004), Mishra & Modi (2013), De & Clayman (2015) found the evidence on the negative relationship between financial performance of portfolios with high SRI scores and their idiosyncratic risk.

However, Cheng, Ioannou & Serafeim (2014) add more to the debate by provide the positive evidence on the relationship of positive relationship between social performance and financial performance. They stated that firms with excel level of socially responsible performance are able to maintain a good relationship with their stakeholders thus enable the firms to reduce the agency costs and lower information asymmetry risk.

Meanwhile, Boaventura, Da Silva & De Mello (2012) found an evidence of no significant relationship between companies social performance and their financial performance in the short term. However, they found positive evidence of significant relationship only in the long term.

Overall, empirical evidence on the relation between SI and financial performances of the firm lead to inconclusive results, namely positive, negative and no relationship at all. However, investigation on the capability of SI to decreasing

portfolios risk yielded more conclusive result. A negative relationship has been confirmed on the relationship between firm social sustainability and their risk, and higher social sustainability scores are correlated with a lower level of firm risk.

In this study, we investigated the leveraging effect of sustainability screening portfolios in reducing portfolios risk within the Indonesian context. Specifically, we adopted the methodology developed by Brammer, Brooks & Pavelin (2006) by investigating the disaggregated effect of Social-Environmental-Economic performances of the firms to their financial performances. In their research, they construct several types of portfolios based on firms' CSR scores and holding it for one or two-year holding period. In their study, they found pieces of evidence on the negative relationship between CSR scores and stock return, in a portfolio level.

The same evidence found by Galema, Plantings & Scholtens (2008). In their study, they stated that within social sustainability, only employee relation resulted in a significant positive effect on companies' financial performance. The study fills the gap within the theoretical context by providing evidence for the relationship between sustainability and financial performance in the portfolio level. Specifically, the main contribution of this study is related to the examination on the disaggregating effect of each component of sustainability performance to the firm financial performance.

Uniqueness contribution of this study is by offering the analysis in a disaggregated ways (i.e. separately examines the relationship between each sustainability performance dimensions and stock return), within portfolio level. The second contribution of this study lies within the use of the large size of cross-sectional data (more than 400 companies over two years span of time) covered all non-financial sector listed in the Indonesia Stock Exchange (IDX). In other words, we performed sectoral level on the relationship of the sustainability performance of the firms to the stock return.

The article is organized as follows, Theoretical Framework is explained in the second section, and Methodology in the third section. The fourth section focused on the Empirical Findings and Discussion, lastly closed with Conclusion in the last section.

LITERATURE REVIEW

Large body gap of the literature focused on investigating the association between sustainability investing and corporate financial performance. Mixed evidence was gathered and yielded non conclusive results, namely positive relationship (Orlitzky Schmidt & Rynes, 2003; Fauzi & Idris, 2009; Rais & Goedegebuure, 2009); and negative or insignificant relationship (Ullman, 1985; Vance, 1975; Alexander & Buchholz, 1975; Brammer, Brooks & Pavelin, 2006).

Further direction of the sustainability and financial performance focused on the identification of critical points that enable companies to benefit from Sustainability Investing in the capital market. For example, Cheng, Ioannou & Serafeim (2014) confirmed the evidence of more available access to finance for socially responsible firms. They stated that firms with excel level of socially responsible performance are able to maintain a good relationship with their stakeholders thus enable the firms to reduce the agency costs and lower information asymmetry risk.

Dhaliwal, Oliver, Tsang & Yang (2011) gave valid evidence on the positive signal gained from companies initiation to disclose their sustainability performance or CSR performance, on firms' cost of equity capital. In this study, they confirmed the behaviour of firms that are "less socially responsible" as more proactive toward their CSR information disclosures strategy compared to their peers that behaved in more

responsible ways. In this sense, the study confirmed the notion of companies with higher CSR performance and reduced level of cost of equity capital.

Related to the concept of a relationship between CSR and firms' financial risk, Jo & Na (2012) reported the negative direction between CSR and firm risk. They mentioned the extreme level of a negative relationship between firm CSR performance and their risk in the controversial industry sectors.

Their results are aligned with the result of Fabozzi, Ma & Oliphant (2018) and Hong & Kacperczyk (2009). In their study, they confirmed the superior performance of controversial stocks to overpower the market. Hong & Kacperczyk (2009) stated on the extreme performance of sin stocks as an antagonistic result of ethical investors behaviour. In their study, they stressed the direct effect of "carefully excluding" the sin stocks in their portfolio screening criteria resulted in higher performance of the sin stocks itself.

Numerous studies have been focused on the investigation of firms' sustainability and financial performance, both in the developed and developing countries. For example, within the area of developing country, Brammer, Brooks & Pavelin (2006) examine the relationship between CSP and stocks returns, as a market-based measure for CFP, in a portfolio level. They found that there is negative significance between CSP and stocks returns, and considerably abnormal return can be gained from holding least-socially responsible stocks.

Galema, Plantings & Scholtens (2008) examine the effect of SRI on stock returns from the DataStream data based by conducting three analyses using the KLD scores from the period of 1992-2006. They found that SRI stocks do not generate risk-adjusted excess returns, and employee relationship is the only SRI dimension that has a significant positive effect on monthly excess returns.

Artiach, Lee & Nelson (2010) investigate factors that drive high levels of CSP as proxies by the membership of the DJSI. They found that leading CSP firms are more profitable when compared with conventional firms, and they are most likely the largest firms in each industry. Boaventura, Da Silva & De Mello (2012) focus on the aspects of the relationship between CSP-CFP. They found that long term institutional investment is positively related to CSP, there is no significant relationship between short term investors and CSP, disaggregation of CSP into its constituent components suggest that the pattern of institutional investment is also related to the form which CSP takes.

In developing countries, several pieces of evidence were gathered as well. For example, Fauzi, Mahoney & Rahman (2007) examine the relationship between institutional ownership and CSP for Indonesian companies. They found that there is no significant relationship between institutional ownership and CSP for Indonesian companies. Most institutional ownership in Indonesia does not include CSP as part of their investment decisions. The paper also suggests measuring CSP over several years, and the paper also suggests combining content analysis with a qualitative approach to improve research results.

In their other research paper, Fauzi & Idris (2009) examine the difference of CSP between state-owned and private companies in Indonesia, and also to analyze the correlation between the CSP and CFP by using company size and institutional ownership as a control variable. They found that there is no significant mean difference of CSP between state-owned and private-owned companies in Indonesia. They also recommend using a longitudinal approach as an alternative to cross-sectional approach and extend CFP measure to market-based measure. Correlation test show there is no association between CSP and CFP in Indonesian state-owned and private companies.

Rais & Goedegebuure (2009) examine stakeholder relations as a reliable measure of CSP, and its impact on firm performance and firm competitive position. They found that stakeholder-oriented CSP adds significant effect to financial performance and competitive position. Firms that apply CSP strategies are able to do their businesses more effectively. Fauzi & Idris (2009) measure CSP, CFP, business environment, strategy, organization structure, and control system. They found that under slack resources theory and good management theory, the study found positive relation between CSP-CFP; and the CSP-CFP link under slack resources theory is stronger than CSP-CFP link under the good management theory. They recommend further research to study on the impact of contextual variables of corporate performance on CSR as a base to develop TBL (triple bottom line) based CSR reporting in Indonesia.

Boaventura, Da Silva & De Mello (2012) focus on investigating the relationship between CFP and CSP, with main theoretical covered the stakeholder theory, the relationship between CSP-CFP, good management theory and slack resources theory. They found that the main result in the theoretical field reinforce the proposed positive relationship between CSP-CFP and good management theory and demonstrate a deficiency in the explanation of the time lag in the causal relationship between CSP-CFP, as well as deficiencies in the description of the CSP construct. For further research, this paper gave the recommendation to research the temporal lag in the causal relationship between CSP and CFP and the possible reasons why the positive association between CSP and CFP has not been assumed in some empirical studies.

Odia & Imaghe (2015) examine the relations among corporate social and environmental disclosure, social and environmental performance and financial performance in Nigeria based on simultaneous equation approach. They found that good social and environmental performance is significantly and positively associated with good economic performance, social and environmental disclosure. They also found that the negative and significant association between financial performance and social and environmental disclosures indicate that economically viable companies are varied and reluctant to make substantial social and environmental disclosures. Future recommendation from this paper suggests taking data sample from a corporate annual report, as this may provide more robust and additional results.

Given the mixed arguments presented, we expect the relationship between Sustainability performance and stocks return will be positive, given that companies that maintain its social performance and adopt the social responsibility concept in order to be sustainable will also gain good financial performances in the short run and long run. The good management theory explains how the good company management in all aspects led to good financial performance. The slack resources theory explains that good financial performance leads to excess profits that can be used for social activities we propose the following hypothesis:

H1: Firms' sustainability performance held a positive association with its' financial performance

METHODOLOGY

The final sample in this study consists of 452 companies (209 companies for the year of 2012 and 243 companies for the year 2013). Sustainability-related data are obtained from companies available reports such as annual reports, sustainability reports, corporate social responsibility reports, websites and companies other published documented papers.

In this study, at first, we use 470 firms listed in the year of 2012-2013 (222 firms for the year 2012 and 248 for the year 2013). However, due to lack of secondary data available (i.e. annual report, sustainability report, historical stocks return, CSR report, financial statement) our final observation decrease to 452 firms (209 for the year of 2012 and 243 for the year of 2013).

The scored firm portfolio contained firms that were listed in the 2-year holding period, while unscored portfolio contained firms that were listed only in 1-year holding period (firms that were included in 2012 but then omitted in 2013, or vice versa). Stock return data are collected from Yahoo. Finance website. Table I below represents the sample composition by industry groups. The trading, services and investments sector represent the substantial majority for the year of 2012 and 2013, while sector agriculture remains as the lowest one. The number of samples came from the agriculture sector increase for more than 44% between the year of 2012 and 2013, while firms from mining sector were screened out due to low performance. Our final sample grew by 16% for the 2-year holding period.

Table 1. Sample breakdown by industry

Sector	2012		2013		Growth
	N	(%)	N	(%)	(%)
Agriculture	9	4.31	13	5.35	44.44
Mining	28	13.4	26	10.7	-7.14
Basic industry & chemistry	21	10.05	29	11.93	38.10
Miscellaneous industry	15	7.18	19	7.82	26.67
Consumption	17	8.13	21	8.64	23.53
Property & Real Estate	32	15.31	35	14.4	9.38
Infrastructure, utility and transportation	18	8.61	20	8.23	11.11
Financial	21	10.05	25	10.29	19.05
Trading, services and investment	48	22.97	55	22.63	14.58
Total	209	100	243	100	16.27

In this study, we adopted a methodology developed by Brammer, Brooks & Pavelin (2006). Firstly, we construct six types of portfolios based on Sustainability Performance (SP) scores, namely top composite portfolio, top social, top environmental, top economic portfolio. We also construct nine types of portfolios based on sector, which are agriculture sector, mining sector, BIC sector, miscellaneous sector, consumption sector, property sector, infrastructure sector, financial sector and trading sector. We build our portfolios equally weighted and assume initial investment on 3 January 2012 for a one or two - year holding period. We compare our portfolios returns to the benchmark (IHSG index).

Next, we construct portfolios based on our SP scores deciles. Each decile contains 20% of our samples, with decile 1 contains 20% firms with the lowest SP scores and decile 5 contains 20% firms with the highest SP scores. We took this procedure to ensure each portfolio we constructed has the same reasonable size.

Then we will conduct a regression between stock returns on SP scores and separately on the three dimensions involved (social, environmental and economic). We take this step to disaggregate the effects of each aspect from SP to stock returns. Lastly, we will run our regression that separates our samples by sectors, due to idea that social responsibility between firms that operate in different fields is different, one firm beneficial activities can be destructive to the other. Hypothesis H1 will be tested by running cross-sectional regression analysis in statistical program STATA.

The regression equation is as follow:

$$r_{i,t} = \propto_0 + \propto_1 SP\ Measures_{i,t-1} + \propto_2 SIZE_{i,t-1} + \propto_3 BETA_{i,t-1} + \propto_4 r_{i,t-1} + e_t$$

where:

ri,t = the returns of the stock i in year t (each year runs from 3 January);

SP measures = the composite SP scores and its components (social scores, environmental scores, economic scores). Social represents social sustainability score, and environmental represents environmental sustainability score, economic represents economic sustainability score.

size = company' size/natural logarithm of the company's total assets

beta = company's beta

ri,t-1 = momentum/last year return of the company's portfolio

As for our sustainability performance (SP) data, we adopted the methodology developed by Firmialy & Nainggolan (2016, 2018). In their study, They combined several guidelines from Wood (1991), Clarkson (1995), Hopkins (1997), Steg (2003), Dommerholt (2009) to represent SSP framework from academics and SSP framework from KLD, SAM, Calvert, Sustainalytics, FTSE4Good, Vigeo, Oekom, DJSI, GRI, SRI-Kehati, ISO 26000, and IFC to represent social rating agency. They select these rating agencies based on the availability and transparency of data and methodology on the internet and then modified it so it will be better suited to match Indonesia's business environment. In their study, they used the term Corporate Social Performance (CSP), rather than Sustainability Performance (SP). Their final Sustainability Performance Framework (SPF) consisted of three main dimensions which are social, environmental and economic. Overall, their proposed SPF model will cover three dimensions, 17 indicators and 93 sub-indicators.

They divide their framework to strength and concern, whereas the company's strength link with their positive behaviour, whereas the company's concern link with the company's harmful behaviour. The sum of all aspects fell categorized under company's strength can be defined as "strength disclosure score", while the sum of all aspects under company's concern category was translated as "concern disclosure score". The sum of strength and concern score represents composite "total disclosure scores". They employed content analysis on their sub-indicators data as the coding basis and counted each word frequency to measure extensiveness of the information disclosed.

For Sustainability Performance (SP) score estimation, the disclosure score for each item and dimension in the SPF were converted to the range of scale between 1-3, with the score of 3 represent firms that disclose relatively detailed evaluation criteria in the annual report, sustainability report or corporate websites, whereas a score of 2 represent companies that disclose an average amount of information, and finally a score of 1 if it discloses a very brief textual description. Company whose disclose nothing to fall into this latter category.

Furthermore, we re-run the analysis of our regression model on separate sample data based on the sectoral level. We run the analysis furthermore nine times, furthermore represents the analysis on nine sectoral levels in Indonesia Stock Exchange (IDX).

RESULTS AND DISCUSSION

Table 2 below represents returns from our various portfolios based on SP scores. The top social portfolio contained firms with highest (exceed average) social scores, the top environmental portfolio contained firms with highest environmental scores, the top economic portfolio contained firms with highest economic scores, and top composite

contained firms with highest sustainability performance (SP) score. Our scores portfolio contained 206 firms, while our unscored portfolio contained 42 firms.

Most of the 1-year returns are all positive for all portfolios, except for top score environmental, agriculture sector, and mining sector. The 1-year return for scored firms sharply underperformed the benchmark index by 17.21% whereas the un-scored firm returns outperformed the benchmark by 18.64%.

Portfolios of top composites outperformed the index by over than 12.72%. Top environmental portfolio gains negative returns in 1-year investment horizon, as well as agriculture and mining sector. Portfolio containing stocks from the consumption sector grew more than 85% in 1-year length. The mining sectors performance underperformed the benchmark with and other portfolios we constructed with negative returns more than 30%.

The 2-year returns for most of our portfolios are all positive, except for un-scored firms, agriculture and mining sector. The 2-year return for scored firms outperformed the benchmark index by 6.58%, whereas the un-scored firm returns decreased sharply below the benchmark index by more than 13.9%.

Portfolios of top composites gained negative returns by over 6,5% compared to the index. Portfolios containing stocks from consumptions sectors and property and real estate sector grew more than 25% in 2-year investment horizon. The mining sector shows the slowest performance with negative returns of more than 30%.

Table 2. Returns from various portfolios (%)

	1-year return (%)	2-year return (%)	Number of firms
Scored firms	1.6	0.49	206
Unscored firms	0.1673	-6.85	42
Top score social	26.83	0.24	15
Top score environmental	-1.67	0.09	12
Top score economic	19.74	0.24	15
Top score composite	31.53	0.25	18
Agriculture sector	-1.3	-7.98	9
Mining sector	-32.71	-31.84	26
Basic industry and chemical	5.55	3.92	21
Miscellaneous sector	14.76	14.76	15
Consumption sector	114.03	70.67	17
Property and real estate sector	50.75	33.55	32
Infrastructure sector	53.29	23.91	18
Financial sector	33.69	18.31	21
Trading. services and investment	45.54	28.32	47
Benchmark (IHSG)	18.81	7.07	450

Our findings are consistent with our hypothesis and previous results by Boaventura, Da Silva & De Mello (2012). We found an empirical evidences on the positive relationship of companies social performance and financial performance in the long run. We also found similar evidences on the relationship between companies social performance and financial performance in the short run, similar to previous findings of Brammer, Brooks & Pavelin (2006).

Next, we will examine our portfolio based on deciles of SP scores that can be seen below in Table 3. Portfolio social-decile 1 contains 20% of firms with the lowest social scores, and so on, while social-decile 5 contains 20% of firms with the highest social scores. Portfolio environmental-decile 1 contains 20% of firms with the lowest

environmental scores, while environmental-decile 5 contains 20% of firms with the highest environmental scores.

Portfolio economic-decile 1 contains 20% of firms with the lowest economic scores, while portfolio economic-decile 5 contains 20% of firms with the highest economic scores. Portfolio composite decile-1 contains 20% of firms with the lowest sustainability performance scores, while portfolio composite decile-5 contains 20% of firms with the highest sustainability performance scores.

Environmental and economic portfolios shown that with an increase in SP scores, stocks returns also increase simultaneously, whether it is in the 1-year or 2-year horizon. Composites and social portfolios also shown a positive increasing until decile 4, then slightly decline by over than 9% for the 20% of firms with the highest scores. In this sense, it is safely said that sustainability performance of the firms' ability to give a positive contribution to the stock return, by increasing its sustainability certainty (real strength), thus decreasing its sustainability uncertainty (adverse concern).

Table 3. Returns from various portfolios based on decile of sustainability performance (SP) scores (%)

	Social	Environmental	Economic	Composite
Panel A – 1 year returns				
Decile 1	-39.47	-40.69	-42.34	-36.98
Decile 2	-1.67	-3.63	-5.74	3.67
Decile 3	22.45	17.09	12.53	34.76
Decile 4	60.47	42.30	36.14	43.55
Decile 5	17.84	44.54	59.02	14.61
Panel B – 2 year returns				
Decile 1	-4.69	-4.91	-5.14	-4.51
Decile 2	0.25	-0.56	-0.79	0.32
Decile 3	2.30	1.27	-9.92	3.55
Decile 4	11.71	4.27	3.59	10.02
Decile 5	2.08	9.73	11.11	2.08

The next step will discuss on regression results between stocks returns and sustainability performance. Table 4 below represent regressions results on each component of sustainability performance (SP) scores, namely social sustainability score, environmental sustainability score and economic sustainability score. *Social* represents social sustainability score, and *environmental* represents environmental sustainability score, *economic* represents economic sustainability score. *Size* represents the natural logarithm of total asset, and *beta* represents the company's exposures to market risk. Significance level of 5% and 10% level were denoted by the star (*) and (**), respectively.

SP is positively significant to stocks return at the 10% level, with an increase of 1-point in the SP score leads to an increase in return for 0,006% per year. Our findings are consistent with our hypothesis and previous results by Brammer, Brooks & Pavelin (2006). The phenomena may occur because of companies' capability to maintain its' social performance, and companies will get many benefits from this acts as well, such as minimizing potential conflicts with shareholders, enhancing companies' reputational image in public eyes, and increasing companies' productivity.

Environmental scores are negatively significant to stocks return at the 10% level, with an increase in environmental scores leads to a decrease in return for 0,001% per year, consistent with our hypothesis and previous results by Brammer, Brooks & Pavelin (2006).

The phenomena may be related to companies' high environmental expenditures that affected companies' profit, thus decreasing its' performances. Companies' beta is positively significant to return at 5% level, with an increase of 1-point in companies' beta leads to an increase in return for 1,999% per year and 2,105% per two years holding period. The findings are consistent with our hypothesis and the basic concept of "higher risk, higher return".

Momentum is negatively significant at 5% level, with an increase of 1-point in momentum score leads to a decrease in return for 6,867% per year, consistent with our hypothesis and previous results by Brammer, Brooks & Pavelin (2006).

Our model able to describe around 80% of the variation between SP and portfolios' stocks return with our selected independent variables, and the other 20% of the variation can be explained by other variables related to the stocks return and SP measures. Regression on returns on each separate measure of SP for 1-year and 2-year holding period can be seen in Table 4.

Table 4. Regression of returns on each separate measures of sustainability performance (SP) for 1-year and 2-year holding period

	1-Year				2-Year			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
CSP	0.003		0.006***		0.001		0.001	
	(0.291)		(0.094)		(0.7459)		(0.1662)	
Social		-0.003		0.003		0.001		0.001
		(0.632)		(0.19)		(0.6049)		(0.6373)
Environmental		-0.001		-0.001**		0.001		-0.001
		(0.247)		(0.057)		(0.5123)		(0.17)
Economic		-0.002		-0.001		-0.001		-0.001
		(0.201)		(0.165)		(0.7331)		(0.1728)
Size			-0.001	-0.001			$3.4X10^{-09}$	$3X10^{-09}$
			(0.142)	(0.136)			(0.637)	(0.7005)
Beta			1.938*	1.999*			2.092*	2.105*
			(0.003)	(0.002)			(0.0009)	(0.0008)
Momentum			-6.877*	-6.867*			-0.00569	-0.00547
			(0.000)	(0.000)			(0.6646)	(0.6787)
Coefficient	0.194*	0.210*	0.211*	0.226*	0.197*	0.199*	0.198*	0.201*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-Square	-	-	0.805	0.804	0.000	0.001	0.298	0.301

Our findings confirmed the previous result suggested by Galema, Plantings & Scholtens (2008). In their study, they confirmed ae positive relationship between the social performance of the firms with stocks returns based on 14-year data observation. They found that social employee dimension gave the highest positive relationship to the stock return. The phenomena possibly related to the market slow response to the social information that considered as the intangible capital and therefore harder to valuate rather than the tangible capital.

In short year span, the environmental performance gave a positive relationship to the stock return, aligned with previous results suggested by Odia & Imaghe (2015). In their study, they confirmed the positive relationship between environmental performance and companies financial performance with Structural Equation Modelling (SEM) modelling technique based on short term data (less than a year observation time). The phenomena translated as companies' good signal of "eco-efficiency" to the market. However, this raises other issues to discuss further. Could it be that the signal is mixed? Is there possibly any conflict of interest that motivated the company to disclose such

information to the public? This two questions may serve as new direction on future research.

Our final step will examine the relationship between separate SP measures to stocks return in 1 and 2 years holding period per sector, and the result is shown in Table 5 below. *Social* represents social sustainability score, and *environmental* represents environmental sustainability score, *economic* represents economic sustainability score. Significance level of 5% and 10% level were denoted by star (*) and (**), respectively.

At 1-year holding period, social scores are negatively significant at 10% level in the miscellaneous sector, real estate and property sector and financial sector, while at 2-year holding period, social scores are negatively affected the miscellaneous sector and financial sector at 5% level. Environmental scores are positively significant at 5% level in the infrastructure sector, with an increase of 1-point in environmental scores leads to 0,129% increase in returns per year. However, the relationship between environmental scores and stocks return show different results for the financial sector, compared to the infrastructure sector.

Environmental scores are negatively significant at 10% level, with an increase of 1-point in environmental scores leads to 0,267% decrease in stocks return per year, and 0,648% decrease in stocks return per two-year holding period. At 1-year holding period, economic scores are negatively significant at 5% level in real estate, and property sector, infrastructure sector, financial sector, with an average decrease in stocks return around 0,174% per 1-point increase in economic scores.

At two year holding period, economic scores are negatively significant at 5% level in primary industry, and chemical sector, real estate and property sector, infrastructure sector and financial sector, with an average decrease in stocks, return around 0,518% per 1-point increase in economic scores. However, the relationship between stocks return and economic scores are different for the agriculture sector, compared to the other sectors.

Economic scores in the agriculture sector are positively significant at the 10% level, with an increase of 1-point in economic scores leads to 0,509% increase of stocks return per year, and 0,959% increase of stocks return per two years.

Our findings may be related to companies' in the agricultural sector are more sensitive to their environmental performance rather than its social performance (we can observe this from each variable parameter estimates), thus adopt the social responsibility concept in order to be sustainable. Since we use stocks return in this research as a proxy for financial performance measures, it is safe to say that the companies' strategy is in line with ethical investors who based their investing preference to social/ethical criteria.

In this sense, it is safely said that sustainability performance of the firms' ability to give a positive contribution to the stock return, by increasing its sustainability certainty (positive strength), thus decreasing its sustainability uncertainty (negative concern), or specifically firms' idiosyncratic risk. Overall, our study supports global views of SP as a positive indicator to the firms' financial performance and hence result in further recommend on an increase investment in SP, specifically environmental dimension in short year time span (less than 1 years) and economic dimension in long year time span (more than 2 years).

Our findings stressed out the importance of positive relationships between stock return and social sustainability performance, furthermore realizing the main benefit that investors will get by carefully screening which ethical stocks "worth" to invest. This finding is aligned with the good management theory that explains how good company

management in all aspects can lead to good financial performance. Our final finding stressed out the importance of positive relationships between stocks return and Social Sustainability Performance.

Our findings agree with the good management theory that explains how good company management in all aspects can lead to good financial performance. However, due to limited time, our research process samples only limited to 2 years of data holding mutual fund. Future research may be able to extend the time length of the research process to examine the effect of SP with stocks thoroughly return, especially the potential leveraging effect of corporate efficiency as a moderator variable between the corporate sustainability performance and financial performance. Future research also stresses out the importance to evaluate determinants of Sustainability Performance (SP) in Indonesia, as well as evaluating the relationship between SP and CFP at the mutual fund level.

Table 5. Regression of returns on each separate measures of sustainability performance (SP) For 1-year and 2-year holding period per sector

	α1	*p-value*	*α2*	*p-value*	*α3*	*p-value*	*α0*	*p-value*	*N*	*R-square*
1-year holding return										
Agriculture	-0,041	0,582	0,5095*	0,051	0,154	0,419	-0,1452**	0,043	9	0,388
Mining	0,024	0,841	0,012	0,865	-0,294	0,124	0,007	0,898	26	0,091
Basic Industry and Chemical	0,030	0,476	-0,288	0,220	-0,192	0,230	0,1155**	0,021	21	0,310
Miscellaneous	-0,1286*	0,057	-0,165	0,273	0,308	0,313	0,160	0,141	15	0,264
Consumption	0,050	0,276	-0,304	0,381	0,051	0,755	0,098	0,372	17	0,020
Real Estate and Property	-0,1406*	0,061	-0,1964***	0,004	0,036	0,671	0,1586***	0,008	32	0,171
Infrastructures	0,014	0,701	-0,3694***	0,000	0,1292**	0,043	0,0963**	0,010	18	0,493
Financial	-0,006	0,822	0,056	0,824	-0,084	0,113	0,024	0,643	21	0,184
Services, trading and investment	-0,003	0,936	0,107	0,114	-0,1163***	0,002	0,017	0,472	47	0,037
2-year holding return										
Agriculture	-0,059	0,699	0,9588**	0,016	0,164	0,669	-0,2543**	0,018	9	0,411
Mining	0,144	0,513	-0,064	0,623	-0,278	0,267	-0,056	0,610	26	0,037
Basic Industry and Chemical	0,119	0,419	-0,9609**	0,026	-0,252	0,293	0,2381**	0,037	21	0,257
Miscellaneous	-0,2847**	0,020	-0,354	0,169	0,602	0,205	0,3593*	0,079	15	0,276
Consumption	-0,004	0,952	-0,599	0,418	0,161	0,516	0,253	0,319	17	0,028
Real Estate and Property	-0,282	0,146	-0,2824**	0,042	-0,006	0,977	0,3065**	0,028	32	0,132
Infrastructures	0,031	0,706	-0,6735***	0,000	0,115	0,615	0,2152**	0,029	18	0,290
Financial	0,017	0,786	-0,125	0,841	-0,136	0,273	0,101	0,448	21	0,113
Services, trading and investment	-0,045	0,410	0,067	0,721	-0,149	0,134	0,085	0,134	47	0,031

Note: α0 represent the portfolio' intercept; α1-3 represent company slopes; p-value represents the p-value for each independent variables toward dependent variables in our equation; star (*) represent significance level higher than 95% confidence interval, and star (**) represent significance level between 90%-95% confidence interval.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study presents to answer a big question regarding the growing trends of sustainability and financial performance. We designed the paper with the aim to determine the relationship between Sustainability Performance (SP) of the firm to the financial performance, or in this case, the stock return was chosen as the observed indicator for financial performance specifically, in portfolio level. The final sample evaluated consists of 452 companies (209 companies for the year of 2012 and 243 companies for the year 2013). We built our methodology to evaluate the relation between SP and stocks return by following Brammer, Brooks & Pavelin (2006). While

the Sustainability Performance (SP) scores were developed based on references by Firmialy and Nainggolan (2016, 2018).

There are two main essential findings in the study. Firstly, based on the result of sustainability performance measurement, all firms' shows an increase in their social and economic performance and a decrease in their environmental scores. Social, environmental and economic performances are varied across industries.

Secondly, environmental sustainability and economic sustainability portfolios have shown that with an increase in sustainability scores, stocks return also increase simultaneously, whether it is in the 1-year or 2-year horizon. The same evidence was gained from composite and social sustainability portfolios, both increases in the composite sustainability performance and social sustainability performance show increasing positive movement to the firm stock return. Sustainability performance scores and Beta are positively significant to stocks' return, while momentum is negatively significant to stocks return.

In this sense, it is safely said that sustainability performance of the firms' ability to give a positive contribution to the stock return, by increasing its sustainability certainty (positive strength), thus decreasing its sustainability uncertainty (negative concern), or specifically firms' idiosyncratic risk. Overall, our study supports global views of SP as a positive indicator to the firms' financial performance and hence result in further recommend on an increase investment in SP, specifically environmental dimension in short year time span (less than 1 years) and economic dimension in long year time span (more than 2 years).

Our findings stressed out the importance of positive relationships between stock return and social sustainability performance, furthermore realizing the main benefit that investors will get by carefully screening which ethical stocks "worth" to invest. This finding is aligned with the good management theory that explains how good company management in all aspects can lead to good financial performance. Our final finding stressed out the importance of positive relationships between stocks return and social sustainability performance.

Our findings agree with the good management theory that explains how good company management in all aspects can lead to good financial performance. However, due to limited time, our research process samples only limited to 2 years of data holding mutual fund. Future research may be able to extend the time length of the research process to examine the effect of SP with stocks thoroughly return, especially the potential leveraging effect of corporate efficiency as a moderator variable between the corporate sustainability performance and financial performance. Future research also stresses out the importance to evaluate determinants of Sustainability Performance (SP) in Indonesia, as well as evaluating the relationship between SP and CFP at the mutual fund level.

Recommendations

Our findings practical implication focused on the benefit of "Sustainability Investing" and furthermore, realizing the main benefit that investors will get by carefully screening which ethical stocks "worth" to invest. Findings of this study confirmed the notion of heterogenous sustainability performance within Indonesian firms, on a sectoral level. We also found pieces of evidence on the positive direction of an increase of social and economic performance to stock return. Meanwhile, environmental sustainability performance shows otherwise.

Also, the study contributes to the theoretical context of sustainability and firm financial performance in the context of developing countries, specifically in Indonesia, based on the guidances of stakeholder theory as the main principle found in the study.

The practical contribution of this study is significant for corporate managers on the importance of maintaining the firms' SP as a way to "prosper in the long term". Secondly, the practical contribution of this study stressed on the importance of corporate managers to invest in three dimensions of SP disaggregate and further integrate it into companies strategy as an essential risk management tool.

However, this result gave a unique signal that further recommended to us to identify whether there is an effect of "greenwashing" or specific "eco-reputational illusion" occurred. Thus recommendation served as our principal, further direction for future research. The second recommendation of this study suggests that there is a conflict of suspicions on whether the manager may act to their benefit by creating the "eco-reputational illusion" as suggested by the agency conflict and signalling theory. The second recommendation further discusses in our next topic of research.

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The nexus between tourism development and economic growth in Eastern Indonesia: a panel VECM approach

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Abstract

The empirical nexus between tourism development and economic growth have been widely examined, however, the empirical results generally produce diverse conclusion and often debated. The purpose of this empirical study is, firstly, to investigate and analyze the dynamic relationship between tourism sector development and economic growth both in the short and long run. Secondly, to examine the direction of causality between tourism development and economic growth in Eastern Indonesia over the period 2010-2017. This study employed a panel vector error correction model (PVECM) for the quantitative analysis approach from panel data of 12 provinces in eastern Indonesia. The empirical findings of this study were: 1) In the long run, the relationship between tourism development and economic growth supported the feedback causality hypothesis where changes and expansion in the tourism development affect economic growth and increasing economic growth have an impact on the expansion of the tourism sector (bi-directional causality). 2) The empirical findings corroborated the growth-led tourism hypothesis in the short run which argues that the achievements of economic growth affect the expansion of tourism development. In the short run, this empirical study only found a one-way causality running from economic growth to tourism development.

***Keywords**: Causality, Economic growth, PVECM, Tourism development,*

JEL Classification: O11, Z32

INTRODUCTION

In the last decades, the tourism sector has a strategic role and provided significant growth along with the dynamics of the national development paradigm that is more oriented to the development of the service and industry sector. The development of the tourism sector is very promising so that it is expected to become a leading sector in Indonesia's development. In 2017, the contribution of the tourism sector to the country's foreign exchange revenues reached USD 16.8 billion while its contribution to GDP and employment was around 18.5% and 12.5 million people. Evidence of Indonesia's success in the development of the tourism industry can be evaluated from the growth trend of the tourism sector with an indicator of the number of tourist arrivals increasing from year to year, especially foreign tourists. In 2010, the number of foreign tourist arrivals was 7 million people, then in 2017 increased to as many as 14 million people or experienced an average growth of 10.56% per year with the highest growth in 2017 of

21.88%, whereas in the same year national economic growth only grew by 5.07%. (BPS, 2019).

Indonesian tourism is targeted to be one of the best destinations in the world. Steps to become a world-class tourism destination have been carried out, among others, through the Wonderful Branding Country Indonesia. However, one of the important issues in the development of Indonesia's tourism sector is the low competitiveness caused by the lack of availability of infrastructure and tourism investment both government and private sector, especially in Eastern Indonesia, indicating that there is still a development gap between the Western Indonesia and Eastern Indonesia. In 2011, the provinces in eastern Indonesia were able to contribute to economic growth of 4.44%, then in 2017 an increase of 5.65%, with an average economic growth of 6.48% per year. In the same period, the number of foreign tourist arrivals in Eastern Indonesia in 2010 was 251,669 people then increased in 2017 to 1,129,920 people, with an average growth of 29.61% per year (BPS, 2018).

In the perspective of the empirical nexus between tourism development and economic growth have been widely examined, however, the empirical results generally produce diverse conclusions and often debated. Some researchers have found that tourism development has a positive impact on economic growth or supports the tourism led-growth hypothesis (TLGH). Other empirical studies have found a one-way relationship running from economic growth to the tourism sector that supports the economic driven tourism growth hypothesis or growth-led tourism hypothesis (GLTH). Several recent studies conducted in developed and developing countries have obtained empirical findings that support a two-way causality or there is a mutually influential relationship between tourism development and economic growth (bi-directional causality) that supports the feedback causality or reciprocal causal hypothesis while Kasimati (2011) and Katircioglu (2009) concluded that there was no causal relationship between tourism and economic growth or this argument supports the neutrality hypothesis. Çağlayan, Şak & Karymshakov (2012) also revealed that there was no causal relationship between tourism and economic growth in the case of Asia, the Middle East and North Africa, Central Asia and Sub Saharan Africa.

The first empirical finding reveals that economic growth is determined by tourism development which supports the tourism-led economic growth hypothesis (TLGH). Empirical studies that support this hypothesis using time series data (Suhel & Bashir, 2017); (Adnan Hye & Khan, 2013); (Kibara, Odhiambo, & Njuguna, 2012); (Akinboade & Braimoh, 2010); (Kreishan, 2015); (Tang & Tan, 2015); (Mishra, Rout, & Mohapatra, 2011), (Jalil, Mahmood & Idrees, 2013); (Risso & Brida, 2008); (Bento, 2016); and (Brida, Lanzilotta, & Pizzolon, 2016). Others applying panel and cross-section data that supports this argument/hypothesis is carried out by Çağlayan, Şak & Karymshakov, (2012); Lee & Chang (2008); Atan & Arslanturk (2012) and Sequeira & Nunes (2008). Meanwhile, De Vita & Kyaw (2017) and Lee & Chang (2008) employed panel data for supporting the tourism-led growth hypothesis (TLGH).

The growth-led tourism hypothesis argues that economic growth affects tourism expansion (GLTH). The studies in line with this hypothesis were conducted by Oh (2005); Payne & Mervar (2010); Odhiambo (2011); Suresh & Senthilnathan (2014), meanwhile, the reciprocal causality relationship or the feedback hypothesis (FH) considers the causal linkage between economic growth and tourism expansion as a bi-directional causality, where the impetus for the two variables gives mutual benefits. An

empirical study was conducted by Nizar (2015) in Indonesia finding that there was a bi-directional causality relationship between the development of the tourism sector and economic growth or supported the reciprocal causal hypothesis. Recognition of a causal relationship between economic growth and tourism expansion is very important because it can have beneficial implications for relevant policy decision making (Khalil, Kakar, & Waliullah, 2007); (Dritsakis, 2004); (Shuaibu & Oladayo, 2016); (Songling, Ishtiaq, & Thanh, 2019); (Katircioglu, 2009); (Ongan & Demiröz, 2005); (Lee & Chang, 2008); (Kim, Chen, & Jang, 2006); (Atan & Arslanturk, 2012); (Seghir, Mostéfa, Abbes & Zakarya, 2015); (Tugcu, 2014); (Apergis & Payne, 2012); (Chou, 2013) and (Seetanah, 2011).

This study aims to, firstly, to investigate and analyze the dynamic relationship between tourism sector development and economic growth both in the short and long run. Secondly, to examine the direction of causality between tourism development and economic growth in Eastern Indonesia over the period 2010-2017. The rest of this paper proceeds as follows: Section 2 presents a review of relevant literature. Section 3 describes the research method consisting of an explanation of the data and variables used, specifications of the econometric model, testing data and PVECM analysis. Section 4 explains the results and discussion. Section 5 is the final section that contains conclusions and recommendations.

LITERATURE REVIEW

In the perspective of an empirical study of tourism development, many researchers have previously conducted studies/research on the pattern of causal relationships between economic growth and tourism development, however, empirical results tend to be diverse, leading to lengthy debates and consensus differences. The first empirical finding is economic growth is determined by tourism development which supports the tourism-led economic growth hypothesis (TLGH). The second empirical finding is that tourism growth is driven by economic growth or supports the growth-led tourism hypothesis, which considers economic growth to affect tourism expansion (GLTH). The third empirical finding, reciprocal causality, or supporting the reciprocal causal hypothesis, which considers the causal relationship between economic growth and tourism expansion to be bi-directional causality, where the impetus for the two variables gives mutual benefits.

Chiu & Yeh (2017) examined the threshold effects of the tourism-led growth hypothesis based on cross-sectional data of 84 countries. The study investigated the nexus between tourism development and economic growth and finds a linear positive impact of international tourism receipts on economic growth, which confirms evidence of the tourism-led growth hypothesis. The study was conducted by Šimundić, Kuliš & Šerić (2016) about tourism and economic growth in Latin America and the Caribbean. Total countries studied there are 33 countries with a period of time from 2000 to 2014. The study employed a dynamic panel data approach. Variable used are real GDP, GDP per capita, tourism growth per capita, government expenditure, investment, openness, human capital and stability political. The results obtained by all variables are significant and have a positive effect. The Results of this research showed the positive impact of tourism on economic growth supporting the tourism-led growth hypothesis.

De Vita & Kyaw (2017) investigated the relationship between tourism specialization and economic growth while accounting for the tourism destination

countries, defined in terms of financial system development. The study employed a system generalized methods-of-moments (SYS-GMM) estimation methodology to investigate this relationship for 129 countries over the period 1995-2011. The results of the study concluded that the relationship between tourism specialization and economic growth is found to be positive and significant for middle-countries and high-income countries as they appear to gain considerably more from tourism specialization than low-income countries.

Cárdenas-García, Sánchez-Rivero & Pulido-Fernández (2015) examined whether tourism growth influences economic development in a panel of 144 countries. The study groups the countries into two groups based on their different socioeconomic structures such as level of income per capita, infrastructure, training, or instability of the economic activity. The first group of countries characterize countries that showed a higher value of the synthetic index of economic development in 1991, where it has been demonstrated that tourism growth has led to an improvement of the economic development. Narayan, Sharma & Banningidadmath (2013) used panel data predictive regression modeling in the Pacific Island countries from 1985-2010 and found a unidirectional causal flow from tourism to growth.

Çağlayan, Sak & Karymshakov (2012) found a unidirectional causality running from tourism to economic growth in a panel of 135 countries for East Asia, South Asia and Oceania; and a unidirectional causality running from economic growth to tourism in the case of countries in America and Latin America and the Caribbean. Kibara, Odhiambo, & Njuguna (2012) used time-series data from Kenya and an ARDL-bounds testing approach to examine the linkages between tourism and economic growth in a multivariate setting with trade as an intermittent variable. The finding from the study was a unidirectional causal flow from tourism development to economic growth both in the long and short run. Sequiera & Nunes (2008) also validated the tourism-led growth hypothesis in the case of multiple countries from 1980 to 2002 using panel regression. The study tested real per capita GDP, the ratio of tourist arrivals to population, tourism receipts as a percentage of exports and as a percentage of GDP and other variables. Although a unidirectional causal flow from tourism to economic growth is found in all countries, the study also finds a decreasing effect of tourism on economic growth in small countries.

Payne & Mervar (2010) used the Toda-Yamamoto causality test for Croatia and also find a unidirectional causality flow from GDP to tourism receipts. Katircioglu, (2009) employed the bounds test for cointegration and Granger causality tests to investigate a long-run equilibrium relationship between tourism, trade and real income growth as well as the direction of causality for Cyprus. The study found that GDP Granger-causes tourist arrivals. Odhiambo (2011) employed ARDL bounds testing and finds that in the long run, it is economic growth that drives the development of the tourism sector in Tanzania. Suresh & Senthilnathan (2014) examined the causal relationship between economic growth and tourism earning in Sri Lanka during 1977-2012 by employing Granger-causality tests using annual time series data. The results revealed that there was a unidirectional causality flow from economic growth to tourism earning.

The research was conducted by Nizar (2015) employing the VAR model concluded that the growth of tourism and economic growth have a reciprocal causal relationship. The impact of tourism (receipts) growth increase will accelerate economic

growth while the increase of GDP growth will boost the increase of tourism growth in the short-run. Chow (2013) examined causal relationships between tourism spending and economic growth in 10 transition countries for the period 1988–2011. Using panel causality analysis, the results supported and consistent with the feedback hypothesis for four of the ten countries namely the Czech Republic, Poland, Estonia, and Hungary. Seetanah (2011) applied panel data on 19 island economies over the period 1990 to 2007 to explore the potential contribution of tourism on economic growth and development within the conventional augmented Solow growth model. The study employed GMM methods and found that tourism significantly contributes to economic growth. Granger causality analysis further reveals a bidirectional relationship between tourism and growth. Apergis & Payne (2012) examined the causal relationship between tourism and economic growth for a panel of nine Caribbean countries over the period 1995–2007. The panel error correction model revealed bi-directional causality between tourism and economic growth in both the short run and the long run.

METHODS

Data and variable

The type of data used in this study is secondary data in the form of panel data, which includes 12 provinces in Eastern Indonesia namely 1) West Nusa Tenggara, 2) East Nusa Tenggara, 3) North Sulawesi, 4) Central Sulawesi, 5) South Sulawesi, 6) Southeast Sulawesi, 7) Gorontalo, 8) West Sulawesi, 9) Maluku, 10) North Maluku, 11) West Papua, 12) Papua. The research period is from 2010 to 2017. All data was taken from the Indonesian Central Statistics Agency (BPS) and the Indonesian Ministry of Tourism. In this study, tourism development has two variables as proxy that have been widely used in previous studies, namely the number of tourist arrivals (JW) and private investment in the tourism sector (IP), measured by the number of tourism business units. Economic growth reflects an increase in production output from year to year, measured by the Gross Regional Domestic Product (GRDP). Data processing, the transformation of variables into natural logarithms and estimation of the econometrics model using Microsoft Excel and EViews 10.

The specification of the econometric model

This study applies the quantitative method approach. Panel Vector Error Correction Model (PVECM) is employed to 1) investigate the short-run and long-run causality between tourism development and economic growth. 2) determine the direction of the causal relationship between tourism development and economic growth in the short-run and long-run. Panel Vector Error Correction Model (PVECM) is a restricted PVAR (panel vector auto-regression) designed for use with non-stationary series that are known to be cointegrated. The PVECM has cointegration relations built into the specification so that it restricts the long-run behavior of the endogenous variables to converge their cointegrating relationships while allowing for short-run adjustment dynamics (Engle and Granger, 1987). The cointegration term is known as the error correction term because a series of partial short-run adjustments make corrections to deviations to achieve long-run equilibrium gradually.

If the variables are cointegrated of the same order, then the valid error correction model exists between the three variables. The determination of cointegration relationship (cointegrated vector) that shows the presence of a long-term relationship

between variables, causality (Rachev, Mittnik, Fabozzi, Focardi & Jasic, 2007); (Gujarati & Porter, 2009). In PVECM treats the three observed variables (LPE, LJW, and LIP) as endogenous variables and include the lag value of each variable on the right-hand side of the equation. In the panel data, the VECM model used is written as follows:

$$\Delta LPE_{it} = \alpha_1 + \sum_{i=1}^{p} \beta_{11} \Delta LPE_{it-1} + \sum_{i=1}^{q} \beta_{12} \Delta LJW_{it-1} + \sum_{i=1}^{r} \beta_{13} \Delta LIP_{it-1} + \lambda_1 ECT_{it-1} + \mu_{1it} \quad \text{..... (1)}$$

$$\Delta LJW_{it} = \alpha_2 + \sum_{i=1}^{p} \beta_{21} \Delta LJW_{it-1} + \sum_{i=1}^{q} \beta_{22} \Delta LPE_{it-1} + \sum_{i=1}^{r} \beta_{23} \Delta LIP_{it-1} + \lambda_2 ECT_{it-1} + \mu_{21it} \quad \text{..... (2)}$$

$$\Delta LIP_{it} = \alpha_3 + \sum_{i=1}^{p} \beta_{31} \Delta LIP_{it-1} + \sum_{i=1}^{q} \beta_{32} \Delta LPE_{it-1} + \sum_{i=1}^{r} \beta_{33} \Delta LJW_{it-1} + \lambda_3 ECT_{it-1} + \mu_{3_{it}} \quad \text{..... (3)}$$

Where ECT is expressed as follows:

$$ECT_{it} = LPE_{it} - \beta_0 - \beta_{12} LJW_{it} - \beta_{13} LIP_{it} .$$

LPE is economic growth variable, measured by the natural logarithm of the Gross Regional Domestic Product (million IDR). LJW is the natural logarithm of the number of foreign tourists arrival. LIP is a private investment in the tourism sector, using the natural logarithm of the tourism business number (unit) as a proxy. ECT is an error correction term, *t* is time (the year 2010-2017) and *i* is cross-section data (12 provinces in Eastern Indonesia).

In this model, the error correction term is placed on the right-hand side. In the long-run equilibrium, this term is equal to zero. However, if LJW, LPE and LIP deviate from the long-run equilibrium, the error correction term will not be equal to zero and each variable adjusts to partially restore the equilibrium relation. The coefficient measures the speed of adjustment of the ith endogenous variable towards the equilibrium.

Testing data and PVECM

PVECM analysis must go through the following stages/procedures:

Panel unit root test.

The unit root test is used to test whether panel data is stationary or not stationary. Stationary data will tend to approach the average value and fluctuate around the average value. Panel data is a combination of times series data and cross-section, so the stationary test phase needs to be done to see whether there is a unit root contained between variables, so that the relationship between variables becomes valid. If the panel data has a root unit, it is said that the data moves randomly (random walk). If the absolute value of statistics is greater than the critical value, the observed data shows stationary or reject the null hypothesis. In this study, the method of panel data unit root tests is Levin, Lin & Chu t-test, ADF (Augmented Dickey-Fuller)-Fisher test and Philips-Perron (PP)-Fisher test. Levin, Lin & Chu (2002) in Baltagi (2005) used the panel data unit root test by considering the following ADF specifications:

$$DY_{it} = \alpha Y_{it-1} + \sum_{j=1}^{p} \beta_{it} DY_{it-j} + X_{it} \delta + \varepsilon_{it} \quad \text{..... (4)}$$

Where Y_{it} = panel data. DY_{it} = difference form of $Y_{it.}$, $\alpha = p\text{-}1$, pi = number of lags adjusted for first difference. ε_{it} =error term.

Panel cointegration test

The presence of a cointegration relationship indicates the existence of a causal relationship but does not show the direction of causality between the variables.

Cointegration is a long-term relationship between variables, although not individually stationary, but the linear combination between these variables becomes stationary. The use of Panel VECM requires that there be at least 2 cointegrated variables. The method that can be used to test the cointegration is Kao Residual Cointegration Test (Engle-Granger Based). Kao (1999) in Baltagi (2005) proposed an Augmented Dickey-Fuller (ADF) panel cointegration test in which cointegrating vectors are assumed to be homogeneous. Let $\hat{e}_{it}$ be the estimated residual from the following regression:

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it} \quad \text{..... (5)}$$

The Kao test is based on a version of the ADF test on the residual (ε_{it}) of the auxiliary regression $\varepsilon_{it} = \rho\varepsilon_{it-1} + v_{it}$, or on the augmented version of the pooled specification:

$$\varepsilon_{it} = \rho\varepsilon_{it-1} + \sum_{j=1}^{p} \lambda_j \Delta\varepsilon_{it-j} + v_{it} \quad \text{..... (6)}$$

The ADF test is applied to the estimated residual: where p is chosen so that the residual v_{it} are serially uncorrelated. The ADF test statistic is the usual t-statistic in the previous equation. The null hypothesis of no cointegration, the ADF test statistics can be written as:

$$ADF = \frac{t_{ADF} + \left(\frac{\sqrt{6N\hat{\sigma}v}}{2\hat{\sigma}0v}\right)}{\sqrt{\left(\frac{\hat{\sigma}_{0v}^2}{2\hat{\sigma}_v^2}\right) + (10\hat{\sigma}_{0v}^2)}} \quad \text{..... (7)}$$

Where $\hat{\sigma}_v^2 = \Sigma_{\mu\varepsilon} - \Sigma_{\mu\varepsilon}\Sigma_{\varepsilon,}^{1}\hat{\sigma}_{0v}^2 = \Omega_{\mu\varepsilon} - \Omega_{\mu\varepsilon}\Omega_{\epsilon,}^{1}\Omega$ is the long-run covariance matrix and t_{ADF} is the t-statistic of in the ADF regression. Kao shows that the ADF test converges to a standard normal distribution N (0,1). The statistical value of Kao panel data cointegration test (ADF), when compared with the t-statistic value at 5% or the Probability value. If the statistical value is greater than the critical value or the probability value is less than 0.05, there is a long-run relationship in the variables.

Wald Test/VEC Granger Causality

The short-run causality is also tested using the Wald test. The Wald test computes a test statistic based on the unrestricted regression. The Wald statistic measures how close the unrestricted estimates come to satisfy the restrictions under the null hypothesis. If the restrictions are in fact true, then the unrestricted estimates should come close to satisfy the restrictions.

RESULT AND DISCUSSION

Description and testing of data

Based on the research objectives that have been stated previously, namely 1) Researching or investigating the direction of causality between the development of the tourism sector and economic growth in Eastern Indonesia. 2) Analyzing the dynamic relationship between the development of the tourism sector and economic growth in Eastern Indonesia both in the short-run and long-run. To answer two main objectives, this study employs the Panel Vector Error Correction Model (PVECM).

A description of the panel data containing the mean, median, maximum value, lowest value (minimum) and the number of observations, available in Table 1. On

average, the number of foreign tourist visits during the period of 2010-2017 in 12 provinces of Eastern Indonesia was 55,314 people, with a maximum value of 604,823 people. Table 1 also explains that economic growth, measured by Gross Regional Domestic Product (GRDP) experienced a significant increase of an average of 6.48% per year or an average GRDP value of Rp. 68,290.03 billion, with a maximum value of Rp.288,909 billion and a minimum value of Rp.14,984 billion. During 2010-2017, the achievement of the amount of private investment was an average of 295 business units per year, with a maximum figure of 112 business units and a minimum number of 62 business units.

Table 1. Description of data

Statistics	Data/Variables		
	JW	PE	IP
Mean	55314.15	68290.03	294.7292
Median	8649.000	54811.09	224.5000
Maximum	604823.1	288908.6	1211.000
Minimum	10.00000	14983.91	62.00000
Std. Dev.	111582.0	58277.24	211.9719
Jarque-Bera	593.9090	114.4607	89.19167
Probability	0.000000	0.000000	0.000000
Sum	5310159.	6555842.	28294.00
Sum Sq. Dev.	1.18E+12	3.23E+11	4268549.
Observations	96	96	96

Table 1 also explains that data are not normally distributed with the statistical significance indicator Jarque-Bera statistically significant at alpha of 5%. The number of cross-section units is 12 provinces in Eastern Indonesia (KTI) and the total time-series is 8 years (2010-2017) so that a total of 96-panel data observations are obtained.

The econometric model which used to analyze the direction of causality between the development of the tourism sector and economic growth and to analyze the dynamic relationship of the development of the tourism sector and economic growth both in the short-run and long-run in Eastern Indonesia is the Panel Vector Error Correction Model (PVECM). The first requirement in using PVECM analysis is that the data used should be stationary and integrated. Therefore, in this section, the first step is testing data stationarity by employing the methods of Levin, Lin & Chu (LLC), and Augmented Dickey-Fuller (ADF) -Fisher and Philip-Perron (PP)-Fisher as shown in Table 2.

Table 2. Unit root test/stationarity of panel data

Variables	Level			First Difference		
	LLC	ADF-Fisher	PP-Fisher	LLC	ADF-Fisher	PP-Fisher
LPE	0.20897	11.2724	13.8480	-10.3348	111.101	147.732
	(0.5828)	(0.9869)	(0.9500)	(0.000)***	(0.000)***	(0.000)***
LJW	-0.99656	15.3241	16.4411	-13.7387	145.858	170.143
	(0.1595)	(0.9109)	(0.8715)	(0.000)***	(0.000)***	(0.000)***
LIP	0.40310	9.49429	10.2133	-12.0683	127.625	150.377
	(0.6566)	(0.9963)	(0.9936)	(0.000)***	(0.000)***	(0.000)***

Note: LLC=Levin, Lin & Chu. ADF-Fisher= Augmented Dickey-Fuller-Fisher
PP-Fisher=Philips-Perron-Fisher
*Statistical value in parentheses () is p-value. ***, **, * = Significant at alpha 1 %, 5 %, 10 %.*

Table 2 provides important information on the unit root test for examining stationarity of panel data by employing several methods namely Levin, Lin & Chu-Fisher, Augmented Dickey Fuller-Fisher, and Philips Perron-Fisher. Testing data in level shows that all variables tested (LPE, LJW, and LIP) are not stationary or fail to reject the null hypothesis (there is unit root) so that the differencing process is one of the solution to make data stationer. In the first difference data, all variables tested are significant at alpha 5 % (p-value < 0.05) or reject the null hypothesis indicate that all first difference variables are stationary or have no unit root in the same order. The next step in using PVECM analysis is to carry out a cointegration test with the aim of identifying the existence of a long-term relationship between variables in the model, using the Kao residual cointegration test method presented in Table 3.

Table 3. Kao residual cointegration test

Method	t-statistic	P-value
ADF	-4.713161	0.0000
Residual Variance	0.257042	
HAC Variance	0.188656	

*Note: ***, **, * = Significant at alpha 1 %, 5 %, 10 %.*

The cointegration test results in Table 3 provide information that the ADF statistical value of the Kao residual cointegration test is statistically significant at alpha of 5% or p-value <0.05, indicating there is a long-term relationship between variables in the model. The presence of a cointegration relationship indicates the existence of a causal relationship but does not show the direction of causality between the variables. Data or variables (LPE, LJW, and LIP) have passed the stages of unit root and cointegration testing which is a condition of using PVECM analysis. The next step is to estimate PVECM with the aim, firstly, to obtain important information regarding the direction of the causal relationship between tourism development and economic growth. Secondly, the dynamic relationship between tourism development and economic growth both in the short and long term. PVECM estimation results can be seen in Table 4.

Table 4. Summary of PVECM estimation results

Independent Variables	Dependent Variables		
	ΔLPE	ΔLJW	ΔLIP
Long-Run Coefficient			
LJW(-1)	1.190377 (7.34849)***	-	-
LIP(-1)	-2.762038 (-7.24611)***	-	-
ECT	-0.197222 (-1.82067)*	-1.675971 (-6.14329)***	-0.244931 (-2.02494)***
Short-Run Coefficient			
ΔLPE(-1)	-0.170378 (-0.67872)	1.381343 (2.18493)***	-0.117197 (-0.57546)
ΔLPE(-2)	-0.170918 (-0.74810)	-0.126206 (-0.21934)	0.463008 (1.81490)*
ΔLJW(-1)	-0.079406 (-0.85985)	0.134482 (0.57822)	0.021002 [0.20367]
ΔLJW(-2)	0.031257 (0.49259)	0.134482 (1.45165)	0.008810 (0.12434])***
ΔLIP(-1)	0.002340 (0.00837)	-2.114926 (-3.00254)***	-0.799624 [-2.56043]***
ΔLIP(-2)	0.210642 (0.95811)	-0.603899 [1.21957)	-0.446928 (-1.82054)*

*Note: Statistical value in parentheses () is p-value. ***, **, * = Significant at alpha 1 %, 5 %, 10 %.*

Based on the PVECM estimation results summarized in Table 4, demonstrating several important information that there is a long-term causality running from tourism development variables (LJW, LIP) to the economic growth variable (LPE) and also giving a strong evidence of the existence of a long-run causality running from economic growth to the tourism development (LJW & LIP). In the long run, tourism development affects economic growth and the achievement of economic growth leads to expansion of the tourism sector (feedback causality). The existence of a two-way relationship (bi-directional causality) is shown by the ECT coefficient, which is negative and statistically significant at alpha 5% for all variables. The ECT coefficient shows the speed of adjustment or the process of correction from the short run to lead to equilibrium in the long run. The speed of adjustment from tourism development to economic growth is 19.72 % annually. Table 4 also reports that the two tourism development variables in the short run do not significantly affect economic growth, however changes in economic growth is found to have a statistically significant effect on tourism development at alpha 5%, so that in the short term there is only a one-way relations running from economic growth to tourism development.

The final procedure is to test for a short run causality using the Wald test as set out in Table 5. There is no evidence to support the short-run causality running from tourism development variables (LJW and LIP) to economic growth variable (LPE) or fail to reject the null hypothesis of the Wald test. However, the Wald test shows significant short-run linkage running from economic growth (LPE) and tourism investment (LIP) to the number of foreign tourist arrival (LJW).

Table 5. Wald test/VEC Granger causality

Dependent variable	independent variable	Value	df	p-value
LPE	LJW	1.554582	2	0.4596
	LIP	2.079326	2	0.3536
LJW	LPE	6.864627	2	0.0042***
	LIP	12.12901	2	0.0023***
LIP	LPE	4.555168	2	0.1025
	LJW	0.043806	2	0.9783

*Note: ***, **, * = Significant at alpha 1 %, 5 %, 10 %.*

In summary, the case of empirical studies in eastern Indonesia using PVECM reveals bi-directional causality in the long-run or supports the feedback hypothesis, which are in line with research conducted by several previous studies (Chow, 2013; Apergis & Payne, 2012), while in the short run, this empirical study supports the growth-led tourism hypothesis, which reveals the reverse causality running from economic growth to tourism development. Several previous studies corroborate these findings. Study Payne & Merva (2010) used the Toda-Yamamoto causality test for Croatia and find a unidirectional causality flow from GDP to tourism receipts. Katircioglu (2007) found that GDP Granger-causes tourist arrivals. In Suresh & Senthilnathan (2014) examined the causal relationship between economic growth and tourism earning in Sri Lanka during 1977-2012 is examined by employing Granger-causality tests using annual time series data. The results reveal that there is unidirectional causality flow from economic growth to tourism earning.

CONCLUSIONS AND RECOMENDATIONS

Conclusions

This empirical study can conclude several important findings related to the pattern of dynamic relationships and the direction of the relationship between tourism development and economic growth both in the long run and short run by using the Panel VECM, this empirical study found that there was a bi-directional causality between tourism development and economic growth in the long run which corroborated the feedback hypothesis. However, in the short run, empirical findings supported the growth-led tourism hypothesis (GLTH) which argues that the achievements of economic growth affect the expansion of tourism development. This condition is in line with the economic development of the provinces in eastern Indonesia which are still lagging behind compared to economic development in the western regions of Indonesia which directly or indirectly influences tourism development.

Recommendations

Regional governments in eastern Indonesia should focus on the development and improvement of public infrastructure, tourism infrastructure and the strengthening of tourism services that are based on regional leading tourism so that in the long run it will have an impact on improving the performance of the tourism sector and accelerating economic growth simultaneously. In further research, it is necessary to add several variables that further strengthen the results of this study, namely government spending on the tourism sector and regional revenues from the tourism sector, with a longer period.

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Comparison of fuzzy clustering methods in economic freedom ranking in Asia-Pacific

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Abstract

Economic freedom can be defined as freedom in which individuals can perform their economic activities freely without being exposed to the pressures and constraints. The aim of the studies on the classification of countries according to their economic freedoms is to determine the place of the countries in the world or in the continent where they are located. In this way, the status of the countries with sustainable growth and high welfare is determined. In this study, it is aimed to rank Asian countries according to economic freedom data. In contrast to many classifications and sorting studies, the present study attempts to determine the best sorting method by comparing multiple methods. As a result of the economic freedoms published by the Heritage Foundation every year, the conditions of Asian countries between 2015-2019 were determined. Fuzzy C-Means, Gath-Geva and Gustafson-Kessel methods, which are the three most commonly used methods, were used in the fuzzy clustering analysis. The results obtained from all fuzzy clustering methods were compared and interpreted with the results of the Heritage Foundation year by year. According to all analysis results, it can be said that the Fuzzy C-means method is more successful for Economic Freedom data and classification studies. According to the Fuzzy C-Means method, the three best Asian countries were Hong Kong, New Zealand and Australia respectively.

Keywords: *Economic Freedom, Fuzzy Clustering, Fuzzy C-Means, Gath-Geva*

JEL Classification: C38, C43

INTRODUCTION

According to the Heritage Foundation, economic freedom is defined as the fundamental right of every person to control his or her labor and property. In an economically free society; while it is recognized that individuals have the freedom to work, produce, consume and invest as they wish; labor, capital, and goods (URL-1).

The Economic Freedom Index shows the positive relationship between economic freedom and various social and economic goals. In this context; The concepts of public health, environmental cleanliness, wealth per capita, human development, poverty eradication, and democracy are closely related to economic freedom. Economic freedom brings more prosperity to countries. The Economic Freedom Index documents and maintains the positive relationship between economic freedom and various positive social and economic goals. Studies on measuring economic freedoms have been carried out by the Heritage Foundation and The Wall Street Journal. The index of economic freedom was formed according to the definitions of Adam Smith. These indices are also considered

as indicators of sustainable growth and prosperity levels for countries. A separate calculation method is available for each independent index. The higher the score, the more economically the country is interpreted as being freer than other countries. With economic freedom, today's most important issues such as healthier societies, cleaner environments, more wealth per capita, human development, democracy and poverty eradication can be realized. Heritage Freedom Index, published by Heritage Foundation, evaluates countries over 100 points. According to the ratings, countries fall under the categories of "not free", "mostly not free", "partially free", "mostly free" and "free".

Economic freedom is necessary not only in relation to human dignity but also in order to adjust the changing preferences of producers and consumers in response to market forces and to ensure economic growth. Increased economic freedoms will help individuals move more comfortably in both production and consumption processes. Thus, individuals will be able to act more easily in their economic decisions. As regards the link between economic freedom and economic growth, there are intense efforts to identify the key elements of economic freedom. On the other hand, studies are conducted to determine the relationship between economic performance and economic freedom of countries such as income level and inequality.

Today, countries are classified as developed, developing and undeveloped countries according to their development levels. The role of economic development is an important issue in order to be among the developed countries. The realization of economic development should be ensured through economic growth by making radical changes in country policies and taking important steps. Economic growth labor, capital and so on. While it is expressed by quantitative changes such as production factors, the development includes quantitative changes as well as qualitative changes in the country. For the qualitative changes mentioned here, we can mention economic, social, cultural and political changes. It is necessary to ensure economic growth and development in the country with the necessary efforts for individuals and societies to reach more prosperity. In order to realize economic growth, countries should focus on issues that will raise their level of economic freedom. Economic freedoms are very important for economic growth and development.

In countries with low levels of economic freedom, the restrictions imposed by the state to solve possible problems and to keep the market under control are more pronounced. The control and restrictions established by the state on the economy of the country make economic activities difficult in the market. Furthermore, there is a possibility that the control and restraint power on the market may be abused in line with certain interests. This situation in the market undermines the confidence of individuals living in the country and reduces the desire for economic activity. The same is true for foreign investors. The investor, who is in search of a new investment area in the international arena, primarily considers the cost and profit maximization of the investment. Foreign investors will give up the idea of investing in a country where they cannot maximize profits due to economic constraints. Therefore, low-level countries are not attractive to foreign investors in terms of economic freedoms.

In this study, index ranking for Asian-Pacific countries was made with the help of the data of economic freedom used by the Heritage Foundation. The Fuzzy C-Means, Gath-Geva and Gustafson-Kessel methods of fuzzy clustering analysis methods were compared between 2015-2019 and it was determined which results were close to the results of Heritage foundation.

METHOD

Clustering analysis

Clustering analysis is a method that provides the classification of the units examined in research by grouping them according to their similarities, revealing the common features of the units and making general definitions about these classes. The aim is; to classify the ungrouped data according to their similarities and to assist the researcher in obtaining useful, summative information. The objective of cluster analysis is the classification of objects according to similarities among them and classify the data into groups (Balasko, Abonyi & Feil, 2005).

Clustering is a method of unsupervised learning, and a common technique for statistical data analysis used in many fields, including machine learning, data mining, pattern recognition, image analysis, bioinformatics, and marketing.

Fuzzy Clustering Analysis is an analysis technique developed based on the fuzzy logic theory. In this approach, clusters emerge as an appropriate method if they are not distinctly separated from each other or if some units in their membership are undecided in cluster membership. Fuzzy sets are functions that determine each unit between 0 and 1, which is defined as the membership of the unit in the set. Very similar units are located in the same cluster according to the degree of high membership (Höppner, Klawonn, Rudolf & Runkler, 1999).

The structure of the cluster and the algorithm used to specify which of these distance criteria will be used. Some of the convenient characteristics of fuzzy clustering are providing membership values that are convenient to comment on, flexible on the usage of distance and when some of the membership values are known, they can be combined with numeric optimization (Naes & Mevik, 1999). The biggest advantage of fuzzy clustering over crisp clustering methods is that it provides more detailed information on the data. But on the other hand, there will be too much output when there are too many individuals and clusters so it will difficult to summarize and classify the data. Moreover, the use of fuzzy clustering algorithms is preferred if there is uncertainty in the data (Abonyi & Feil, 2007).

Fuzzy C-Means algorithm (FCM)

Fuzzy C-Means algorithm forms the basis of all fuzzy clustering techniques that depend on the objective function. This algorithm was first developed in Dunn (1973). Bezdek (1974) then generalized this fuzzy objective function by defining a weighting exponent. The latest version of the algorithm recognizes the spherical shape of points in m-dimensional space (Bezdek, 1981). The distance between objects and cluster centers is measured by Euclidean distance given in Equation.1. (Höppner, Klawonn, Rudolf & Runkler, 1999).

$$d_{ik} = (x_i - v_k) = \|x_i - v_k\| = \left[\sum_{v=1}^{p} (x_{ji} - v_{jk})^2 \right]^{1/2} \quad \text{..... (1)}$$

In Equation.1. x_k represents the position observation value in the coordinated system, and v_i represents the cluster center for each cluster which is called prototypes. In the beginning, it is necessary to know the actual number of clusters and the membership degrees of the individuals beforehand to be able to put this technique into practice. But in practice, it is difficult to know these parameters before the application. For these, it is possible to find these values through the method of trial and error or through some

techniques developed. The objective function used for this clustering method is as follows:

$$J(u,v)=\sum_{j=1}^{n}\sum_{t=1}^{c}u_{jk}^{m}\left\|x_{ji}-v_{jk}\right\|^{2} \quad \text{..... (2)}$$

This function is the weighted least square function. *n* parameter represents the number of observations, and *c* represents the number of clusters. u_{jk}^{m} is the membership of x_j in *k*-th cluster, $J(u,v)$ value is a measure of the total of all weighted error sum of squares. There is a constraint to which this objective function applies. According to the fuzzy logic principle, each data belongs to each set with a membership value ranging from $[0,1]$. The sum of membership values of all data for all classes should be "1" (Ruspini, 1973).

If the $J(u,v)$ function is minimized for each value of *c*, in other words, if it is derived from the 1st degree according to v_j's and made equal to 0, the prototype of FCM algorithm can be given in Equation.3:

$$v_{jk}=\frac{\sum_{j=1}^{n}u_{jk}^{m}x_{ik}}{\sum_{j=1}^{n}u_{jk}^{m}} \quad \text{..... (3)}$$

In equation.3, it symbolizes; the number of the cluster with c, fuzziness index with m, process ending criteria with ε and membership degrees matrix with *U* of FCM algorithm generate cluster prototypes at random. By taking means of these values, the membership degrees matrix is calculated as given in Equation.4 (Sintas, Cadenas & Martin, 1999).

$$u_{ik}=\left[\sum_{j=1}^{c}\left(\frac{d_{ji}}{d_{jk}}\right)^{\frac{2}{m-1}}\right]^{-1} \quad \text{..... (4)}$$

U cluster prototypes are updated in all iteration and the processes are repeated until $\left\|U^{(t)}-U^{(t-1)}\right\|$ value reaches the previously determined error term. After the FCM algorithm is implemented membership degrees are used in other to decide which individual will participate in which cluster. For each individual; the highest cluster membership is observed and this individual is added to that cluster

Gustaffson-Kessel algorithm (GK)

The Gustafson-Kessel algorithm is a fuzzy clustering algorithm developed to identify ellipse-like clusters instead of spherical clusters. The Fuzzy C-Means method does not give good results in such clusters. After that, Gustafson & Kessel (1979) used Mahalanobis distance instead of Euclidean distance in the fuzzy clustering method. In this algorithm, compared to the Fuzzy C-Means algorithm, in addition to the cluster centers, each cluster has a symmetric and positively defined matrix *A*. This matrix causes the norm $\|x\|_A=\sqrt{x^T Ax}$ for each set. Here, taking these matrices randomly can cause

distances to be small. In order to prevent the objective function from being minimized by the matrix whose inputs are approximately zero, fixed volume clusters are required such that *det (A) = 1*. Here only cluster forms are variable, cluster sizes are not variable (Gustafson & Kessel, 1979).

The prototype of the Gustafson Kessel algorithm is given in Equation.5:

$$p \in N, D = R^p, X = \{x_1, x_2, ..., x_n\} \subseteq D, C = R^p x A \in R^p x \{A \in R^p \,|\det(A) = 1\} \quad \text{..... (5)}$$

Here A is a symmetric and positively defined matrix, $c \in N, R = P_C \in (C), m \in R$. The objective function for Gustafson-Kessel algorithm with Mahalanobis distance is defined as in Equation.6:

$$J(X, u, v) = \sum \sum u_{ik}^m (x_k - v_i)^T A_i (x_k - v_i) \quad \text{.....(6)}$$

A_i matrix; can be found with determination and inverse of variance-covariance matrice S_i:

$$A_i = \sqrt{\det(S_i)} S_i^{-1} \quad \text{..... (7)}$$

$$S_i = \sum u_{ij}^m (x_k - v_i)(x_k - v_i)^T \quad \text{..... (8)}$$

Instead S_i, the Gustafson-Kessel Algorithm uses matrices calculated according to the following equation called fuzzy variance-covariance matrices:

$$F_i = \frac{\sum_{j=1}^{n} u_{ij}^m (x_k - v_i)(x_k - v_i)^T}{\sum_{j=1}^{n} u_{ij}^m} \quad \text{..... (9)}$$

The essence of the covariance matrix F_i is that it provides information about the shape and orientation of the set. It is found by the ratio of the ellipsoid axes to the length of the cluster. The Gustafson-Kessel algorithm is used to detect clusters along linear subspaces of the data field. These clusters are represented by flat hyper ellipsoids which can be seen as hyperplanes. The eigenvector corresponding to the smallest eigenvalue value determines the normal of the hyperplane and can be used to calculate linear models from the covariance matrix to the optimal location.

Gath-Geva algorithm (GG)

The Gath and Geva algorithm is a more advanced version of the Gustafson-Kessel algorithm, which also takes into account the density and size of clusters. This approach is not based on optimizing the objective function. The Gath-Geva algorithm is an experimental method based on the blur of the maximum likelihood estimator. The main idea is to assume that the data points are normally distributed *p*-dimensional (Gath & Geva, 1989).

The fuzzy maximum similarity estimator distance function is given as follows:

$$d_{ik} = \frac{\sqrt{\det(F_i)}}{\beta_i} \exp(x_k - v_i)^T F_i^{-1} (x_k - v_i) \quad \text{..... (10)}$$

The β_i statement is the preliminary probability of the data and F_i is the fuzzy variance-covariance matrix

$$\beta_i = \frac{\sum_{j=1}^{n} u_{ij}^m}{\sum_{j=1}^{n}\sum_{i=1}^{c} u_{ij}^m} \quad \text{..... (11)}$$

$$F_i = \frac{\sum_{j=1}^{n} u_{ij}^m \left(x_k - v_i\right)\left(x_k - v_i\right)^T}{\sum_{j=1}^{n} u_{ij}^m} \quad \text{..... (12)}$$

Fuzzy cluster centers are also calculated as the Gustafson-Kessel algorithm. Generalization of the statistical estimators for the expected value and the covariance matrix directly leads to the computational operations for cluster centers v_i and covariance matrix A_i. β_i estimates the probabilistic probabilities for pellicle values. Normalized finite probabilities give the probability of data generated by the *i-th* normal distribution. The distance function is also selected in proportion to the posterior probabilities. If the distance is small, this means a high probability for memberships and a low probability if the distance is large (Oliveira & Pedrycz, 2007).

Unlike the fuzzy c-means algorithm and the Gustafson - Kessel algorithm, the Gath - Geva algorithm is not based on an objective function, but a blur of statistical estimators. The best feature is that when the initial cluster centers are selected in good quality, they can yield accurate division results in unequal variable properties and densities. In addition, this algorithm successfully detects both the fuzzy c-means and all clusters that the Gustafson - Kessel algorithm can find. However, the Gath - Geva algorithm becomes more reasonable for the local minimal with increasing complexity. Either parts of the Gath - Geva algorithm may be very different for different initialization of prototypes or floating-point overflows that can easily occur due to the exponential function. Therefore, it is acceptable to use a modified exponential function that provides linearly incremental values when the arguments are an overflow.

Cluster validity indices

One of the main problems in clustering analysis is what optimal number of clusters will be. This is always a problem in all clustering analysis methods like crisp clustering, fuzzy clustering or soft set clustering, etc. So we have to use cluster validity indices.

If we have no prior knowledge about the number of classes, it is hard to make the right decision on the number of classes. Cluster validity indices tell us the quality of partition that was found and enables us to determine optimal partitions. For these, validity indices can be used to search for the optimal number of clusters in the data set that is not known in advance. In Literature, there are so many validity indices for detecting the optimal number of clusters (In classical clustering nearly 10 indices are studying but in fuzzy clustering, there are more than 70 and researchers still working on it). In this article, it is used Artificial Neural Network based validity index which introduced by Erilli, Yolcu, Egrioglu, Aladag & Oner (2011).

Index calculation

Index calculations are made as given in Erilli (2018) work. Index values were calculated by using the data published on the Heritage Foundation website. These variables are based on 12 quantitative and qualitative factors, grouped into four broad categories of economic freedom:

1. Rule of Law (property rights, government integrity, judicial effectiveness)
2. Government Size (government spending, tax burden, fiscal health)
3. Regulatory Efficiency (business freedom, labor freedom, monetary freedom)
4. Open Markets (trade freedom, investment freedom, financial freedom)

The proposed index is calculated with three different fuzzy clustering analyses. The suggested steps are given as follows:

i. The variables forming each index value (they must be in the same cluster) are clustered by all three fuzzy clustering analysis methods.
ii. After applying all three fuzzy clustering analysis methods, cluster membership degrees of each observation is calculated for all methods separately (Cluster membership degrees take place between 0 and 1 for each observation).
iii. Cluster membership degrees obtained by each fuzzy clustering method are sorted from small to large within the clusters. This is the ranking of the countries' freedom in the relevant year. These operations are carried out separately for each year and the continent ranking is determined for the relevant periods.,

In this study, the method which gives the best percentage will be selected by looking at the rankings obtained with the values written above and the correlation values with Heritage Foundation rankings.

RESULTS AND DISCUSSION

In the application part, the Economic Freedom data published by the Heritage Foundation were researched separately for 2015-2019 according to the mentioned methods. First, countries were clustered according to years of fuzzy clustering analysis. The countries clustered separately for each method for each year are listed for each cluster from big to small according to their cluster membership degrees. According to the three methods specified for each year, Asian countries were ranked according to their economic freedoms and the results were compared according to Heritage results. MATLAB. 2007.b package program was used in all applications. Statistically, significant value is taken 0.05 for all analyses. According to the results of fuzzy clustering analysis, cluster numbers for each year are given in Table 1 for each method.

Table 1. Number of clusters for all years for 3 Fuzzy clustering methods

Clustering methods	2015	2016	2017	2018	2019
FCM	6	6	3	4	4
GK	6	5	5	5	5
GG	6	5	5	4	5

As for Table 1, only in 2015, all methods find the same number of clusters. This can be explained by the fact that the slightest change in the data allows a change in the level of fuzziness.

For the comparison, correlation coefficients between rankings were examined for each year. The best method was determined according to the rank correlation values of

the first 10 countries and all countries. Table.2 shows the correlation values of all countries and only the top 10 country rankings with Heritage for each year's data.

When the results in Table 2 are examined, it is seen that the method which has the highest correlation value with Heritage scores belongs to the FCM method. In addition, the most statistically significant correlation values belong to FCM.

The top 10 country rankings according to three different fuzzy clustering methods and heritage foundations are given in the appendix for each year. According to Heritage results, Hong Kong has been at the top of the tables every year. According to the results of FCM, it was in the first place for 3 years and according to the other two methods, it was never in the first place. In contrast to the Heritage ranking, the results of the three methods included 25 different countries in the top 10. In Heritage scores, this number is only 12.

Table 2. Correlation of Fuzzy clustering classification results with heritage results

Year/Clustering methods	All Asia-Pacific Countries	First 10 Countries
2015		
FCM	0.707*	0.879*
GK	0.641*	0.782*
GG	0.706*	0.842*
2016		
FCM	0.798*	0.794*
GK	0.641*	0.667*
GG	0.737*	0.785*
2017		
FCM	0.729*	0.818*
GK	0.699*	0.518
GG	0.471	0.489
2018		
FCM	0.647*	0.842*
GK	0.401	0.406
GG	0.421	0.412
2019		
FCM	0.755*	0.824*
GK	0.601*	0.552
GG	0.741*	0.727*

In Table 3, the correlation values of the calculated rankings for five different years are given. As can be easily understood from the table, we can say that FCM is the best method with the highest correlations.

Table 3. Correlation means (for 5 years) of Fuzzy clustering classification results with heritage results

Clustering methods	All Asia-Pacific Countries	First 10 Countries
FCM	0.727	0.831
GK	0.597	0.585
GG	0.615	0.651

When we look at the results of the Heritage Foundation 2015-2019, it is seen that the top 5 countries have not changed. We can say that this result is due to the constant coefficients used in the Heritage foundation ranking. In the fuzzy clustering methods, the

coefficients differed according to each cluster and allowed the ranking of 10 different countries in the top 5. Thus, more variability arising from the data was included in the analysis. It can be argued that the results of fuzzy clustering analysis, where the rankings of the countries change almost every year, may give results with more pronounced annual performances.

The most interesting result is that Australia ranked first for all 3 methods according to the results calculated in 2015 and 2016. It is thought that the growth data of the Australian economy in 2015 and 2016 are better than their competitors Hong-Kong, New Zealand, Taiwan and Singapore, lower value-added values such as inflation and unemployment, and finding the best country compared to fuzzy methods. Also, it is seen that some countries are in the top ranks in some years and in the bottom ranks in some years. For example, countries Samoa for 2015, Fiji for 2017 and Tonga for 2019 are in the top places in fuzzy systems and they are in the lower places according to Heritage results.

According to Heritage Foundation 2019 results, 4 of the top 5 countries are Asian countries. The most important reasons for this are that financial freedom, trade freedom, investment freedom, and business freedom in Asian countries is better than the world countries. The fact that all these values are higher in Asian countries increases the data turbidity. Therefore, it is considered that fuzzy methods will give more successful results in cases of high instability.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In this study, the 3 most commonly used methods in Fuzzy clustering analysis are used for listing the Asia-Pacific countries for economic freedoms for years 2015-2109. According to the results of the analysis, the FCM method was determined as the most successful method.

In the study, firstly, clustering analysis was performed for all methods. For each cluster of the countries divided into clusters, year-by-year rankings were made according to cluster membership degrees. Then, the correlation values between Heritage and Fuzzy Clustering methods were examined. The highest correlation value for the year 2015 was found to be 0.80 according to the FCM method. According to only the top 10 countries, this ratio increased to 0.88. In general, the ranking results obtained by FCM are similar to Heritage results by 73% for the whole continent and 83% for the first 10 rankings.

In particular, the fact that the number of observations and the number of variables used is close to each other, and that many of the variables have very close values for countries, increase the uncertainties in the results obtained. In such cases, fuzzy methods are proposed instead of classical methods. In this study, fuzzy clustering methods were compared and the best results were tried to be determined. According to the results obtained in the study, it can be said that economic freedom rankings made with fuzzy clustering methods are successful.

The principles of economic freedom are a sure guide, but only a guide. What truly will matter are the creative solutions to pressing world problems that are certain to flow from people all over the world.

Recommendations

In the classification and grouping studies, the data structure which is the subject of the analysis has a direct effect on the results. By comparing the results obtained using different methods, it may be easier to determine the appropriate analysis method. In future studies, economic freedoms can be made by using a soft set, rough set, grey set or near set clustering methods instead of fuzzy clustering. In this way, more method comparisons will be made and this can help to find the best method.

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URL-1: www.heritage.org

Appendix. Top 10 countries rankings by three different fuzzy clustering methods and heritage foundation

2015 Data

No	Heritage	FCM	GK	GG
1	Hong Kong	Australia	Australia	Australia
2	Singapore	Singapore	Singapore	Hong Kong
3	New Zealand	New Zealand	New Zealand	Japan
4	Australia	Hong Kong	Japan	New Zealand
5	Taiwan	Japan	Hong Kong	Singapore
6	Japan	Taiwan	Taiwan	Malaysia
7	SouthKorea	Bhutan	Malaysia	Macau
8	Malaysia	SouthKorea	Macau	Brunei Darussalam
9	Macau	Samoa	SouthKorea	Samoa
10	Brunei Darussalam	India	Kazakhstan	India

2016 Data

	Heritage	FCM	GK	GG
1	Hong Kong	Australia	Australia	Australia
2	Singapore	Singapore	New Zealand	New Zealand
3	New Zealand	New Zealand	Papua New Guinea	Singapore
4	Australia	Hong Kong	Maldives	Hong Kong
5	Taiwan	Japan	SouthKorea	Japan
6	Japan	Taiwan	Bangladesh	Brunei Darussalam
7	SouthKorea	SouthKorea	Pakistan	Samoa
8	Malaysia	Bhutan	Indonesia	Macau
9	Macau	Malaysia	Kazakhstan	Malaysia
10	Brunei Darussalam	Macau	China	SouthKorea

2017 Data

	Heritage	FCM	GK	GG
1	Hong Kong	Hong Kong	Malaysia	Australia
2	Singapore	New Zealand	Hong Kong	Hong Kong
3	New Zealand	Japan	Japan	Japan
4	Australia	Singapore	New Zealand	SouthKorea
5	Taiwan	Australia	Taiwan	Malaysia
6	SouthKorea	Taiwan	Singapore	New Zealand
7	Malaysia	Malaysia	Vanuatu	Singapore
8	Macau	Kazakhstan	Fiji	Taiwan
9	Brunei Darussalam	Bhutan	Macau	Fiji
10	Japan	Macau	Australia	Vanuatu

2018 Data

	Heritage	FCM	GK	GG
1	Hong Kong	HongKong	Taiwan	Japan
2	Singapore	New Zealand	Japan	SouthKorea
3	New Zealand	Japan	Hong Kong	Hong Kong
4	Australia	Singapore	New Zealand	Malaysia
5	Taiwan	Australia	Singapore	Australia
6	Malaysia	Taiwan	Malaysia	NewZealand
7	SouthKorea	Malaysia	SouthKorea	Singapore
8	Japan	SouthKorea	Tonga	Taiwan
9	Macau	India	Bhutan	Vanuatu
10	Vanuatu	Brunei Darussalam	Australia	Brunei Darussalam

2019 Data

	Heritage	FCM	GK	GG
1	Hong Kong	Hong Kong	Taiwan	Malaysia
2	Singapore	New Zealand	Malaysia	Hong Kong
3	New Zealand	Taiwan	Japan	Singapore
4	Australia	Japan	SouthKorea	Australia
5	Taiwan	Malaysia	New Zealand	SouthKorea
6	Malaysia	Australia	Singapore	Taiwan
7	SouthKorea	Singapore	Hong Kong	New Zealand
8	Japan	SouthKorea	Vanuatu	Japan
9	Macau	Kazakhstan	Tonga	China
10	Thailand	Azerbaijan	Australia	Vanuatu

Impact of institutional quality on economic performance of Eastern Africa: a panel data analysis

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Abstract

Nowadays, studies argued that international difference in prosperity across a country is the matter institutional quality. Thus, the poor economic performance of African's is linked to their weak institutional quality. The aim of this study is to examine the extent to which institutional quality affect economic performance of 14 selected East African Countries; Burundi, Comoros, Djibouti, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Mauritius, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe, over the period 2005-2016, using fixed effect and System GMM methods. The finding of this study confirms with the existing empirical study that economic institutions matter for economic performance among which control of corruption and government effectiveness has positive impact on economic performance, while rule of law has adverse impact. The finding of this study implies that that Eastern Africa with better institutions has a higher economic performance. Therefore, the Eastern Africa countries should improve those institutions that have positive impact, and promote and change those institutions that have adverse effect in way that it can promote economic development.

Key words: *Eastern African, Economic performance, Institutional quality, Panel data analysis, System GMM*

JEL Classifications: E02, O11, O55

INTRODUCTION

The cause of international difference in economic growth and development is the most important concern in social sciences. Many years ago, economist recognized that capital accumulation and exogenous technical progress are the main reason behind cross-country difference in international economic development. Subsequently, the debate was extended to the quality of policy and incentive structure that enable a county to accumulate more capital and innovate. In the recent time, institutional frame works affecting these policies and incentives was found to be the root cause behind difference in economic growth and development (Acemoglu & Robinson, 2010)."Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction and in consequence they structure incentives in human exchange, whether political, social, or economic" (North, 1990).

Today, the role of institution in economic performance attracted the attention of many researchers, policy makers and development practitioners. A growing body of the literatures established that Institutions are fundamental determinant of the welfare of nations, because they affect organization performance by fostering better policy choice.

They are created to establish incentive structure that help to reduce transaction cost, minimize uncertainty and promote efficiency, maintain social harmony, hence contribution to strong economic performance of a nations. When they weak uncertainty, unpredictability, instability, corruption and transaction costs increase (Wiggins & Davis, 2006; Tadic, 2006; Acemoglu & Robinson, 2010; Vītola & Senfelde, 2012).

An enormous empirical studies emerged to examine the impact of institution on economic performance (Jalilian et al., 2003; Rodrik, Subramanian & Trebbi, 2004; Acemoglu et al., 2005; Habtamu, 2008; Fabro & Aixalá, 2009; Batuo & Fabro, 2009; Commander & Nikoloski, 2010; Osman, Alexiou & Tsaliki, 2011; Fayissa & Nsiah, 2013; Kilishi, Mobolaji & Yaru, 2013; Han, Khan & Zhuang, 2014; Iqbal & Daly, 2014; Nawaz, 2015; Effiong, 2015; Valipoor & Bakke, 2016).Most of the these studies establishes positive relationship between institution and economic performance. In addition, the above studies conclude that institutions are the fundamental cause of economic growth and development differences across countries and hence poor quality of institution is the root cause of economic problem of third world countries. Thus, the poor economic performance of the SSA has been linked to intuitional quality. However, studies are ambiguous on the channel through which institutional quality affect economic performance due the existence of various measure institutional qualities and the methodological applied. Most of the existing literatures assume homogenous relationships across the country included in the analysis which is not always the case(Chang, 2011; Eicher & Leukert, 2006; Luiz, 2009).In addition, Most of the above studies incorporate larger number of countries in their analysis, hence failed to address the unexpected shocks that are specific to one country and one period.

To this end, the main objective of this study is to investigate institutional quality and economic performance relationships in 14 selected Eastern Africa countries by employing fixed effect and SYS-GMM over 2005-20016 periods.

LITERATURE REVIEW

The question of what makes societies economically successful remains the concern of many social scientists for a long periods. Especially, economists have developed different theoretical framework to explain the cause of cross-country difference in economic growth and development. Until 1980s, human capital, physical capital, technology advancement remain the driving factors behind economic growth and development of a country. Post 1980s, the new institutional economics integrated the theory of institution into the mainstream economic (Sardadvar, 2011). The Institutional economics stresses the crucial role of institutions in economic performance of a Country. It provides a framework for understanding the interaction of government structures, firm organization, and individual decisions, emphasizing transaction costs as a central component of economic activity (Wajda, 2015).

The most widely used definition of institutions which based on Douglas North framework is that the formal rules (a constitution, laws and regulations, a political system, property rights, etc.) and informal rules (a system of values and beliefs, customs, ideas, social norms, etc.) that govern the behavior of individuals and organizations (Hodgson, 2006). On the other hand, Vitola & Senfelde (2015) define institutions as socially approved behavior models that restrict the rationality of an individual and constrain or encourage specific behavior, and assume that high quality institutions encourage an efficient use of limited production resources in order to fulfill the needs of society.

Today, Empirical literatures are exponentially increasing in searching for what explain larger difference in property across a country. Jalilian, Kirkpatrick & Parker (2003) explored the impact of the quality of regulatory governance on economic growth .Using the World wide governance Indicators(WGI) and applying the OLS and fixed effect estimation techniques ; regulatory quality found to have positive impact on economic growth of developing countries. Habtamu (2008),using System GMM over 1996-2005 for 35 Sub-Saharan Africa (SSA), found that institutional qualities such as Rule of law, government effectiveness, regulatory quality, political instability, and voice and accountability were found to influence the growth of SSA, while control over corruption has no relation to growth in the region. Fabro & Aixalá (2009), using dynamic panel and Instrumental variable estimation techniques for 145 rich and poor countries, found that for the total sample of countries institutional arrangement is a fundamental factor for explaining the level of economic development. However, when countries divided up based on income level, they found no evidence that institutional qualities are important in poor countries.

Osman, Alexiou & Tsalik (2011) examined the link between institutional quality and economic performance in 27 Sub-Saharan Africa (SSA) countries during the period 1984-2003.Using ICRG index of institutional quality and static and dynamic panel estimation techniques, the study found that institutional variables assume a key role in the process of economic development whereas the control variables display a limited effect. Kilishi, Mobolaji, Yaru, (2013), using the World wide governance data over 1996-2010 for 36 SSA and employing System Generalized Method of Moment (GMM) estimators, found that institution really matter for Sub-Saharan Africa's economic performance, among which regulatory quality appeared to be the most important. Fayisa & Nsiah (2013), using a panel of data for 39 Sub-Sahara African countries and employing a dynamic and static panel data destination, found that good quality of institutions has a positive and significant impact on growth.

Most of these studies establish positive relationship between institution and economic performance. In addition, the above studies conclude that institutions are the fundamental cause of economic growth and development differences across countries and hence poor quality of institution is the root cause of economic problem of third world countries. Thus, the poor economic performance of the SSA has been linked to intuitional quality. However, studies are ambiguous on the channel through which institutional quality affect economic due the existence of various measures institutional qualities and the methodological applied. Most of the existing literatures assume homogenous relationships across the country included in the analysis which is not always the case (Eicher & Leukert, 2006; Luiz, 2009; Chang, 2011).In addition, Most of the above studies incorporate larger number of countries in their analysis, hence failed to address the unexpected shocks that are specific to one country and over period. Docquier (2014) stated that instead of comparing a larger number of countries having heterogeneous characteristics, it might be interesting to focus on a smaller sample of counties that are likely similar and experienced institutions change at different period. To this extent, this study selected the Eastern Africa countries.

The Eastern Africa Countries, especially the Horn Africa are known for the most conflict area in the World. For instance, today countries such as Ethiopia and Kenya are experiencing the fasted growing economy in the area. Evidence shows that , Despite increasing economic growth in the region, on average than other regions, institutional quality in East African is weakening (UNODC, 2013; Solomon, 2014).Thus, there is

need to investigate the extent to which the institutional quality affect the economic performance of countries in this region.

METHODS

Data type and source

This study has used Panel dataset of 14 selected Eastern Africa countries such as the East African countries investigated in this study are; Burundi, Comoros, Djibouti, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Mauritius, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe ,which is a 12 year records between the years of 2005-2016 period. The data are obtained from different sources, such as Worldwide Governance Indicators (WGI), Center for Systematic peace (CSP), World Development Indicators (WDI), IMF and UNCATD databases.

Data on quality of economic institutions indicators has been obtained from WGI database which produced by Kaufmann et al. (2011) and compiled at the World Bank annually. These indicators are based public opinion and perception-based surveys of various governance measures from investors, consulting firms, non-government organizations, governments, and multilateral agencies; and classified into six clusters. According to Kaufmann, Kraay & Mastruzzi (2010), these indicators are conceptually defined as follows:

Government effectiveness (GEE): It captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Regulatory quality (RQE)**:** It captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Rule of law (RLE)**:** It captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

Control of corruption (CCE): It captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the "capture" of the state by elites and private interests.

To measure quality of Political institution; the study used polity2 variable from polity4 project of CSP.Polity2 is a scale measurement ranging from ranges from +10 (strongly democratic) to-10 (strongly autocratic), which is computed by subtracting the indicator of Autocracy score from the indicator of Democracy score (Marshal, Gurr, & Jaggers, 2016).

GDP per capita at 2010 $US constant price has used as dependent variable in the analysis. Data on GDP per capita has been obtained from WDI. In addition, data on annual population growth rate, total investment and trade openness sourced from World Development Indicators, IMF and UNCATD respectively.

Econometrics model specification

In order to explore the impact institutional quality of economic performance Eastern African (EA), the study employed panel data analysis approach. Following the study specifies the log linear economic growth model augmented with institutional variables as the following:

$$\ln\text{GDPpc}_{it} = \beta_0 + \beta_1 \text{I}_{it} + \beta_2 \text{polity2}_{it} + \beta_3 \text{topen}_{it} + \beta_4 \text{inv}_{it} + \beta_5 \text{popg}_{it} + \mathcal{F}_i + \varepsilon_{\text{it}} \quad \text{.....(1)}$$

Where,
i = 1, 2..., N is the number of countries; t = 1, 2, …, T is time period, a K1 vector which is slopes of independent variables i, is the unobserved heterogeneity and is the error.is logarithm of level of GDP per capita, "I" is the indicators of quality of economic institutions (such as, CCE, GEE, RQE and RLE), topen is trade openness which is the sum of exports and imports of goods and services measured as a share of gross domestic product,polity2 is the proxy measure of quality of political institution, "inv" is Investment as a percentage of GDP is calculated at market prices, "popg" represents annual population growth rate.

With the equation of the model (1), due high correlation between the four measures of quality of economic institutions it is impossible to regress all of them at the same time. . For this reason, the method of principal component analysis is used to deal with the possible multi-collinearity problem. Principal component analysis (PCA) is a statistical technique used for dimension reduction.

Depending on this problem, the study has been designed on two analytical methods. First, the composite indicator for all quality of economic institution has computed by PCA. In this manner, the four measures of quality of economic institutions namely: CCE, GEE, RQE and RLE were aggregated as one indicator of institutional quality. The Second method of analysis applies disaggregated analysis. In this case, the impact of each of the individual indicators on economic performance examined separately.

Estimation techniques

The most popular method to estimate equation (1) is the static panel estimation method. It commonly known that Static panel data estimation involves the fixed effect (FE) and random effect (RE) estimation. This study has chosen fixed effect estimation over random effect due to its advantage in controlling of unobserved county and time fixed effect. The random effect assume that unobserved country fixed effect are uncorrelated with error term which impossible in this study. For instance geography, culture, history and distance to equator and many other fixed factors exists to be correlated with institutional variables which cannot be controlled in random effect.

In fact, the FE employed in this involves the method of LSDV which take into accountant country and time fixed effect. This technique is sensitive to heteroscedasticity problem. The Brush pagan test is used to test this problem which has the null hypothesis of there is a constant variance. The larger probability value is required to accept to these hypotheses. When this null hypotheses rejected the Feasible Generalized Least squares (FGLS) is employed in order to improve the efficiency of the FE. With FGLS we can estimate the Fixed effect regression model of equations (3.34) and (3.4) under the assumptions of homoscedastic and no autocorrelation. In addition, FGLS allows estimation in the presence of first order autocorrelation, AR (1), within panels and cross-sectional correlation and heteroscedasticity across panels (Greene, 2012).

However, economic relationships usually involve dynamic adjustment processes and dataset are panel data with small time period there has been often problem of inference, such as sample bias in coefficients and hypothesis tests. Therefore, neither FE nor the RE is unbiased and consistent. Thus, under such problem the appropriate model is dynamic panel data modeling. Such model is appropriate when the outcome variable of interests depend past realization. In this approach equation (1) can be specified as in the following:

$$\ln GDPc_{it} = \beta_0 + \beta_1 \ln GDPc_{it-1} + \beta_2 I_{it} + \beta_3 polity2_{it} + \beta_4 popg_{it} + \beta_5 topen_{it} + \beta_6 inv_{it} + \mathcal{F}_i + \varepsilon_{it} \quad \text{.....(2)}$$

The popular method to estimate equation (2) is called Generalized Method of Moments (GMM). It is the extension of Instrumental Variable (IV) approach in order to form the instrument for endogenous variables from its own past lag value. The most important reason of choosing GMM estimation techniques over IV estimation is that it's not appropriate techniques when there is more instrument than endogenous variables, which happen in the case of these study variables of institutional quality. In addition, with GMM estimation there no needs to be worry about homoscedastic and stationary (Hansen, 1982).

In fact, GMM estimation has two types: the first difference GMM (Diff-GMM) and System GMM (SYS-GMM). The Diff-GMM is estimation technique which apply first differencing to the original model and use moment condition to generate internal instrument for variable that are endogenous (Arellano & Bond (1991).This approach does not provide good estimator under heteroscedasticity and for time invariant repressors. To address this problem, Arellano & Bover (1995) as well as Blundell & Bond (1998) proposed the SYS-GMM as an alternative. Because of this reason SYS_GMM estimation has been employed in this study. The System GMM estimators involve two step processes. In steps one the System GMM not robust. Therefore, the "two step" SYS- GMM should be performed in order to improve the efficiency of the estimation result.

In order to generate internal instrument, the SYS-GMM form two systems of equations: one equation in level form and one other in differenced form. Using the moment condition, it generates two kinds of instruments; one group of instrument the lagged level and the other group are the first differenced instruments. Finally, equations in level forms are instrumented with differenced instruments while equations in first difference are instrumented with instrument in lagged level (Roadman, 2009). In order to be valid

Therefore, the validity of SYS-GMM estimation results depends on the validity of these instruments. These instruments should not be greater than number of observations and strictly exogenous. The formal test statistics for this is called Hansen J-statistics. This test has two null hypotheses:

H_{01}: Instruments as group are valid

H_{02}: Instruments are valid exclusively

Therefore, the higher the P-value of the Hansen J-statistics is better to accept this hypothesis

In addition, the estimated result of SYS-GMM is consistent if there is no evidence of significant second order serial autocorrelation. The Arellano and Bond (AR) Test have been used to test the null hypothesis of no autocorrelations. Similarly, the higher the P-value of AR (2) is better to accept this hypothesis to retail this hypothesis.

RESULTS AND DISCUSSION

As discussed in methodology section, the result of this study has been based the Fixed Effect and System GMM estimation techniques. The fixed effect has been employed to deal with heterogeneity among the individual country and the system GMM estimation is to deal with the endogeneity problem. Since the Fixed estimation results suffer from heteroscedasticity problem, the method of Feasible Generalized Least square estimation (FGLS) technique was used. Through this study, robust estimation result of fixed effect estimation mean that FGLS.

Table 1 shows the diagnostics test results for SYS-GMM .In this study, five models were estimated as indicated table 2-6 below and the diagnostics tests for these results are presented in table 1 through column 2- 6. As indicate clearly in the table the number of instrument in each regression is smaller than the number of observations (N=153), which pretty what is desirable. On the other hand, the minimum of 1 and maximum of 4 lag values was imposed on the predetermined variable, since one period lag of predetermined variables are not assumed to be correlated with current shocks. For this study, one period lagged dependent variable (l. lnGDPpc) is treated as predetermined variable meaning that it's not strictly endogenous. In addition, The minimum and maximum lag limit imposed on endogenous variables, that is all independent variables except lagged value of GDPpc, is 2 which can be written as lag (2 2) (Roadman, 2009).

Table1. Model diagnostic test results for system GMM

Evaluation criteria	Table 2	Table 3	Table 4	Table 5	Table 6
Observations	153	153	153	153	153
Number of Instruments	16	14	16	14	42
Lag limit (min/max)	(1/4)	(1/2)	(1/4)	(1/2)	(1/2)
Second order Autocorrelation(AR2) :p-value	0.422	0.095	0.417	0.065	0.544
Hansen test of Overid. restrictions: p-vale	0.939	0.605	0.939	0.730	1.00
Testing the validity of instruments in subsets of equations					
GMM(endogenous var.) type instruments					
Hansen test excluding group: p-value	0.986	0.607	0.986	0.744	1.00
GMM(predetermined var.) type instrument					
Hansen test excluding group: p-value	0.971	0.305	0.976	0.318	1.00

Source: Own estimate using Stata 13.

Note: *The term in parenthesis "(min/max)"used with lag limit means minimum and maximum lag imposed on variables used as instrument, here on predetermined variables*

Moreover, as clearly depicted in the table1there is no second order autocorrelation. The p-value for Arellano – Bond test -AR (2) is 1 which cannot reject the null hypothesis of no autocorrelation at 0.05 levels. Furthermore, Hansen test for instrument over identification and instrument in subset of equation are valid and the null hypotheses of instruments are valid cannot be rejected at 1% convectional level.

Table 2 shows the result of the aggregate impact of institutional quality on economic performance of the Eastern African. From the table it is clear that the aggregate indicator of quality of economic (Einst) has positive significant on economic performance at 1% convectional level under the robust FE estimation. The result is consistent under the SYS-GMM at 5% level. Using the SSY-GMM results, we can infer that one unit increase in institutional quality would leads to 3.6% increase economic performance. In addition, the result implies that improvement in quality of economic institutions would have huge contribution for economic welfare and country with better quality of institution would have better economic performance. In fact, this finding is in accordance with (Kilishi, Mobolaji & Yaru, 201; Fayisa & Nsiah, 2013; Batuo & Fabro, 2009). On the other hand, the robust estimation result of fixed effect shows that Polity2 has positive relationships with GDPpc per capita. The result implies that each individual country has its own and time fixed effect that affects quality of economic institution which in turn impacted on economic performance. However, the results of SYS-GMM indicate that polity2 has insignificant impact on economic performance. This result does not mean that polity2is not important, rather the deteriorations quality of political institution. This result is in line with Commander & Nikoloski (2010).

The other control variable, total investment (inv) has positive country and time effect on economic performance. However, after controlling for endogeneity, investment has insignificant impact on GDP per capita. This shows that keeping institutional constant, the impact of investment on economic performance is limited in Eastern African. PO Finally, the SYS-GMM results indicate that one period lag of GDP per capita (l. lnGDPpc) has positive significant effect on economic performance. The result implies that Eastern Africa Economic performance depends on its own past performance than other factors.

Table 2. The impact of aggregate quality of economic institutions on economic performance

Dependent variable is GDP per capita (lnGDPpc)					
Independent variables	FE		FGLS		SYS-GMM
	C	C &T	C	C &T	
Einst	0.140***	0.124***	0.140***	0.124***	0.036**
	(0.0348)	(0.0228)	(0.0327)	(0.0207)	(0.015)
polity2	0.0197***	0.00740	0.0197***	0.00740*	0.006
	(0.00699)	(0.00466)	(0.00658)	(0.00422)	(0.008)
Topen	0.00000	-0.00013	0.00000	-0.00013	0.00000
	(0.000851)	(0.000601)	(0.000801)	(0.000544)	(0.001)
Inv	0.00560***	0.00284***	0.00560***	0.00284***	0.000
	(0.00126)	(0.000842)	(0.00119)	(0.000763)	(0.001)
Popg	-0.168**	-0.0696	-0.168**	-0.0696	-0.069*
	(0.0724)	(0.0485)	(0.0681)	(0.0439)	(0.036)
L.lnGDPpc					0.894***
					(0.047)
Constant	7.113***	6.756***	7.113***	6.756***	0.942**
	(0.228)	(0.152)	(0.214)	(0.137)	(0.417)
Observations	167	167	167	167	153
R-squared	0.979	0.992			
Number of Countries			14	14	14

***Source**: Own estimates using Stata 13.*
***Note**: Standard errors in parentheses, *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1means significant at 10% level.Whereas, C indicate country fixed effect and C & T indicate country and Time effect.*

Table 3 shows that the estimated results of control of corruption (CCE) on Eastern African economic performance. The result indicates that CCE has positive effect on GDP per capita (GDPpc).The result implies that this positive impact depend on country and time fixed effect. This confirm with (Batuo & Fabro, 2009; Han, Khan & Zhuang, 2014; Valipoor & Bakke, 2016) which stated that in country where control of corruption is high their economic growth and development better. Similar to in case of Einst, the robust estimation result of fixed effect shows that Polity2 has positive relationships with GDPpc per capita, when CCE and other variables kept constant. The result implies that each individual country has its own and time fixed effect that affects quality of economic institution which in turn impacted on economic performance. However, the results of SYS-GMM indicate that polity2 has insignificant impact on economic performance. This result does not mean that quality of political institution not important, rather the deteriorations quality of political institution. This result is in line with Commander & Nikoloski (2010).

Table 3. Estimated impact of Control of corruption on economic performance

Dependent variable is GDP per capita (lnGDPpc)					
Independent	FE		FGLS		SYS-GMM
Variables	C	C & T	C	C & T	
CCE	0.159***	0.212***	0.159***	0.159***	0.054*
	(0.0575)	(0.0363)	(0.0541)	(0.0541)	(0.030)
polity2	0.0245***	0.0119**	0.0245***	0.0245***	0.001
	(0.00725)	(0.00462)	(0.00683)	(0.00683)	(0.003)
Topen	-0.00009	-0.00020	-0.00009	-0.00009	0.001**
	(0.000875)	(0.000591)	(0.000824)	(0.000824)	(0.001)
Inv	0.00551***	0.00228***	0.00551***	0.00551***	0.001
	(0.00131)	(0.000844)	(0.00123)	(0.00123)	(0.001)
Popg	-0.183**	-0.103**	-0.183**	-0.183**	-0.038
	(0.0769)	(0.0489)	(0.0724)	(0.0724)	(0.043)
L.lnGDPpc					0.977***
					(0.024)
Constant	7.214***	6.992***	7.214***	7.214***	0.222
	(0.261)	(0.165)	(0.246)	(0.246)	(0.230)
Observations	167	167	167	167	153
R-squared	0.978	0.992			
Number of Countries			14	14	14

***Source**: Own Estimates using Stata 13.*

***Note**: Standard errors in parentheses, *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1 means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect.*

The control variables; investment (inv), and population growth (popg) has positive and negative significant country and time fixed effect respectively .But, the SYS-GMM result revealed that the standard economic variables has no relation with the Eastern African economic performance. This confirms with (Fayisa & Nsiah, 2013; Kilishi, Mobolaji & Yaru, 2013) which argued that standard economic variable has limited impact on economic performance once institution s are control for. Finally, the results of SYS-GMM indicate that trade openness and lagged value of GDP per capita has positive significant impact on economic performance. But, the magnitude of lagged value of GDP per capita is high indicating that economic performance depends on it past performance than the other factors.

Table4shows the estimated impact of government effectiveness (GEE) on economic performance of the Eastern Africa. The robust estimation of FE indicates that GEE has positive impact on GDP per capita (l.lnGDPpc) at 5% under SYS-GMM. The possible impact of GEE implies that each country has unique and time effect government effectiveness. This finding also confirm with the hypothesis of this research and the previous studies (Development, 2009; Effiong, 2015; Habtamu, 2008; (Fayisa & Nsiah, 2013; Kilishi, Mobolaji & Yaru, 2013).Therefore, using the SYS-GMM estimation we can infer that one unit improvement in government effectiveness would leads to 6.3% increase in GDP per capita. Keeping GEE and other variables at constant, polity have positive impact on GDP per capita under the fixed effect estimation. However, this results loss its consistency after dealing with endogeniety which show that deterioration of quality of political institutions in the Eastern Africa. This result confirms with(Commander & Nikoloski, n.d.).

Table 4. Estimated impact of government effectiveness on economic performance

Dependent Variable is GDP per capita(lnGDPpc)					
Independent Variables	FE		FGLS		SYS-DGMM
	C	C&T	C	C&T	
GEE	0.239***	0.211***	0.239***	0.211***	0.063**
	(0.0592)	(0.0389)	(0.0557)	(0.0352)	(0.026)
polity2	0.0197***	0.00740	0.0197***	0.00740*	0.005
	(0.00699)	(0.00466)	(0.00658)	(0.00422)	(0.008)
Topen	0.000001	-0.000131	0.000001	-0.000131	0.000000
	(0.000851)	(0.000601)	(0.000801)	(0.000544)	(0.001)
Inv	0.00560***	0.00284***	0.00560***	0.00284***	0.000
	(0.00126)	(0.000842)	(0.00119)	(0.000763)	(0.001)
Popg	-0.168**	-0.0696	-0.168**	-0.0696	-0.067*
	(0.0724)	(0.0485)	(0.0681)	(0.0439)	(0.036)
L.lnGDPpc					0.896***
					(0.048)
Constant	7.272***	6.897***	7.272***	6.897***	0.962**
	(0.242)	(0.161)	(0.228)	(0.146)	(0.415)
Observations	167	167	167	167	153
R-squared	0.979	0.992			
Number of Countries			14	14	14

***Source**: Own estimates using Stata 13.*
***Note**: Standard errors in parentheses, *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1 means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect.*

The standard economic variables: investment and annual pollution growth rate (popg), which are used as control variables has positive and negative significant impact on the region economic performance under the FE robust estimation at 1% and 5% level respectively. After dealing with endogeneity problem, the negative impact of pogg is inconsistent and inv has negative impact at 10% which is almost negligible. Finally, one period lag of GDP per capita has significant on current economic performance of the Eastern African. The SYS-GMM estimation result of table 4.8 shows that l. lnGDPpc statistically significant at 1% level, with positive sing of 0. 896. This indicates that the Eastern African Economic Performance depends on its past performance than GEE and other factors.

Table 5 shows the impact of regulatory quality (RQE) on Easter African economic performance. The robust estimation result of FE indicates that RQE has significant impact on GDP per capita at 1% level, which implies that RQE depends on country fixed effect. However, the result was not consistent under the SYS-GMM implying the absence of RQE relation to economic performance in Eastern Africa. This result confirms with WB (2002).

In addition, robust estimation result of FE in the table 5 show that Polity2 and investment (inv) has positive impact on the Eastern African economic performance at 1% level. However, this result is inconsistent when endogeneity problem was dealt with. The result indicates the deterioration of political institutions and weak investment environment in the Eastern African. Annual population growth has negative significant impact on GDP per capita at 5% and 10% convectional level under the FGLS and SYS-GMM respectively. The result implies that annual population growth rate depend on country fixed effect and as population grow decrease by one unit, economic performance would increase by 3.9%.The result of SYS-GMM shows that Trade

openness (Topen) and lagged value of GDP per capita (L.lnGDPpc) has positive significant impact on the Eastern African Economic performance at 10% and 1% convection level. However, the larger significance level of Topen shows that trade openness has negligible impact on the region economic performance. The positive impact of lagged value of GDP per capita shows that the performance of the region economies depends on its past performance.

Table 5. The effect of regulatory quality on economic performance

Dependent variable is GDP per capita					
Independent Variables	FE		FGLS		SYS-GMM
	C	C&T	C	C&T	
RQE	0.236***	0.0599	0.236***	0.0599	0.027
	(0.0535)	(0.0411)	(0.0503)	(0.0373)	(0.037)
polity2	0.0215***	0.00927*	0.0215***	0.00927**	-0.000
	(0.00692)	(0.00510)	(0.00651)	(0.00462)	(0.002)
Topen	0.000067	-0.000449	0.000067	-0.000449	0.001*
	(0.000844)	(0.000660)	(0.000795)	(0.000598)	(0.001)
Inv	0.00488***	0.00303***	0.00488***	0.00303***	0.001
	(0.00128)	(0.000929)	(0.00120)	(0.000842)	(0.001)
Popg	-0.156**	-0.0419	-0.156**	-0.0419	-0.039*
	(0.0712)	(0.0530)	(0.0670)	(0.0480)	(0.018)
L.lnGDPpc					0.958***
					(0.024)
Constant	7.198***	6.619***	7.198***	6.619***	0.354*
	(0.230)	(0.173)	(0.217)	(0.157)	(0.188)
Observations	167	167	167	167	153
R-squared	0.980	0.991			
Number of countries			14	14	14

***Source**: Own estimates using Stata 13.*

***Note**: Standard errors in parentheses the Asterisk; *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1 means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect.*

Table 6 shows the impact of rule of law (RLE) on economic performance of the Eastern African. The robust FE estimation result shows that RLE has positive significant impact on GDP per capita. This positive impact depends on the country and time fixed effect. But, the SYS-GMM indicated that the impact of RLE on economic performance of the region is negative at 1% convectional level. This finding contradicts with what expected in this study, but in line with (Kaufman & kraay, 2002) which stated that institutional development which depend on per capita income lead to a weak and even negative economic performance.

On the other hand, table 6 shows that polity2 has only significant impact on GDP per capita under the country fixed effect model, which is not consistent under the SYS-GMM. This result indicates the deterioration of quality of political system in Eastern Africa. In addition, Trade openness (Topen), which used control variable for RLE, has no significant impact on economic performance under the fixed effect. But after controlling for endogeneity, it turns out to be significant at 1% convection level. This result implies that the impact of Topen depend well-functioning rule of law. Moreover, Investment and annual population growth rate are the other variables that are used as control variable. These two variables have significant impact on economic performance at 1% and 10% convectional level under the fixed effect estimation. But, the result is

not consistent after dealing with the edongeneity problem. Finally, lagged value of GDP per capital (l. lnGDPpc) has positive impact on economic performance at 1% conventional level which implies that the performance of the region economies region depend its past performance than institutional quality and other factors.

Table 6. Estimated impact of rule of law on economic performance

Dependent variable is GDP per capita (lnGDPpc)					
Independent Variables	FE		FGLS		SYS-GMM
	C	C &T	C	C &T	
RLE	0.320***	0.232***	0.320***	0.232***	-0.179***
	(0.0631)	(0.0440)	(0.0594)	(0.0399)	(0.058)
polity2	0.0110	0.00283	0.0110*	0.00283	0.018
	(0.00710)	(0.00481)	(0.00668)	(0.00436)	(0.010)
Topen	0.000217	-0.000112	0.000217	-0.000112	0.001***
	(0.000831)	(0.000605)	(0.000782)	(0.000548)	(0.000)
Inv	0.00554***	0.00307***	0.00554***	0.00307***	0.000
	(0.00123)	(0.000844)	(0.00116)	(0.000765)	(0.001)
Popg	-0.167**	-0.0782	-0.167**	-0.0782*	-0.016
	(0.0700)	(0.0491)	(0.0659)	(0.0444)	(0.039)
L.lnGDPpc					0.948***
					(0.058)
Constant	7.381***	6.950***	7.381***	6.950***	0.215
	(0.237)	(0.167)	(0.223)	(0.151)	(0.479)
Observations	167	167	167	167	153
R-squared	0.981	0.992			
Number of Countries			14	14	14

***Source**: Own estimates using Stata 13*
***Note:** Standard errors in parentheses, *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1 means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country and Time effect.*

CONCLUSION AND RECOMMENDATIONS

Conclusion

The finding of this study depict that institutional quality and economic institutions in particular, has positive significant impact on economic performance of the region. To understand which institutions has the most significant impact and which institutions has lacking in the region, the effect of each individual institutional quality indicators were estimated separately, along with the investment, population growth rate ,quality of political institutions and trade openness. Accordingly, the result shows that quality of economic institutions has significant impact on economic performance, among which control of corruption and government effectives are the most important. The impact of rule of law institution in Eastern Africa has negative significant effect, while regulatory quality is lacking in the region. These impacts depend on individual and time fixed effect, which implies that each country has its own specific fixed effect that shapes economic institutions, which in turn affect economic performance by affecting individual quality of economic institutions.

Recommendations

If we see from policy perspective, government policies should pay attention on building strong institutions in terms of quality and quantity, since it is a key for further economic growth. In the light of the limitation of this study, the following implication

will have proposed for future research; Even though this study has tried to control for deep factors that shapes quality of institutions, such as trade openness and quality of political institutions, still others factors such as income distribution, efficiency of tax system and education are not considered due to lack of data availability. Thus, study that interested to investigate the impact of institutional quality on the Eastern African Economy should focus on these factors

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Toward a tourism destination brand equity of coastal tourism of Pangandaran Regency

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Abstract

Indonesia is one of the countries where tourism is the major contributors to the GDP. There are province and districts in Indonesia that mainly focused on the tourism business, Pangandaran is one of them. As a new district, Pangandaran is still trying to develop its brand as a tourist destination. This study aims to provide perceptual maps of Pangandaran as a brand compared to other coastal tourism destination. The study used Multidimensional Scaling (MDS), to inquire about the brand image of various coastal destination in Indonesia among domestic tourist. Two dimensions consisted of performance and value are used to measure the destination brand. More profound questions are also asked to inquire about factors that may influence tourist visitation. The result indicates that the Pangandaran brand as a tourism destination is perceived as a domestic oriented destination. A suggestion based on five steps of brand building is proposed to improve Pangandaran.

Keywords: *Competitiveness, Destination branding, Multidimensional Scaling (MDS), Pangandaran, Tourism*

JEL Classifications: O21, Q26, R11

INTRODUCTION

Tourism is one of the most important economic activities in the modern day. In the past decade, tourism contributed to 10% of global GDP. Furthermore, tourism-related jobs account for 1 in 10 of the population. Globally, tourism accounts for 30% of services exports and have created many job opportunities for the population. It can be said that tourism is a significant force of the global economy, especially in developing countries. Indonesia is one of the countries where tourism is a significant contributor to the economy. Indonesia is globally recognized for relatively cheap natural resources and emphasizing culture in tourism. Tourism consists of 6% of the country total exports, and in response, the government invested 9% of its budget in tourism (World Economic Forum, 2017).

In developing countries such as Indonesia, tourism plays an important role in economic growth. The existence of tourism in a particular area can open up more opportunities. These opportunities can be in the form of an immediate and direct effect such as more employment and enterprise opportunities, to a broad more dynamic effect on the economy and social (Ashley, De Brine, Lehr, & Wilde, 2007). In the past, researches had documented the impact of tourism on economic growth. One research in

Mauritius, a small island country in the Indian Ocean, documented the impact of tourism arrival on the economic growth of the nation (Durbarry, 2002). Other research in Greece, a well-known international tourist destination, indicated that there is a causal relationship between international tourism earning, real exchange rate, and economic growth of the nation (Dritsakis, 2004). Citing the impact of tourism in other nations and its already observable effect in the economy, the Indonesian government included tourism growth as one of the strategies in developing the national economy (LPEM-FEBUI, 2018).

Indonesia is the largest archipelago in the world, consisted of around 17000 islands each with its cultural and natural diversity. As such, the diversity of Indonesia natural and cultural heritage gave birth to the various tourism destination, some are famous as an international tourism destination, and some are more famous among domestic tourist. Pangandaran is one of the tourist destinations in Indonesia that are popular among domestic tourists.

Pangandaran is a regency in West Java, Indonesia, that split from the neighboring Ciamis Regency in 2012. Before the split, Pangandaran itself is already a well-known tourism destination among domestic tourist. After the split, the newly formed Pangandaran government are attempting to further Pangandaran potential as a tourism destination. Pangandaran aims to be a world-class tourism destination like Bali and Gili Trawangan, two examples of tourism destination in Indonesia that are successfully developed to become an international tourist destination. (Dinas Pariwisata dan Kebudayaan Kabupaten Pangandaran, 2017). Unfortunately, as of now, Pangandaran as a tourism destination is underdeveloped in many aspects; from infrastructure, cultural uniqueness, local products, and management. In short, there is a lot of problems that the Pangandaran government need to overcome in order to become a world-class tourism destination. Therefore to overcome these problems Pangandaran local government attempt to improve the Pangandaran brand image.

To improve the brand image of Pangandaran, Pangandaran government need to understand the strength and weaknesses of Pangandaran from the eye of its visitors. Destination branding is a concept that can be used to understand the visitor's perception. Destination branding refers to activities that aim to emphasize the underlying image and associative knowledge that people have on a destination. These activities can include the creation of graphics (name, symbol, or logo) related to the destination or developing the essential cultural and natural resources (Evangelista & Dioko, 2011). Unlike the branding of a product, the process of branding a destination requires the marketer to understand the inherent characteristic of a product including their related brand equity (Lim & Weaver, 2014). Brand equity itself is a concept that refers to the attached value of a brand name. Unlike a real product, the brand equity of a destination itself differs in its multidimensionality. Therefore, the measurement of brand equity itself is less straightforward and prone to mistake (Gartner, 2014). In this study, the scale developed by (Lassar, Mittal, & Sharma, 1995) and used by (Evangelista & Dioko, 2011) in order to measure brand equity.

In this study, Pangandaran as a brand is compared with its competitor at the national level. This comparison made in order to understand the position of Pangandaran better. The comparison is made using Multi-Dimensional Scaling (MDS). This method is used to visualize the differences between tourism destination in

Indonesia. The comparison made by using scale developed for the social aspect of brand equity. Since the main visitors of Pangandaran are domestic tourists, this study also aims to understand the factors that influence domestic tourists decision in choosing a tourism destination. This study also aims to formulate suggestion based on the result of the perceptual map on how to develop Pangandaran as a tourism destination.

METHODS

Several works of literature discuss brand equity of tourism destination, destination branding, and destination image. The paper by (Campelo, Aitken, Thyne, & Gnoth, 2013), discuss building a sense of place model in order to determine the factor that determines and influence the sense of place of a destination. Gartner discusses the concept of brand equity of a tourism destination in general (Gartner, 2014). The attempt to compare tourism destinations using Multidimensional Scaling (MDS) have been made by (Claveria & Polluzi, 2016). Gartner also used MDS in order to categorize tourism activities (Gartner, 1989). Pike in his paper, aims to measure brand equity over time and provide a good insight into the concept of brand equity in the context of a tourism destination (Pike, 2009). Compared to the above literature this paper aims not only aim to measure brand equity or compare the attributes of destinations but to combine those methods and present the result through MDS.

This study aims to create a perceptual map of Pangandaran based on five dimensions of destination brand equity (performance, value, attachment, trust, and image). The perceptual map is created through an interdependence multivariate analysis method called Multi-Dimensional Scaling (MDS). MDS is a method that aims to find structure in a set of distance measures between cases or objects. Additionally, this study measures the criteria for domestic tourist when choosing a tourism destination.

Aside from Multidimensional Scaling (MDS), this study utilized other methods to support the finding. Several semi-structured interviews were conducted to explore the context of Pangandaran tourism. The findings of these interviews will be used to support the findings of MDS. Furthermore, the interview findings will help describe the context of this study.

An exploratory interview is conducted in order to support the finding of the research. The respondents consisted of SME owners and local government officers. The interview method used is a semi-structured interview with the aim to gain a better understanding of the actual context of Pangandaran. The result of the interview is used to support the quantitative finding and help to formulate suggestion for the government. The list of respondent and important points they brought can be found in the Table 1.

The data set for MDS is collected through an online questionnaire, with the target population of Indonesia. The sampling method used is probability sampling, a sampling method that assumes that every individual in a given population can be sampled.

This study focus on the brand equity dimension of performance and value. The choice to focus on these two dimensions was made because the researcher deemed that these two dimensions can best represent domestic tourist judgment through the data collection method employed. Furthermore, the information regarding these two dimensions is easily obtainable, therefore the comparison between the research and real context can be done. The easiness to obtain information about the two dimensions might help eliminate bias since not all respondents have visited the destinations.

Table 1. Interview findings

Informants	Important Notes	Findings
M1	Co-founder of Pangandaran Tour & Travel, a travel agent company	• Role of travel agents • Importance of travel association
S	An entrepreneur who own two shops of fish products and a seafood restaurant	• Lack of supply material • Lack of equipment and financial support
T	An entrepreneur who own two clothing shops and souvenir shops	• Lack of sustainability from tourism • The negative impact of shopping center relocation
SN	An entrepreneur who owns a seaside steakhouse and a hotel	• Current regulation as a hindrance for growth • The bad infrastructure of new shopping and restaurant district
M2	An entrepreneur who owns a seafood restaurant	• The information gap between government and businesses
D	Head of Destination Management Department of Pangandaran Branch of Tourism & Culture ministry	• The low capability of existing human resource • Problem is marketing
Mn	A staff of Pangandaran Regency government	• Coconut is the main product of Pangandaran • Profile of Pangandaran • Private land ownership of potential tourism site causing troubles • Pangandaran still developing its concept
Mg	Creative Economy Department of Pangandaran Branch of Tourism & Culture ministry	• Lack of brand image • An only small part of the population engaged in tourism • The Ministry tried to guide several entrepreneurs to develop the unique product of Pangandaran
As	Physical and Infrastructure Department of Pangandaran Regency government	• Lack of uniqueness compared to other destinations • Cooperation with a university in order to develop architectural uniqueness
R	Cooperative Department of Pangandaran Regency government	• Coconut is still the main income of Pangandaran • Tourism is around tenth in its contribution to regional income • Lack of capital support to help businesses grow
A	Planning Department of Pangandaran Regency government	• No real engagement between SME and tourism in Pangandaran • Not enough demand for SME products in tourism • In some area, the locals have the initiative to turn their locale into a tourism destination

For the first set of data, the respondents will be asked to rate seven coastal tourism destination in Indonesia based on the two dimensions of tourism destination brand equity. Each respondent will be asked to rate each of the two dimensions of these tourism destinations. These destinations were chosen based on information from travel sites. The destinations are:

1. Pangandaran (West Java)
2. Pelabuhan Ratu (West Java)
3. Kuta (Bali)
4. Nusa Dua (Bali)
5. Gili Trawangan (Nusa Tenggara Barat)
6. Karimun Java (Central Java)
7. Seribu Islands (DKI Jakarta)

For the second set of information, the respondent will be asked to rank ten criteria of a tourism destination based on importance. The criteria and their codes are:

1. Goods and services price (F1): Affordable and reasonable prices of goods and services of the destination
2. Cultural uniqueness (F2): Unique culture that can be the attraction for tourists
3. Essential infrastructure availability (F3): The existence of necessary infrastructure such as toilet, phone signal, roads, etc.)
4. Accessibility (F4): The abundance of transport methods to reach the destination
5. Hygiene (F5): The ability of the provider to keep the destination clean
6. Experience (F6): Activities that are unique or memorable
7. Information availability (F7): The easiness of finding information related to the destination
8. Natural uniqueness(F8): Natural environment or landmark that can attract tourists
7. Service quality (F9): How well a service can deliver customer expectation
9. Community acceptance(F10): Willingness of locals to accept the presence of tourists

These variables are based on a paper by (Assaker, Vincenzo, & O'Connor, 2011) and earlier exploratory interview with tourism providers and stakeholders. The variables encompass the four significant tourism components: economy, social, natural, and infrastructure. The incorporation of these components of tourism is done in the hope that the question is given in the survey cover the factors that can be deemed to be necessary by the respondents.

The data processing method utilized R programming as a tool for statistical analysis. The data are collected first converted into excel files which then used as an input in R programming tool. The study then used the MDS programming code to process the data. The result of the processing is a perceptual map of the destinations and factors, which in this case is processed with a two-dimensional aspect. As of now, the number of data collected is 39 data.

RESULTS AND DISCUSSION

Interview result

The analysis of 11 interviews reveals the problem in Pangandaran tourism. The respondents consist of government officials and entrepreneurs, important stakeholders that enable tourism in Pangandaran. The interviews aim to explore the business environment of Pangandaran tourism, therefore the analysis will be focused on that particular area. Despite the purpose of the interview, the analysis can be used to describe the overall context of Pangandaran tourism.

Interview with small medium enterprise (SME) owners

Five SME owners were interviewed, in the preliminary interview. The SME owners consist of two restaurant and hotel owners, one restaurant and fish products processor, one souvenir and clothes shop owners, and one travel agent owners. All of the SME feel that government support is lacking. M-2, a restaurant and hotel owner, for example, stated that:

" The government, don't want to know whether entrepreneurs make profit or deficit. Now taxes. One million, five hundred thousand, fifty thousand. Many guests complain! Maybe in cities, it's that way. But here is different!"

From that statement, the government new tax policy is one of the main sources of complaint among SME owners. Another statement from M-2, also indicates that there is some frustration among SME owners in their relationship with the government. M-2 said that:

"Meeting is meeting, but it's useless. But it's always tax, even if we submit our suggestion it's always be ignored!"

Another entrepreneur S, a restaurant owner and fish product processor, also support this statement. S stated that:

"Every time we complain, nobody answer"

Relocation policy is another government policy that SME owners complain about. The relocation policy is deemed harmful for Pangandaran. Because of this policy, SME owners have to give up their strategic business location which impacts their income. T, a souvenir shop owner stated that:

" ..because now we are still relocating, destinations do not want to go there. Usually, on the beachside is easy, people can shop everywhere on the beach. Now many tourists take their money back home."

Overall, the SME owners are dissatisfied with the government mainly from the taxes and relocation policy. Despite those problems, the income of SME and large business owners is stable. It is because, during peak visitation times, businesses in Pangandaran can double or even triple their price. Therefore, businesses in Pangandaran can still have steady incomes.

Interview with government officers

Six government officers are interviewed in the preliminary research. These six government officials provide the general context of Pangandaran tourism. Pangandaran is still growing as a tourism destination. Government officials state that they are still trying to develop the uniqueness of Pangandaran. Pangandaran government is still developing unique products and existing traditional culture in order to attract visitors. In terms of uniqueness in Pangandaran, As, stated that:

" …In here, we still need to develop uniqueness. In my opinion, right now it's mostly regional characteristic, still not developed into brand…"

The interview also indicates that although uniqueness development is one of the concerns of Pangandaran government right now, infrastructure development is Pangandaran government primary concern right now. Pangandaran government is trying to build necessary infrastructures and impose rules related to maintenance and area zoning such as restriction of fishermen boats and restriction of street peddlers. The relocation policy of Pangandaran is related to the infrastructure development program.

Furthermore, the interview also indicates that the stakeholders of Pangandaran only concerned about their own interests. From land disputes to locals that aren't engaged in tourism, Pangandaran government is facing a heavy task to bring these stakeholders

together. The statement regarding the solution of this phenomenon by KP is the following:

> " You can't rely only on Mr. M from Creative Economy Division, and then from industry, and from agriculture, everything must be comprehensive, you can't do it partially. It means there is a correlation between potential, lifestyle, and behavior of the stakeholders."

MDS result

Perceptual mapping of performance dimension

Figure 1, shows the Multidimensional Scaling (MDS) result of the performance dimension between the selected destinations. The performance dimension itself refers to how customer judges the fault-free attributes of a destination (Evangelista & Dioko, 2011). The final stress value of all the iteration is 0.131, an indication of fair value for the goodness of fit. From the perceptual map, Pangandaran is tightly clustered with Pelabuhan Ratu, a coastal tourist destination located in the South of West Java, just like Pangandaran. Since the performance dimension is a measure of activity available and natural resources of the destination, it is not surprising that beaches that share similar characteristics are clustered together.

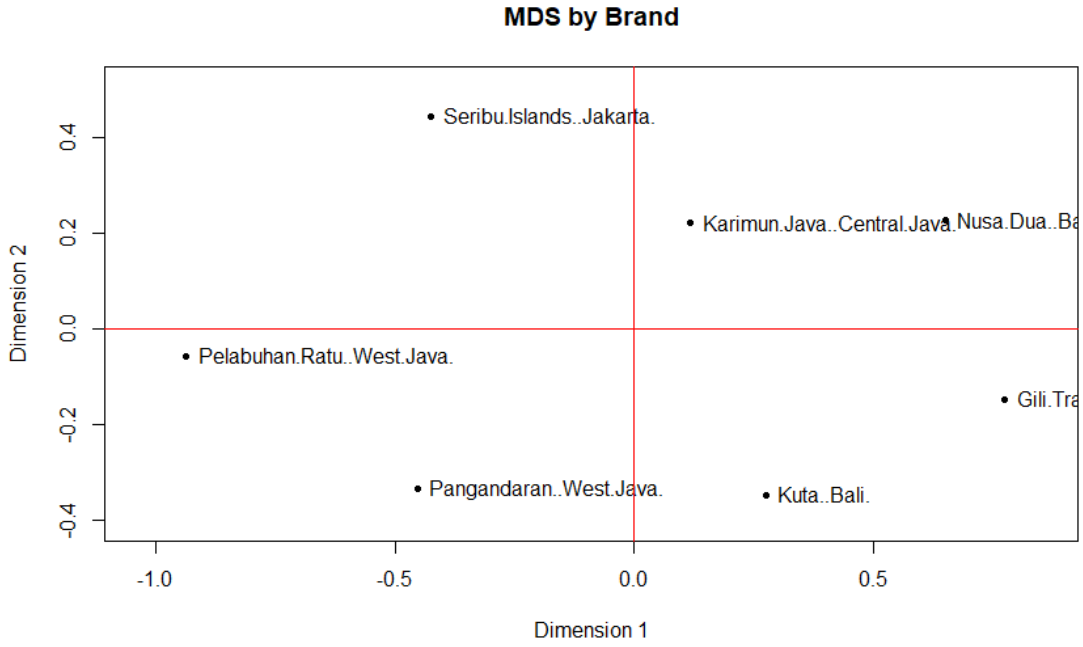

Figure 1. Performance dimension perceptual mapping

From the result, Kuta and Gili Trawangan are clustered together. Both of these destinations shared a similar characteristic. Both Kuta and Gili Trawangan is a destination that experiences a development boom, which gave birth to various accommodation and entertainment places of the same kind. Another group from the result, Karimun Java and Nusa Dua share another unique characteristic. Both of these destinations offer luxurious resorts in combination with natural beauty. Both also offer water-related activity such as diving in Karimun Java and watersport in Nusa Dua. Seribu Islands has grouped alone from the result. The vastly different characteristic of Seribu Islands as a National Park contributes to this result. As a National Park, Seribu

Islands main concern is not on attracting visitors but also protecting its natural resources, this policy can result in its unique clustering. Lastly, Pangandaran is grouped with Pelabuhan Ratu, both located in West Java. Both destinations in the group share a similar characteristic, from their beaches to their cultures. Both of these destinations is a popular local tourist destination because of their affordability and accessibility.

Perceptual mapping of value dimension

Figure 2, shows the Multidimensional Scaling (MDS) result of the value dimension between the selected destinations. The value dimension refers to utility gained from visiting a destination compared to the cost of the experience (Evangelista & Dioko, 2011). The final stress value of all the iteration is 0.171, an indication of the excellent fit of the model. The result shows that Pangandaran is clustered with Pelabuhan Ratu because of their similar characteristics.

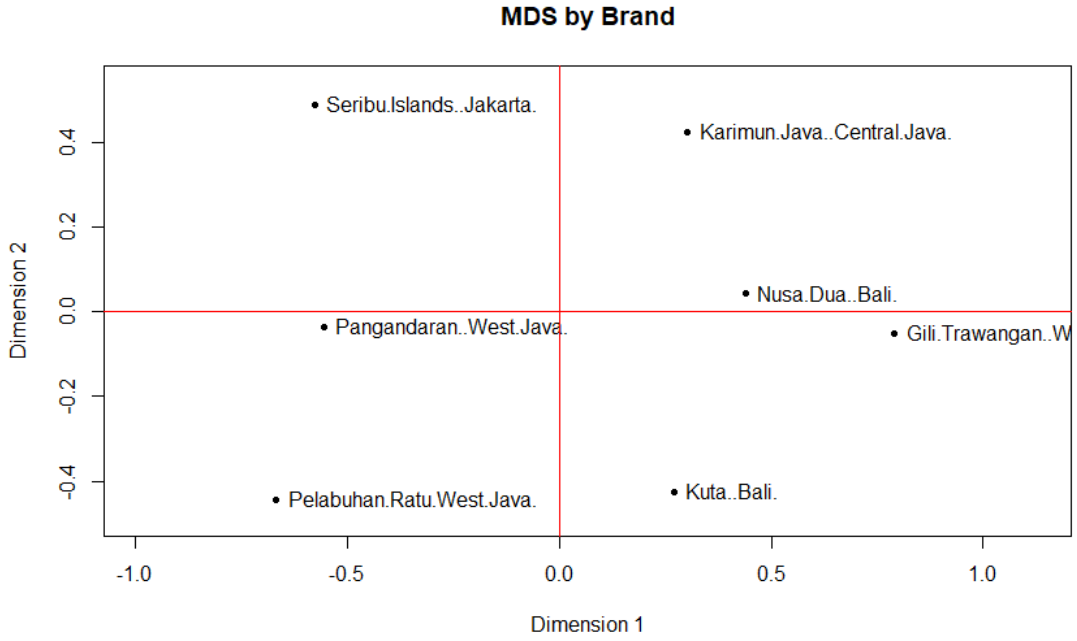

Figure 2. Value dimension perceptual mapping

The result shows that the clustering of the destinations is not much different from the performance dimension. This result could be attributed to the relation the value dimension have with the performance dimension. Nusa Dua and Karimun Java, for example, are different in terms of accessibility. Nusa Dua, located in Bali, is more accessible because of the existence of international airport and various mode of transportation. Meanwhile, to get into Karimun Java visitors have to fly from Surabaya to Dewandaru Airport to a neighboring island, in which visitors can use a boat or ferry to Karimun Java. Despite their different level of accessibility, both destinations are clustered together because of the similar experience they offer. This phenomenon can be observed in other clusters, indicating that domestic tourists value experience more than distance and cost.

Perceptual mapping of factor affecting domestic tourist visitation

Figure 3, shows the Multidimensional Scaling (MDS) result of visitation factors. These results indicate the factors that influence domestic tourists reason for visitation

Dimension 1 of the figure refers to objectivity. Meanwhile, dimension 2 refers to importance.

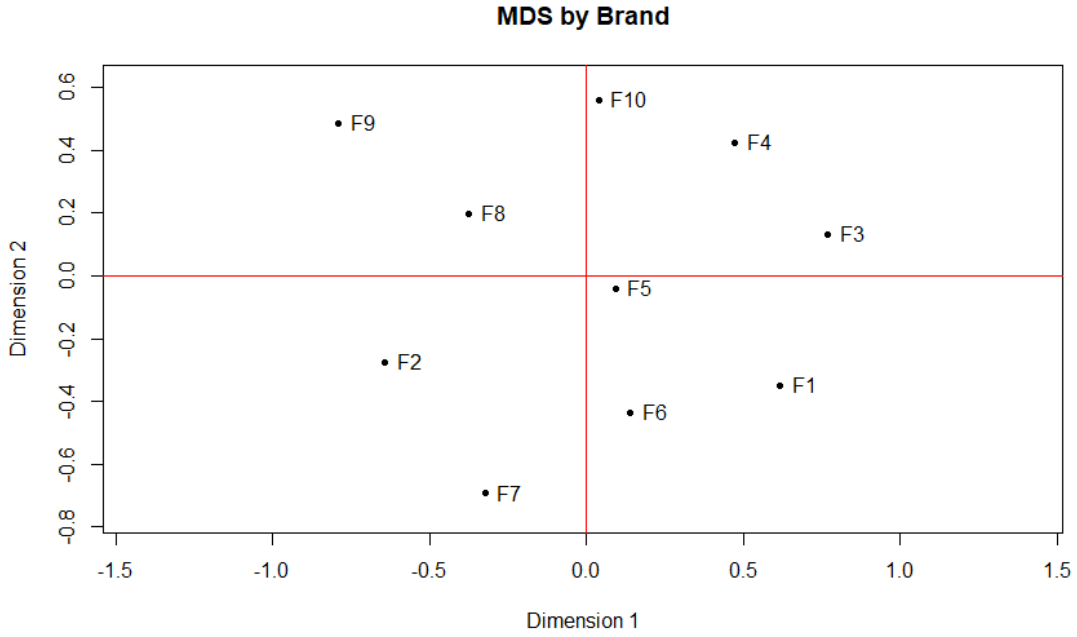

Figure 3. Tourists visitation factors perceptual mapping

The final stress value of all the iteration is 0.25, an indication of the excellent fit of the model. Dimension 2 of the result indicate importance and dimension 1 indicate subjectivity of the factor. Based on the result of necessary infrastructure (F3), accessibility (F4), and community acceptance (F10) are three things that are deemed as a principal, low subjectivity factor. On the contrary, Information availability (F7) and cultural uniqueness (F2) less critical, highly subjective factors. Natural uniqueness (F8) and service quality (F9) can be categorized as less subjective, but less critical factors. Meanwhile, goods and service price (F1), hygiene (F5), and experience (F6) can be categorized as critical subjective factors.

Discussion

The result of performance and value dimension perceptual mapping indicate that Pangandaran is perceived differently from other established tourism destination. Pangandaran is not as developed in terms of the sheer amount of business and entertainment as Kuta and Gili Trawangan. Pangandaran also does not have a natural beauty and luxurious resorts like Nusa Dua or Karimun Java. From the performance dimension mapping, Pangandaran is a destination that is more domestic tourist oriented than other destinations. From this result, Pangandaran can position itself as a go-to destination for domestic tourists.

The value dimension mapping result shows that Pangandaran is clustered with Pelabuhan Ratu, another tourist destination that is located in West Java, Indonesia. Since both of these locations are located in West Java both of these locations can be easily accessible by car for a lot of domestic tourists. Accessibility coupled with affordability could be the strength of Pangandaran in searching for their uniqueness. Pangandaran government could brand Pangandaran as an affordable and accessible destination in order to attract more domestic visitors.

Based on the result of the perceptual map the factor that is deemed most important by domestic tourists is necessary infrastructure. Domestic tourists in Indonesia does not deem natural and cultural uniqueness as an essential factor of visitation, although experience is deemed as one of the more essential factors. Other vital factors from the perspective of domestic tourists are price, accessibility, hygiene, and community acceptance. Based on this result the local government of Pangandaran is on the right track of prioritizing the development of necessary infrastructures, although still lacking in other important factors. In Pangandaran, there are no regulations regarding prices, which contribute to inflated prices on peak visitation time. Pangandaran government could enforce a strict policy regarding pricing if Pangandaran wants to brand itself as an affordable tourist destination.

To improve the brand equity of Pangandaran, several suggestions are made. According to the five steps of building a destination brand, the first step is vision and stakeholder management (Balakrishnan, 2009). Pangandaran needs to unite the visions of its stakeholders. As of now, Pangandaran stakeholders are each have their vision of tourism in Pangandaran. The government of Pangandaran currently interested only on tax revenue, meanwhile the SME owners of Pangandaran are concerned about their income because of the tax policy. Pangandaran government needs to find a driver that can unite the vision of Pangandaran stakeholders. In the context of Pangandaran, this vision can be economic goals. Based on the interview, the stakeholders of Pangandaran is economically driven in their motivation to participate in tourism. Therefore, an economic goal other than regional income to raise the engagement of the stakeholders. This economic goal could be to build an economic benefit from tourism so that every resident of Pangandaran can benefit from it.

The second step of building a brand is the target customer and portfolio matching (Balakrishnan, 2009). Pangandaran needs to match their branding strategy to the portfolio of its visitors. As of now the main visitors of Pangandaran is domestic, which usually come in a large group using buses or as a family using a car. The length of their stay is usually not long; visitors mostly stay only one night at the weekend. Since the primary demographic of Pangandaran are domestic tourists, the government could employ integrative diversification strategy in order to appeal to their market These strategies could include integrating the usage of Pangandaran local products in tourism activity in order to enhance Pangandaran image as a coastal tourism destination or integrating various activity in beaches of Pangandaran in order to strengthen their image (Benur & Bramwell, 2015).

The third step in building a brand is brand positioning and differentiation. Pangandaran could differ its brand from other coastal destinations through its product and culture. The southern coast of West Java is famous for the Javanese and Sundanese legend of Queen of the Indian Ocean. Pangandaran can uphold this story in other to attract domestic visitors. Pagandaran can also strengthen their image of an affordable and accessible tourism destination. By upholding this image Pangandaran can find its unique segment and develop its strategy according to that.

The fourth step in building a brand is a communication strategy (Balakrishnan, 2009). This step is related to how a destination delivers its product across the media. Since word of mouth and electronic word of mouth is more influential in determining visitation, Pangandaran local government should put effort into building an excellent online platform and methods to promote Pangandaran(Evangelista & Dioko, 2011). The last step in building a brand is through managing responses (Balakrishnan, 2009). Pangandaran developers must monitor the online sentiments of their products in order to

be competitive.

Last, this study shows that Multidimensional Scaling (MDS) can be used to measure the brand equity of a destination. This study used to explore the data on the performance and value dimension of Indonesian tourist destinations. This method reveals the relationship between objects through their distance in the spatial map (Saeed, Nam, Haq, & Muhammad Saqib, 2018). The result of this study indicates that Pangandaran is perceived differently from other more established tourist destinations. This study shows that the result of this spatial map can be used to create a suggestion for Pangandaran further development.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The MDS result indicates that the performance and value of Pangandaran are different compared to other tourist destinations. Pangandaran tourism is seen as more affordable and accessible in the eye of domestic tourists, albeit less luxurious and less beautiful in terms of natural resources. This perception of Pangandaran can be a strong point in the development of Pangandaran.

There are several limitations to this study. First, there is a probability not all respondents have visited about the destinations presented in the question. Therefore, the respondents have to rely on their limited knowledge to answer the questionnaire. Second, the interview result is limited because of time constraints. Therefore, the problem existed in this study may not be presented in-depth. Third, the research only encompasses several coastal tourism destinations in Indonesia. Expanding the scope into more coastal destinations or other types of tourism destinations could be done to provide a more comprehensive view.

Recommendations

Further research could elaborate more on the finding of the performance and value dimension of Pangandaran. Since MDS only provide the differences through the spatial map, a better understanding of the context of each tourism destination could provide a more comprehensive explanation of the differences between Pangandaran and other tourist destinations. Furthermore, since this study only explores some aspects of brand equity, further study could explore other dimensions of brand equity to provide a more complete picture of visitor's perception. The study suggests several courses of action in order to develop Pangandaran. These suggestions are built on the basis of the spatial map provided by MDS. This result shows that MDS is a suitable technique to explore the comparison between tourism brands.

There is some policies recommendation that can be implemented in Pangandaran. Pangandaran is the most affordable and accessible among popular coastal tourism destination. Therefore, the provider of tourism should focus on strengthening this aspect of Pangandaran. First, the Pangandaran tourism providers should provide support for the SMEs in Pangandaran. These supports could be in the form of facilities to create their product, markets that specialized in selling local products, or even financial and other capital supports. By supporting the SMEs, the provider can create an environment that is filled with affordable products. Second, the provider must educate the SMEs and residents that interested in opening their business on production, marketing, and other business processes. The purpose is to maintain or improve the quality of SME products. By combining affordability with acceptable quality, Pangandaran can improve its position among other coastal destinations.

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Household behavior to manage electricity consumption after the tariff increase

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Abstract
The event of price electricity increases in Indonesia since 2017 is expected to encourage households to take planned actions on electricity consumption. Hence, this study is intended to reveal the behavior of households to support electricity consumption saving program of the household consumers. By using the Theory of Planned Behavior approach, it is known that: 1) the respondents realize the importance of saving electricity consumption through their behavior; varied regulating electricity equipment, providing household appliances, the use of electricity saving devices. 2) However, households are hindered by psychological constraints about their uncertainty rewards. 3) There is no evidence that households take planned actions in order to use electricity more economically. Thus, it is recommended that PLN (State Owned Electricity Corporation) continue to carry out integrated communication over household consumer about practices to save electricity. It could be conducted by introducing values established, including rewards that can be adopted by households as part of education to the households.

Keywords: *Electricity consumption, Household management, Household saving behavior*

JEL Classifications: D12, D22, D90

INTRODUCTION

Electricity scarcity in Indonesia still occurs where one of the reasons is income increase that causes demand increase. Until the beginning of 2018 electricity consumption at the household level is averagely 1,021 kWh. It is under the target on the future of 1,129 kWh per capita in 2018. Additionally, it also caused by the uneven levels of electrification between regions (Anonymous, 2018). Electricity fulfillment mainstreaming is focused on the supply side. So, the solution is mainly finding and exploring various sources such as gas and earth oil, Methane Coal bed, coal, geothermal energy, new and renewable energy, mineral natural resources and biological resources (Anonym, 2013).

To consider the problem of electricity scarcity Suryanto (2013) suggests three principle programs, namely availability, accessibility, affordability (acceptability). Hence National Policy to overcome scarcity is provides a 35,000 MW electricity procurement that requires high-cost construction and facilities throughout Indonesia. In this case, the electricity fulfillment strategy that focuses on supply ignores user potential savings solution. Tough potential saving behavior of electricity users is an important part of managing electricity needs both in the short and long term (Anonym, 2015).

Additionally, in order to solve supply shortages, Indonesia also faced with an inappropriate subsidy policy for the recipients are not the right citizens. So, in 2017 the government issued a policy of withdrawn subsidies, especially for household's user of

450 and 900 KwH customers which increases household monthly payment. Government witdrawl policies on electricity however still consider its social functions, pay attention to disadvantage poor groups. Therefore, PLN (*State Owned Electricity Corporation*) in cordinater with TNP2K, the agency that is authorized to manage poverty data in Indonesia, provide recommendations among these poor people who are still given electricity subsidies, especially for users of 450 and 900 KwH (Anonym, 2017).

Households involvement on electricity consumption must be considered as one of scarcity solution. The right intervention makes theirs reason is not only based on the rationale considerations but also based on customer emotion. Otherwise, emotion is derived from household value adopted. Those aspects then could be considered into factors that determines affection, behavior, and control in choosing the alternative when stimulus is coming.

These three components is widely used to explain and predict behavioral intentions and consumer behavior that was initiated by Ajen (1991), then followed in (2002). It is known as PTB (Planned Theory Behavior) which is widely used to explain consumer behavior due to the stimulus.

Accordingly, electricity-saving, energy-saving behavior are subjects that have different understanding but have the same goal. These behaviors occur in response of electricity prices rising. In line with it, behavior indicators that can be used for those concepts measured is known as a hybrid approach. They are 1) LED lights used, 2) LED TVs used, 3) Electricity-saving air conditioners, 4) time to use drying machines, 5) electricity-saving on ironing, and 6) pull out the plug (Untoro, Gusmedi & Purwarsih, 2014). Additionally, it is also including behavioral actions namely, 1) deciding the handler of goods that do not use electricity, 2) communicating between household members in terms of the need to save electricity and 3) used special sleep lights (Anonym, 2015; Johannes & Pasaribu, 2016).

Managing consumption and choosing product used is influenced by value adopted. According to Anana & Nique (2007) values differ from attitudes where attitudes are more positive or negative, but values lead to the desired conditions in a social order so that it is believed to be a determinant of behavior. The value personal adopted is believed affect his/her consumer behavior. Kao & Tu (2015) show that values related to environmental values influence a person's attitude in consuming electricity, because the changes in climate hot and cold affect the choice of heating devices. The same thing was also found by Eskeland & Medakas (2010) which states that climate change affects electricity demand.

Behavioral research related to electricity consumption behavior is still rarely conducted particurally after subsidies withdrawl. It is noticed related researchs: Destyasa, Setyanto & Farela (2013) revealing provider services including the implementation of a model of service in customer satisfaction, Murtagh, Gatersleben & Uzzell (2014) examined behavior difference in terms of smart electricity signals, Ogwumike, Ozughalu & Abiona (2014) examined the determinants of energy used at the household level, and Johannes, Sari & Amalia (2015) examined the customer perceptions of smart electricity usage. Hence, the research question is: how is consumer behavior intension on electricity consumption after tariff increase.

LITERATURE REVIEW

Consumer behavior according to Schiffman & Kanuk (2010) focuses on explaining the consumer behavior to seek information, consume, use goods and services, and stop using them. In this connection, the increase in electricity prices could be observed through consumer behavior changing on their electricity daily usage.

To the households customer electricity prices increase encourages them to manage consumption through two main actions: first, choosing electricity-saving household appliances, and secondly through managing appropriate use to pay less.

TPB was developed by researchers to predict consumer behavior as the stimulus come. It is used widely in different fields because of its dynamics and flexibility. Avci, & Yayli (2014) use it for a work climate that employees in one organization. While Sentosa. & Nik Mat (2012) combine it with Technology Acceptance Model (TAM) to get broader picture of readiness to accept and intention of respondent's behavior in using internet purchases

Based on TPB, customer intends to the certain direction due to their own cognition. Cognition then, is followed by attitudes, subjective norms and perceptions of behavioral control. Attitudes can be positive or negative towards certain thing, how one accepts them. While subjective norms relate to rules that apply individually to a certain thing. This rule is established because supported by customer value adopted (Nelson, Janzen, Trainor & Ochocka, 2008). While the perception of behavioral control concerns how one associates himself with the social climate (environment) that occurs (Ajzen, 1991; Ajzen, 2002).

Furthermore, it was explained that behavioral intention is determined by a combination of attitudes, subjective norms, and behaviors that are perceived as control. Accordingly, TPB was intended to understand the possibility why people participated to certain conditions.

TPB was firstly established by Ajzen (1991) who extend his own intention behavioral model to be powerful. It is recognized as an open model that can be applied in various field and even added variables to the model according to academic requirements. De Visser & McDonnell (2008) used TPB to explain the acceptance of parents towards vaccination behavior while Chipulu, Marshall, Ojiako & Mota (2018) use it to explain consumer acceptance of multinational companies, and Pavlou & Fygenson. (2006) used TPB to predict customer adoption on electronic commerce. Many researchers use it in different disciplines because logic and requirements are easy to understand.

The subsidy withdraw however is a policy that expect customers to do electricity saving programs. Not only because he will pay cheaper, but it encourages them consciously provide benefits to others. This is possible because the customer has, adopts the value every time he consumes goods and services. Values can be found because of the experience of individual years of functional benefits and social benefits of goods and services consumed. Johannes & Pasaribu (2016) reported that in terms of smart electricity customer, they believe from the begining that using smart electricity will provide benefit because users can manage their own use. However, they did not receive the benefit because they did not believe that the price, they paid would be cheaper. Though the user has been involved in many efficient behaviours. This means that the behavior of electricity use is not only intended to be related to the amount of monthly fees to be charged, but also related to the placement of values by users (Anana, & Nique, 2007).

METHODS

The study was conducted with survey method where the population is household customer. Sampling was chosen by two stages, the first stage was chosen sub-districts from 11 sub-districts in Jambi city, the second the households were selected from the list of residents in the chosen sub-districts. Thus, unit analysis is the customer household. Sample size determination follow Naresh & Birks (2007) rules that recommend sample size for new product test minimally is 200 units. Primary data collected is related to the saving behavior of electricity use using tools and their actions in response to the increase in electricity prices. Variable measurement uses a Likert scale with five measurement

points. The analysis tool uses the TPB approach where the research variables are tested using a regression analysis approach followed by Path analysis.

RESULT AND DISCUSSION

Result

PLN as a state-owned company is responsible for meeting all electricity needs. In carrying out its business, equity considerations remain a priority. So, when electricity scarcity emerges, one of the programs is to encourage customers to save electricity through household's management and use home appliances that save electricity. Hence, Johannes & Pasaribu (2017) suggest PLN to encourage households to be involved in electricity management so that savings can be obtained both at the household level and macro level.

Brief description of sample is described in Table 1. Several qualitative tendencies through the observations and in-depth interview results are explain as follow. In the future the percentage of smart electricity users will be larger because of PLN's internal policies that prioritize them. In line with it, it is argued that smart electricity users will be more responsive to price increases because household is informed through the appliance, monitor that installed. In contrast, customer who paid through auto debit will be less responsive to the tariff increase, because it is only known when they check banking records. In contrast with users who make payments through cash, they will be more responsive to price increases for they have receipt mouthly. Furthermore, the use of electricity-saving tools has not been widely used. The reason is that customers still do not believe that the device can reduce monthly payment.

Table 1. Brief description of sample (n: 205 units)

No	Description	Frequencies	Percentage
1	Education		
	Primary School	17	8,3
	Junior School	12	12,5
	Senior High School	55	26,8
	Diploma	12	5,9
	Postgraduate (S1, S2&S3)	109	53,2
2	Kinds of electricity		
	• Conventional Electricity	139	67,8
	• Smart Electricity (Prepaid electricity)	66	32,2
3	Habit to buy pulse of prepaid electricity		
	• Unplanned	20	30,8
	• Planned	45	69,2
4	Habit for conventional payment		
	• Auto debit	10	7,1
	• Cash etc.	130	92,9
4	Kinds of Electricity Categories (KwH)		
	• 450	8	3,9
	• 900	35	17,1
	• 650	1	0,5
	• 1200	3	1,5
	• 1300	111	54,1
	• 2200	46	22,4
	• 3500-5500	3	1,5
5	Energy saver equipment		
	• Yes	17	8,3
	• No	188	91,7

Source: Primary data, 2018

The results of statistical tests and path analysis using SPSS for Amos 21. The results obtained from the data processing are presented in Figure 1.

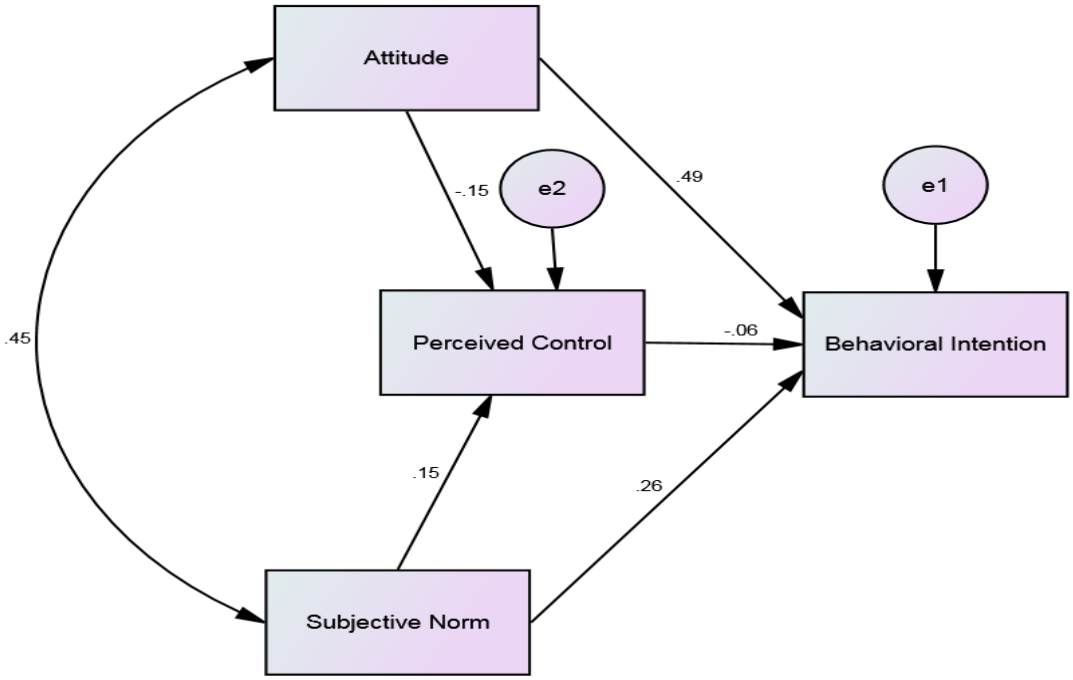

Figure 1. Path Analysis result of electricity management at the household level after tariff increase

As can be seen in Figure 1, using path analysis it is shows the results of the relationship between Attitude (AT), Subjective Norm (SN) to Perceived Control (PC), and then the relationship between PC to Behavioral Intention (BI). Furthermore, as presented in Figure 1, the significance of the relationship between the variables indicated by the P_{value} is shown in Table 2 below.

Table 2. Significance test results between TPB variables on electricity savings intention

			Estimate	S.E.	C.R.	P	Label
1) Perceived (PC)	<---	attitude (AT)	-.160	.085	-1.877	.060	par_5
2) Perceived (PC)	<---	subjective (SN)	.172	.087	1.976	.048	par_6
3) Behavioral (BI)	<---	perceived (PC)	-.063	.058	-1.095	.274	par_1
4) Behavioral (BI)	<---	attitude (AT)	.566	.070	8.103	***	par_2
5) Behavioral (BI)	<---	subjective (SN)	.313	.072	4.377	***	par_3

The test results of the five hypotheses proposed as depict in Figure 1 are explained as follows.

1) H_1 proposed that AT has positive relation to the PC is not accepted. The attitude of saving electricity consumption does not have a relationship with the obstacles to implementing it.
2) H_2 proposed that SN has positive relationship to the PC is received with a value of P (.048). This shows that the norms adopted by household have a positive relationship to the PC (which is considered an obstacle) by the respondents.
3) H_3 proposed that PC has positive relation with BI is not accepted with P value (.274) with a correlation coefficient of -.06. This shows that the constraints are inversely related to action. That is, the higher the level value (PC), the less action will be.

4) H_4 proposed that AT has positive relation with BI, is accepted, and it is highly significant.
5) Finally, H5 proposed that SN has positive relationship with BI, H5 is acceptable.

Discussion

The aspect of cognition, attitudes and perceptions is important to understand consumer behavior. The three concepts are expected to be aligned in the direction faced by the electricity saving program. Cognition involves knowledge of objects related to the presence of stimuli while attitudes are based on affections that show a tendency. In this case, price increase caused customer to use electricity economically (Cebulla, R., J (2010). So, the role of PLN is needed to campaign ways and benefits to be obtained from the use of electricity more efficiently collectively (Galis & Gyberg, 2011).

Regarding to the management of electricity usage, consumer involvement is important to succed the firm's goal (Olson & Peter, 2010). It could be carried out with the good understanding and clarity of benefits received to the customers. This benefit is categorized as functional and emotional. Functional relates to practical benefits because it has or uses something, while emotional benefits are due to the value order adopted by the customer. Values are known in the TPB approach as Subjective Norms, norms or rules adopted subjectively that are shared at the family level. So that, when there is an external stimulus, the value of being a differentiator between individuals will determine. Values will be seen both for individual and social interests (Hussaini, M., and Abdul, N., 2014)

Additionally, Ogwumike, Ozughalu, & Abiona (2014) revealed that factors influence energy use at the household are parental education, per capita expenditure, and the size of household members. It is also supported by Svendsen (2011) who suggests that consumer engagement must be part of the strategy. Thus, customer involvement is strategic factor for success of the electricity use saving program (Fatima & Razzaque, 2013; Espejel, Fandos & Flavian, 2009).

However, based on TPB, perceived control shoulde be considered as of important thing to arrange program. The role of PLN as a provider in this case is to provide integrated communication about the benefits of saving electricity usage starting from: 1) turning off unneeded lights, 2) removing power outlets, 3) choosing low Watt household appliances, up to the use of electricity saving devices. That was confirmed by Yuliati, & Nurasrina, (2012) who campaigned for the need for electricity-saving behavior at the household level. The way that is relevant is to promote value, even personal value, towards the practice of economical use of electricity where the benefits will be received more widely by society (Anana & Nique, 2007).

CONCLUSION AND RECOMMENDATION

Conclusion

Attitude and Subjective Norm are things that play an important role in determining Behavioral Intention to manage electricity usage. Things that is an obstacle is expressed in the form of Perceived Control, including consumer uncertainty about the respondent's actions whether to provide benefits or not. There are indications that consumers do not feel any functional and not beneficial benefits from their actions. Perceived Control, however, is an opportunity for the PLN to direct customer actions with one principle, without having to reduce the use of Watt electricity used, consumers remain in the electricity conditions that are met.

Recommendation

To make save electricity program be effective, PLN should build intensive communication and ensuring customers received the benefit. PLN continue to carry out integrated communication over household consumer about practices to save electricity. It could be conducted by introducing values established, including rewards that can be adopted by households as part of education to the households.

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Typology and inequality between island clusters and development areas in Maluku Province

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Abstract
This study aims to analyze patterns of economic growth and island cluster inequality in Maluku Province during the period 2010-2016. The data in this study are secondary data using quantitative descriptive methods and analytical typology analysis tools and theil index. The results showed that the VIII-IX island cluster which was classified as advanced and fast growing but had a very high inequality compared to other island cluster groups was Tual City, Southeast Maluku Regency and Aru Islands Regency. The division of the Maluku region in the Klassen typology is based on the center of growth with the hinterland area. Southern Maluku as a development area is classified as developed and fast-growing where Tual City is a center of growth but has a very high inequality compared to Maluku in the northern region.

Keywords: Growth center, Inequality, Island cluster, Klassen typology

JEL classification: R10, R11

INTRODUCTION

Regional development in general has the aim to develop the region in a better direction by utilizing the potential of the region to prosper the people in the region. The development of an area requires appropriate policies and strategies and programs. The success of regional development is also determined by the active participation of the community in supporting programs implemented by the government.

To improve the welfare of the community, it is necessary to increase economic growth and equitable distribution of income. This economic growth is measured by Gross Regional Domestic Product (GRDP) and the rate of growth at constant prices (Masli, 2008). The economy of a region is said to have developed growth if the level of economic activity is higher than what was achieved in the previous period. Economic growth is one indicator of people's welfare. Economic growth is an indicator of community welfare in an area (Adisasmita,2005). If an area's economic growth increases, it is hoped that growth can be enjoyed evenly by the entire community.

The development process carried out so far has turned out to be quite complex development problems. Approaches to macroeconomic growth tend to ignore the occurrence of large regional development gaps. Some strategic issues related to inter-island inequality problems in Indonesia can be seen from the development of inter-island socio-economic conditions in Indonesia according to the Gross Regional

Domestic Product (GRDP) has not shown a change in the dominance of the Western Region of Indonesia, especially the Java Island to Eastern Indonesia (Figure 1).

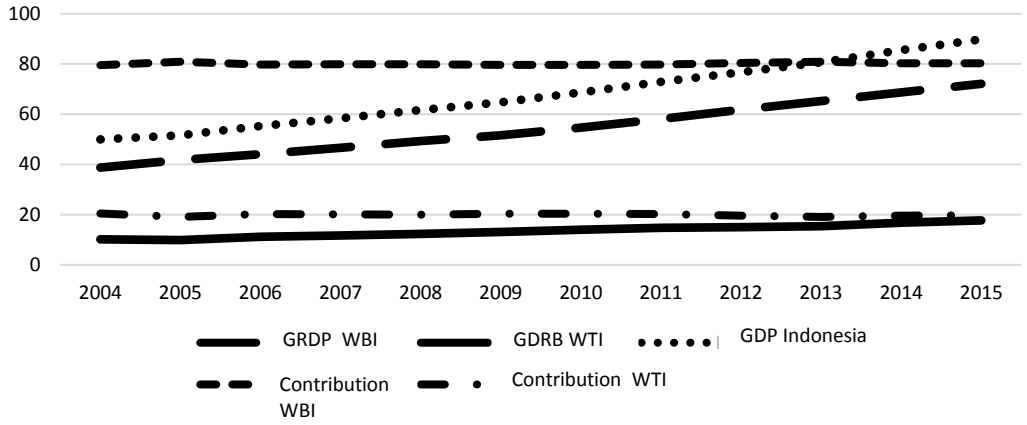

Figure 1. GRDP and contribution of GRDP West Region (WBI) and Eastern Indonesia Region (WTI) in 2004-2015

Inequality in regional development has resulted in stunted regional development due to the low accessibility of economic and social facilities and infrastructure services. The development carried out so far has resulted in regions that are developed, developing and poor. On the other hand development inequality also creates pockets of poverty in remote, isolated, critical and resource-poor areas and is a lagging region that causes disparities between regions. Specifically, disparities between regions in Indonesia occur even though at the same time the provinces are based on data from the BPS-Statistics Indonesia experiencing economic growth. One indicator of the economic growth of the provinces in Indonesia is the increasing Gross Regional Domestic Product (GRDP) of each province, both provinces in Western Indonesia and in Eastern Indonesia. The economic disparity between West and East Indonesia, measured from the GRDP of the 2004-2015 period, has slightly improved (Figure 1). This means that the strategy of forming an economic development zone that aims to encourage the formation of an area that has a role as the prime mover (prime mover) of regional development within a period of almost 20 years was unable to overcome economic disparities between regions.

Sirojuzilam (2005) Inequality that occurs not only to the distribution of community income, but also to interregional development within the territory of a country. Meanwhile, according to Kutscherauer (2010) regional inequality is a difference or dissimilarity of characteristics, phenomena or location conditions and occurs at least between two entities of the regional structure. Inequality must be assessed from several aspects such as social, location conditions, political and administrative, institutional, environmental, public infrastructure and others.

Inequality between regions is a consequence of development and is a stage of change in development itself. Differences in the level of economic progress between regions will cause excessive adverse effects (backwash effects) to dominate the beneficial effects (spread effects) on regional growth, and will lead to an imbalance process (Todaro, 2000). Inequality of economic development between regions according to Sjafrizal (2012) is a common phenomenon that occurs in the process of economic development of a region. This disparity was initially caused by differences in demographic content found in each region. As a result of these differences, the ability of a region to increase economic growth and encourage the development process also

becomes different. Therefore, it is not surprising that in each region there are usually developed regions and relatively underdeveloped regions.

Maluku Province has 1,340 islands with an area of 712,480 km2, consisting of 92.4 percent of the ocean and 7.6 percent of the land (BPS Maluku, 2017). This large number of islands makes Maluku Province the largest archipelago province in Indonesia, with a characteristic that is small islands. Some small islands scattered and separated by the sea are still isolated/left behind compared to other regions, and are even categorized as 3T Regions (Outermost, Frontier and Disadvantaged). The position of the scattered islands also resulted in a centralized development program in the provincial capital. The implication, the pattern of development will create development gaps between regions and hamper resource mobility because it is not yet supported by an adequate distribution and marketing network. The broad range of control also results in the difficulty of conducting surveillance, evaluation and control of security and order which is quite sensitive among small island communities.

The biggest challenge of development with the condition of scattered territories is to build efficient inter-island connectivity or connectivity in one unified island and sea spatial plan. Development of the Maluku Province region needs to be done by calculating the characteristics of the Maluku Islands region as a unified interconnected region, so that the concept of development policy can be right on target and integrated according to its potential and various obstacles encountered. One of the solutions and development strategies in the archipelago in order to optimize the potential for more prosperous natural and human resources is the development of Island Cluster based.

Island cluster based Maluku Development is a reorientation as well as a review of the development direction of Maluku Province from a sectoral, top down, broken focus and temporary approach to a cross-sectoral, regional, participatory, more focused and sustainable approach. This change in approach is needed considering that Maluku Province has the characteristics of small islands that have limited and limited resource potential, so it is necessary to consolidate regional areas to produce a larger and more powerful and competitive economic scale. The developmental approach which has been sectoral in fact has proceeded according to each direction and the interactions are relatively more mutually negating. Consequently, the use of the budget has become less effective because there are many programs that are misplaced, overlapping, unsustainable and have not yet succeeded in creating competitive products at both the district and provincial levels in Maluku.

The island cluster approach offers a direction of development in Maluku which begins with a common conception and perception that Maluku development must be viewed in a regional or regional perspective, where the development of a sector will be interrelated with other sectors in a regional region to work together, strengthen and synergize for the same goal , namely creating a competitiveness of regional economy based on commodities that are relied upon and superior. This study aims to analyze patterns of economic growth and inequality in Maluku Province (Bappeda Maluku 2014).

METHODS

Typological analysis

Klassen typology analysis is used to find a picture of the pattern and structure of economic growth in each region. Regional typology basically divides regions based on two main indicators, namely economic growth and regional per capita income/gross

regional domestic product on the basis of a region's constant prices. The two main indicators are then divided into two axes: the vertical axis is the average economic growth and the horizontal axis is the average income per capita/gross regional domestic product at constant prices. Klassen's typology model classifies regions into four areas: fast-growing and high-income areas, high-growth but low-income regions, high-income but low-growth regions, and relatively disadvantaged areas (low growth and low income) (Syafrizal 1997; Kuncoro 2012).

The analysis used is the regional typology analysis. The criteria used consist of four:

1. Quadrant I (first), that is, regions that are fast progressing and fast growing are regions that have higher economic growth and income per capita compared to development areas.
2. Quadrant II (second), namely developed but stressed regions are money regions having higher per capita income but lower growth rates compared to development areas.
3. Quadrant III (third), i.e. fast developing regions are regions that have high growth but the level of income per capita is lower than that of development areas.
4. Quadrant IV (fourth) is a region that is relatively underdeveloped is an area that has lower economic growth and income per capita compared to the development area.

Table 1. Typology of regions

GRDP/kapita (y) / Growth rate (r)	**(y_i < y)**	**(y_i > y)**
(r_i > r)	Low income, but high growth (III)	High income, high growth (I)
(r_i < r)	Low income and low growth (IV)	High income, but low growth (II)

Source: Kuncoro (2012)

Note: r = average economic growth in the development area
y = average GRDP per capita of development area
ri = observed regency/city economic growth
yi = regency/city per capita GRDP observed

Regional typology, will be done every year to see the development of each regency/city in one development area.

Regional inequality analysis

The analysis used to look at development inequality is Theill Entropy Index Analysis which is the application of information theory concepts in measuring inequality about per capita income and income inequality. Theil's index formula (Ying, 2000 in Kuncoro, 2012) is as follows:

$$T = \sum \left(\frac{y_i}{Y} \right) X \log \left(\frac{y_i}{Y} / \frac{x_i}{X} \right)$$

Note : T = Total Dispparity (Theil Index) of Development Area
y_i = Regency/city GRDP-i in the Development Area
x_i = Number of residents of the regency/city-i in the Development Area.
Y = GRDP Development area
X = Population Number of the development area

RESULTS AND DISCUSSION

Klassen typology

Klassen's typological analysis is divided into three based on the study area: district/ city, island cluster and region. To classify regions based on these criteria, the data presented are the development of economic growth rates and per capita income in 2010-2016.

Maluku Province as an archipelago, for that the approach initiated by the government is the development approach which is based on the Island cluster concept. Based on Maluku Province Regional Regulation Number 16 of 2013 concerning Spatial Planning for Maluku Province in 2013-2033, there are 12 Island Clusters in Maluku Province, namely: Cluster I Island covers the territory of Buru Island; The Island II cluster includes the West Seram Region; The Island III cluster includes the North Seram Region; The Island IV cluster covers the East Seram Region; The V Island group covers the South Seram Region; The Island VI cluster includes the Banda Islands Region, Teon Island, Nila Island and Serua Island; The VII Island cluster covers the Ambon Island Region and Lease Islands; The VIII Island cluster includes the Kei Islands Region; The IX Island cluster includes the Aru Islands Region; The X Island cluster includes the Tanimbar Islands Region; The XI Island cluster includes the Babar, Leti, Moa, Lakor and Damer Islands Regions; and the XII Island Cluster covering the South and Region of Wetar Island (Bappeda Maluku 2014).

Table 2. Average economic growth rate and revenue per capita of regencies/cities in Maluku Province 2010-2016

Regency/City	Growth Rate (%)	Income Per Capita (Rp)
Ambon	6.66	19,118,975
Tual	6.19	16,614,286
Central Maluku (Malteng)	5.62	11,451,414
Buru	5.37	9,310,228
South Buru (Bursel)	5.55	10,996,096
West Seram (SBB)	5.51	8,434,143
East Seram (SBT)	5.71	15,011,143
Aru Islands	6.01	17,754,286
Southeast Maluku (Malra)	6.03	13,938,571
West Southeast Maluku (MTB)	6.09	10,880,000
Southwest Maluku (MBD)	6.50	10,537,778
Maluku	**5.91**	**13,095,175**

The island cluster concept is carried out by developing growth centers as public service centers, trade centers and the flow of goods and services. This island cluster approach is considered more appropriate for regions with archipelagic geographical conditions by dividing or grouping islands into several groups of islands to be made central (cluster centers) that have relatively the same characteristics and proximity. In analyzing the typology of Klassen based on the island group approach, the study was divided into 4 (four) groups of island cluster namely (1) group I island cluster , (2) group II-VII island cluster, (3) group VIII-IX island cluster and (4) group X-XII island cluster.

Table 3 shows the group of island cluster I the average GRDP per capita and economic growth is lower than the GRDP per capita and growth in Maluku. The average GRDP per capita clusters group II-VII is higher than the GRDP per capita in

Maluku while the average economic growth is lower than Maluku. The island cluster VII-IX average per capita GRDP and economic growth is higher than the per capita GRDP and Maluku economic growth. The island cluster X-XII the average GRDP per capita is lower than the average GRDP per capita in Maluku, while the average economic growth is higher than the average growth of the Maluku economy. Regions with the same type, limiting one to another or there is a grouping pattern based on fast-growing and advanced/rich types and does not cover regency/cities with advanced and fast-growing categories klassen typology in quadrant I is. candidate for growth pole (Wibisono, 2015).

Typology of class groups of island cluster in Figure, the category of developed and fast-growing regions in group VIII-IX island cluster. This island cluster has higher economic growth and income per capita compared to the development area (province). Tual City is the administrative capital and is the parent of the newly established region of Southeast Maluku Regency and Aru Islands Regency. The high growth rate is because Tual City is central to Southeast Maluku Regency and Aru Islands Regency in the transportation route, especially sea transportation. Large cargo ships that stop at the port of Tual so that the flow of goods and passengers, access to facilities and infrastructure are very adequate. The quality of human resources is sufficient by increasing community productivity. The increase in per capita income for Tual City, Southeast Maluku Regency and Aru Islands Regency was the biggest contribution to the fisheries, services, industry and transportation sectors. The largest seaweed industry in Maluku is in the City of Tual and Southeast Maluku, while the fish and pearl processing industry is in the Aru Islands Regency. Besides that the regional and cultural characteristics between Tual City, Southeast Maluku Regency and Aru Islands are the same.

Table 3. Klassen typology by island cluster group in Maluku Province

Island Cluster	GRDP per capita	Economic Growth
Cluster I:		
Buru Regency	9,310,228	5.37
South Buru Regency (Bursel)	10,996,096	5.55
Average	10,153,162	5.56
Cluster II-VII:		
Ambon City	19,118,975	6.66
Centra Maluku Regency (Malteng)	11,451,414	5.62
West Seram Regency (SBB)	8,434,143	5.51
East Seram Regency (SBT)	15,011,143	5.71
Average	13,503,919	5.88
Cluster VIII-IX:		
Tual City	16,614,286	6.19
Southeast Maluku Regency (Malra)	13,938,571	6.03
Aru Islands Regency	17,754,286	6.01
Average	16,102,381	6.07
Cluster X-XII:		
West Southeast Maluku Regency (MTB)	10,880,000	6.09
Southwest Maluku Regency (MBD)	10,537,778	6.50
Average	10,708,889	6.29
Maluku	13,095,175	5.91

The developed but depressed regions (Figure 2) in the island cluster II-VII. In the category of Ambon City cluster groups have a high level of income compared to the development area but the growth rate is lower. Ambon City is the Capital of Maluku Province, as a transportation center for all regencies/cities in Maluku. The transportation, service, trade and accommodation sectors contributed to per capita income while Central Maluku Regency, East Seram Regency and West Seram Regency agriculture sector contributed more than other sectors. High unemployment and limited availability of labor and urbanization of the population from rural to urban areas. Slow economic growth in the long run will be able to catch up with rapid and advanced economic growth. Increased unemployment can lead to higher poverty in society. Island Cluster X-XII is the same regency before it was divided, West Southeast Maluku Regency is the main district. The economic growth of this group is higher than the development area (province) with the development of such a rapid development, increased population productivity and good management of natural resources will significantly increase income.

The island cluster I are categorized as regions that are relatively underdeveloped (Figure 2). Buru Regency is the parent district of South Buru Regency which is an area with inadequate facilities and infrastructure and limited transportation, decreased quality of human resources and management of natural resources that is less than optimal so that the increase in regional income is also reduced. Typology of regencies/cities that are included in developed and rapidly developing regions are regions that have high per capita income and absorption of labor and have adequate infrastructure (Pratiwi, 2016).

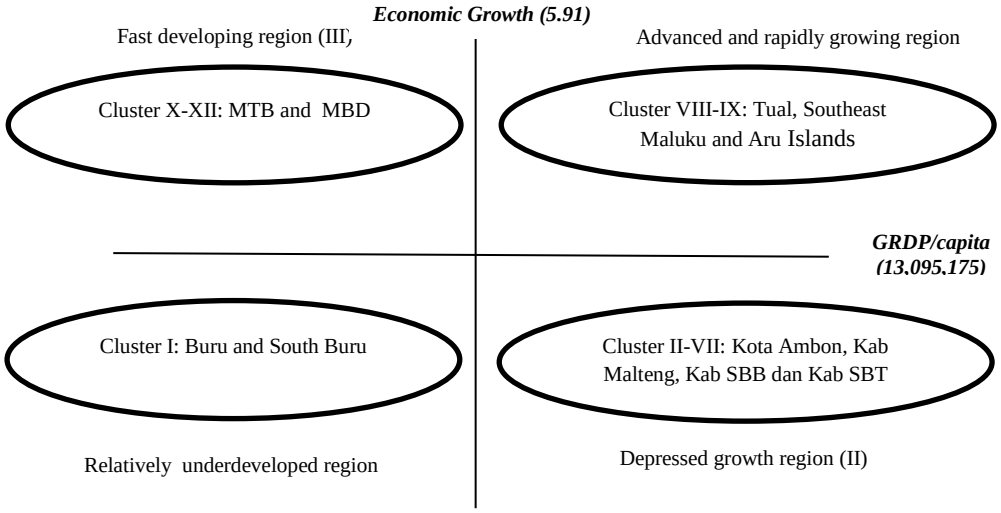

Figure 2 Klassen typology based on island cluster

Maluku province consisting of 2 cities and 9 regencies, the division of Maluku in the Klassen typology is based on growth centers with hinterland areas. Ambon City and Tual City are the centers of growth in Maluku, while other regency are supporting regions (hinterland). The division of territory based on North Maluku covers Ambon City, Malteng Regency, SBB Regency, SBT Regency, Buru Regency and Bursel Regency, while South Maluku Region covers Tual City, Malra Regency, Aru Islands Regency, MTB Regency and MBD Regency.

Table 4 Klassen typology based on region division

Region	GRDP Per Capita	Economic Growth
North Maluku Region:		
1. Ambon City	19,118,975	6.66
2. Malteng Regency	11,451,414	5.62
3. SBB Regency	8,434,143	5.51
4. SBT Regency	15,011,143	5.71
5. Buru Regency	9,310,228	5.37
6. Bursel Regency	10,996,096	5.55
Average	12,387,000	5.73
South Maluku Region:		
1. Tual City	16,614,286	6.19
2. Malra Regency	17,754,286	6.03
3. Aru Islands Regency	13,938,571	6.01
4. MTB Regency	10,880,000	6.09
5. MBD Regency	10,537,778	6.50
Average	13,944,984	6.16
Maluku	13,095,175	5.91

Table 4 shows the typology of Northern Region Maluku for an average economic growth of 5.73 and per capita GRDP 12,387,000 lower than Maluku Province while Southern Region Maluku averaged 6.16 percent economic growth and GRDP per capita 13,944,984 higher than Maluku Province with economic growth of 5.91 percent and GRDP per capita 13,095,175. South Maluku, which consists of Tual City, Malra Regency, Aru Islands Regency, MTB Regency and MBD Regency are included in the category of developed and fast growing regions because this region has higher economic growth and GDP per capita than Maluku Province. For North Maluku, which consists of Ambon City, Malteng Regency, SBB Regency, SBB Regency, Buru Regency and Bursel Regency are categorized as relatively underdeveloped because this region has lower economic growth and GRDP per capita compared to Maluku Province (Figure 3). The regional approach in Indonesia based on typology Klassen Maluku Province is a developed province but has been depressed in recent years experiencing relatively small growth, due to depressed main activities of the province concerned (Sari, 2013). There is no dominant development area or underdeveloped area and developing area. In general all development areas are developing regions but are depressed and developing rapidly (Raafi'i, 2018).

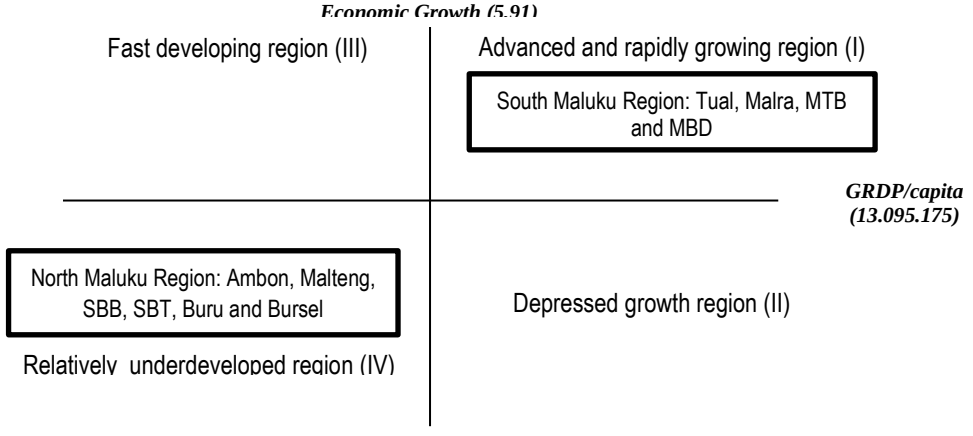

Figure 3 Klassen typology by development area

Inequality analysis in Maluku

The difference in GRDP per capita between regencies/cities in Maluku Province provides an overview of the conditions and development in regencies/cities in Maluku Province. The level of income inequality between regencies/cities in Maluku Province is calculated using theil entropy index. The greater Entrophi Theil index means that it shows greater inequality, if the index gets smaller the more even income distribution. Theil Entropy Index can be decomposed/divided into within gaps and between. This inequity (whitin) is based on the classification of the Klassen typology with the island cluster approach in Maluku Province into 4 groups according to growth and GRDP per capita, namely (1) island cluster I, (2) island cluster II-VII, (3) cluster cluster VII-IX and (4) island cluster X-XII.

Theil index values in Table 5 indicate inequality in Maluku Province. Inequality in the 2010-2016 period for theil index between island clusters tends to be stable and the value is 1.08 while theil index in the island cluster inequality that occurs is also stable in 2010-2016. Island cluster I, island cluster II-VII and X-XII island cluster have an average gap of 0.8, while the island cluster VIII-IX have an inequality value of 1.5. The gap between island cluster is the use of GRDP by providing a high gap because not all regions have natural resources and make a large enough contribution to district GRDP. Government expenditure does not affect inequality but investment is very influential on regional inequality (Barika, 2012). The increase in economic growth is accompanied by an increase in inequality because the majority of the population are farmers, the government must prioritize improving the quality of agricultural human resources to achieve high agricultural productivity and efficiency to improve the economy (Maulidiyah, 2014).

Table 5. Theil Entrophi Index by island cluster 2010-2016

Tahun	Theil Between	Theil Within			
		Island Cluster I	Island Cluster II-VII	Island Cluster VIII-IX	Island Cluster X-XII
2010	1,0944	0,9464	1,1324	1,3437	0,7926
2011	1,0858	0,8968	0,8760	1,6451	0,8554
2012	1,0833	0,8862	0,8579	1,6555	0,8728
2013	1,0805	0,8703	0,8344	1,3054	0,8974
2014	1,0877	0,8590	0,8296	1,6717	0,9565
2015	1,0849	0,8550	0,8303	1,6689	0,9481
2016	1,0363	0,8480	0,6905	1,6666	0,9710

Inequalities between the development areas of the North Maluku Region and South Maluku Region are presented in Table 6.

Table 6. Inequalities between development areas in Maluku in 2010-2016

Tahun	Theil Between	Theil Within	
		North Region Maluku	South Region Maluku
2010	1,0944	1,0704	1,1233
2011	1,0858	0,8830	1,3292
2012	1,0833	0,8673	1,3424
2013	1,0805	0,8643	1,3615
2014	1,0877	0,8394	1,3856
2015	1,0849	0,8385	1,3806
2016	1,0363	0,7430	1,3883

Inequality between development areas in Table 6, it can be seen from the contribution to the Theil value between Northern Region Maluku and Southern Region Maluku that are very lame. Inequality in the development area must be directed to reduce so as not to cause problems in the erosion of resources between districts in the development area. Scouring can occur in natural resources and human resources. Reccomendations Inequality of income by many factors such as the unfair allocation of central and regional government expenditure, expenditure for capital expenditure is still very low, the number of regional heads caught in legal problems (Agusalim, 2016). As a result of crushing is the inability of an area to be able to develop better because of the abandonment of quality human resources and poor value-added natural resource management. The role of local government is needed to move the potential sector as a driver of the regional economy (Ardila, 2012).

CONCLUSIONS AND RECCOMENDATIONS

Conclusion

Based on the identification of typology of island cluster, Tual City, Southeast Maluku Regency and Aru Islands Regency (island cluster VIII-IX) are fast-growing and advanced regions because Tual City is the center of growth and the effects of development abundance from 2010 to 2016 which makes the cluster this island is more developed and developing rapidly, while island cluster II-VII are developed but depressed regionsan increase in community productivity but a decrease in the quality of human resources causes an increase in the number of unemployed which is compounded by fewer jobs, island cluster XI-XII are in the fast developing regions due to increased population productivity and natural resource management has not been managed properly and the lack of human resources and island cluster I are in disadvantaged areas due to the lack of regional facilities and infrastructure, especially transportation, decreased quality of human resources and management of natural resources that are less than optimal. Klassen's typology is based on the area of development of growth centers with hinterland areas. The South Maluku Region (Tual City, Southeast Maluku Regency, Aru Islands Regency, West Southeast Maluku Regency and Southwest Maluku Regency) is a fast-growing and advanced region while the North Maluku Region (Ambon City, Central Maluku Regency, West Seram Regency, Regency Eastern Seram, Buru Regency and South Buru Regency) are areas that are lagging behind.

Inequality in the period 2010-2016 for theil index between island clusters tends to be stable while theil index in the island clusters is high inequality 1.5 in the island cluster VIII-IX compared to the island cluster the other is lower with a 0.8 of 0. The gap between island cluster is the use of GRDP by providing a high gap because not all regions have natural resources and make a large enough contribution to district GRDP. Inequality between development regions can be seen from the contribution to the Theil value between Maluku North Region and Maluku South Region very lame. Inequality in the development area must be directed to reduce so as not to cause problems in the erosion of resources between districts in the development area.

Recommendations

To strengthen linkages between island clusters, a program of cooperation between island cluster can be developed based on sector linkages. Increasing accessibility between island clusters, especially for disadvantaged and border areas through increasing the provision of transportation infrastructure, providing pioneering modes of transportation in areas that cannot be reached by public transportation, and developing transportation cooperation. Efforts that can be made so that inequality between development areas can continue to be stable or decrease is an increase in cooperation so that a balanced economic increase occurs.

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Contribution of leading commodities to the economy of Sarolangun Regency, Jambi Province

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Abstract
This study aims to analyze the contribution of leading commodities to the economy of Sarolangun Regency, Jambi Province. The data used are time series data from 2013-2017, the 2013-2017 GRDP of Sarolangun Regency, the 2013-2017 GRDP of Jambi Province and the 2013-2017 Sarolangun Regency population data. Data were descriptively analyzed using the Klassen typology approach. There were six prime sectors based on the calculation results through Klassen typology during 2013-2017, namely: (1) mining and excavating; (2) water supply, waste management, waste, and recycling; (3) financial services and insurance; (4) administration of government, defense, and mandatory social security; (5) health services and social activities; and (6) other services, while other sectors were classified as potential sectors, developed sectors, and underdeveloped sectors.

Keywords: *GRDP, Klassen typology, Leading commodity, Prime sector*

JEL Classifications: O11, O47

INTRODUCTION

Data showed a fairly high increase in Sarolangun Regency's economic growth rate each year. It was only 3.59 percent in 2015, then it rose to 4.26 percent in 2016 and it increased again to 4.69 percent in 2017 (BPS, 2018). This increase was also accompanied by a high population growth rate of 2.27 percent during 2010-2017, much higher than Jambi Province's rate of only 1.89 percent per year. Theoretically, any increase in the population economy will reduce the number of population adversely affecting regional development and poverty (Suandi, Yuslidar, Suma & Damayanti, 2014). It also has negative impact on household food security and consumption (Suandi, Napitupulu & Damayanti, 2018).

The latest data showed that Sarolangun Regency's poverty rate in 2015 was 28,500 people, or 10.29 percent of the total population (of 278,222 people). This fell to 26,370 people in 2016, or 9.33 percent of the total population (284,201 people). In other words, there has been a 7.48 percent fall. The poverty rate also recorded a drop of 8.87 percent in 2017. Although it has dropped significantly each year, there were about 25,744 people (8.87 percent) in economically weak (poor) groups. These figures are still higher than the poverty rate of Jambi Province (8.19 percent). Future development plans with due regard to poverty rates must be carried out in a comprehensive and holistic manner, oriented to the concept of sustainable development of welfare (Howarth, 2012).

Local governments have broader authority with the policy of regional autonomy and fiscal decentralization, both in drawing up development plans and in financing and implementing them according to the potential of each region. As an integral part of the national development process, plans and implementation of regional development activities are carried out in an integrated manner with the achievement of national development goals (Republik Indonesia, 2014).

Studies on basis sectors (leading sectors) are quite important because they are very useful to inform the success and development policies, especially economic development. The success of regional development seems to give its own contribution to the region, depends on the development goals and the potential of the region. Theoretically, the rate of economic growth of a region depends on economic activities, especially basis sectors (Tarigan, 2012). Based on this, the objectives of this study are to find out and analyze the contribution of leading commodities to the economy of Sarolangun Regency, Jambi Province.

LITERATURE REVIEW

Regional economic development is a process whereby local government and community manage existing resources and form a partnership pattern between local government and private sector to create job opportunities and stimulate the development of economic activities/economic growth in the area (Arsyad, 2010).

Economic growth is the process of changing a country's economic conditions on an ongoing basis towards a better condition for a certain period. Economic growth is an indication of the success of national development (Sukirno, 2011). According to Tarigan (2012), economic growth is the increase in income of society as a whole, namely the increase of added value. Added income is revenue calculated from the value of goods and services produced in a country or region in a given year, called Gross Regional Domestic Product (GRDP) (Sukirno, 2011). According to Neoclassical theory, economic growth rate results from a combination of three economic resources, namely the accumulation of capital, increasing job offers, and technology. Improvement of technology is seen from skill improvement or technological advances so that productivity per capita increases (Tarigan, 2012).

Economic growth of each country or region needs to see which sectors or commodities that have great potential and can be developed quickly, either because of natural potential or their competitive advantage to be developed or known as Turnpike Theory (Tarigan, 2012). According to Sjafrizal (2008), high economic growth rate is still the main target in preparing national and regional development plans in addition to the physical and social development, while the growth rate varies greatly adjusted to the economic potential of each region.

In order to increase economic growth rate, it's very important to distinguish between basis sectors and non-basis sectors. Basis sector in a growth center is the sector whose growth can determine the development in the whole area. Non-basis sector is a secondary sector in the sense that the sector grows as a result of comprehensive development in the area.

Economic base theory seeks to determine basis sectors of an area then from the determination of the sectors, sector activities can be predicted. The information can be used to analyze additional impacts of related sector activities (Sugiyanto & Sukesi, 2010). Analysis of basis sectors of a region can be done with four approaches, namely the direct method, the indirect method, the mixed method, and Location Quotient (LQ) method.

One of the commonly used methods is Location Quotient (Tarigan, 2012). LQ method compares the industry's share or regional employment and/or GRDP of the research area with its share of national employment and/or GRDP at the Provincial/National level.

According to Sugiyanto & Sukesi (2010), creation of centers of economic growth can be started from some dynamic sectors and sectors that have high output ratios, and in certain regions, it can be sectors that can have spread effect and multiple effect on other sectors and broader area. The implementation of the creation a growth center must be followed by trickledown effect and spread effect through a harmonious activity between the growth center and resources in the rural area, so that growth center activities have an impact on the surrounding area.

Based on the analysis results, it was found that leading sectors in the growth center area in East Java were Agriculture sector, followed by Electricity, Gas, and Water sector, Construction, Services sector, Financial sector, Rental and Company Services sector, Transportation and Communication sectors, Trade, Hotel and Restaurant sector, Manufacturing sector, and mining and excavating sector (Arifin, 2008). The study of Suandi, Delis & Rainiyati (2015) added that sector and subsector that contributes the most to the GRDP of the regency was Agriculture sector, reaching 40.4 percent. Subsector that has the potential to increase economic growth rate is food crops subsector (Srikandi, Palar & Wauran, 2015). Qomariah, Mustapit & Supriono (2018) found that food crops commodity in Bondowoso Regency was a basis commodity.

Recent research findings indicate that the Agriculture sector, especially plantation, is still the main livelihood of farmers. Same as the findings of Suandi & Napitupulu (2016), it was found that plantation sector, especially coffee plantation in Kerinci Regency, was a basis sector. It showed that coffee plantations played a major role in the economy of Kerinci Regency. Also coffee plantations in Kerinci Regency had a role in regional development, because they had the potential to give high income and high labor absorption. The same result was shown by Tirani, Pranoto & Moelyo (2018). Agriculture sector was able to make a significant contribution to the regional economy, especially the plantation subsector.

Studies on the contribution of basis sectors and non-basis sectors' activities can also be carried out through the development of each economic sector. By grouping them with Klassen typology, the distribution of subsectors in each region, both primary, secondary, and tertiary subsector, are: prime subsector, potential subsector, developed sector, and underdeveloped sector (Arianti, 2011).

According to Sjafrizal (Hajeri, Yurisinthae & Dolorosa, 2015), Klassen typology is used to find the pattern and structure of economic growth in each region. Classification of the regional economy can be seen through Klassen typology analysis. Based on the Klassen concept, Klassen typology analysis divides regions based on two indicators, namely economic growth and contribution of each subsector to regional GRDP. The results of the study by Arianti (2011) found that in the economic development in Bengkulu Province during 2003-2009, livestock subsector was the prime sector, plantation subsector was the potential sector, forestry was the developed subsector, and food crops subsector was underdeveloped.

METHODS

The research variables are: (a) Gross Regional Domestic Product (GRDP) of Sarolangun Regency and of Jambi Province, (b) revenue of leading commodities of

Sarolangun Regency and of Jambi Province, (c) the number of labors in leading commodities of Sarolangun Regency and of Jambi Province.

The data used in this study are secondary data, namely time series data from 2013-2017. Data were obtained from relevant agencies, such as *Badan Perencanaan dan Pembangunan Daerah* (Bappeda/Regional Development Planning Agency) of Sarolangun Regency, Bappeda of Jambi Province, Reports of BPS Sarolangun Regency, and Reports of BPS Jambi Province. Other data sources were obtained from research reports, journals, and magazines which discuss the role of leading commodities in the regional economy. To get the research purposes of the contribution of the leading commodities to the economy of Sarolangun Regency (revenue and business fields), the analysis is carried out through the approach of Klassen typology. Through Klassen typology analysis, this study can classify research areas in Sarolangun Regency. Based on the Klassen concept, the analysis divides regions based on two indicators, namely economic growth and the contribution of each subsector to regional GRDP (Table 1).

Table 1. Classifications of comparative advantages of commodities based on Klassen typology

Contribution / Growth rate	Kij ≥ Kin	Kij < Kin
Rij ≥ Rin	Prime Subsector	Developed Subsector
Rij < Rin	Potential Subsector	Underdeveloped Subsector

Source: Arianti, 2011.

Notes: R_{ij} *: Growth rate of i-th subsector in area j (regency)*
Rin : Growth rate of i-th subsector in area n (province)
K_{ij} *: Contribution of i-th subsector in area j (regency)*
Kin : Contribution of i-th subsector in area n (province)

RESULTS AND DISCUSSION

Classification of comparative advantages

Through the analysis of Klassen typology, this study can classify research areas in Sarolangun Regency. Based on the Klassen concept, the analysis divides regions based on two indicators, namely economic growth and contribution of each subsector to regional GRDP. From the determination of the average growth rate and the average contribution rate of subsectors to the regional GRDP, commodities (subsectors) are divided into four groups, namely: (1) prime commodity (subsector), (2) potential subsector, (3) developed subsector, and (4) underdeveloped subsector.

Based on the classification by Klassen typology, the distribution of subsectors in each area in Sarolangun Regency is obtained, including primary, secondary, and tertiary subsector. The results of the analysis showed that the sector and subsector which had the biggest contribution to the GRDP of Sarolangun Regency were Agriculture sector, reaching 28 percent. The figure was far lower than the contribution of Agriculture, Forestry, and Fisheries sector in Merangin Regency (40.4 percent), however it was slightly higher than the contribution of Agriculture, Forestry, and Fisheries sector in Jambi Province (26.97 percent) (Table 2). Growth rate of Agriculture sector in Sarolangun Regency was slightly lower than the growth rate of Agriculture sector in Jambi Province (Table 3).

The results through Klassen typology showed that based on its comparative advantage (Table 3), in Sarolangun Regency in 2013, prime subsectors were mining and excavating sector; Administration of Government, Defense, and Mandatory Social Security sector; and Health Services and Social Activities sector. These prime sectors were those that were able to compete with the sectors at the level of Jambi Province, both in terms of growth rate and contribution to the regional economy.

Table 2. Contribution and growth rate of subsectors to the GRDP of Sarolangun Regency and Jambi Province at constant-price based on business fields, 2017

Business Fields	Growth rate		Contribution	
	Jambi Province	Sarolangun Regency	Jambi Province	Sarolangun Regency
A. Agriculture, forestry, and fisheries	5.43	4.20	26.97	28.95
B. Mining and excavating	3.77	5.12	23.57	21.20
C. Manufacturing	3.02	3.52	10.76	4.01
D. Procurement of electricity and gas	1.70	6.51	0.05	0.03
E. Water Supply, waste management, waste, and recycling	2.60	3.34	0.13	0.13
F. Construction	7.22	5.00	7.19	14.34
G. Large and retail trade; car and motorcycle repair	4.33	4.63	9.61	8.17
H. Transportation and warehousing	5.91	5.55	3.28	2.01
I. Provision of accommodation and foods and beverages	7.95	7.82	1.11	2.14
J. Information and communication	6.60	5.30	3.61	3.69
K. Financial services and insurance	3.06	4.05	2.35	2.69
L. Real estate	4.61	3.93	1.44	1.32
M.N. Company services	4.32	5.45	1.05	0.27
O. Administration of government, defense and mandatory social security	2.52	3.05	3.42	5.64
P. Educational services	4.24	3.93	3.26	2.71
Q. Health services and social activities	5.49	6.60	1.15	1.30
R.S.T.U. Other services	4.54	5.70	1.03	1.40

Source: *BPS Jambi Province and Sarolangun Regency (2018) (processed).*

Table 3 shows that agriculture, forestry, and fisheries sector is classified as potential sector, even though agriculture sector is the mainstay in the economy of Sarolangun Regency, both as foreign exchange earner and jobs provider. Agriculture forestry, and fisheries sector had the biggest contribution to the economy of Sarolangun Regency, reaching 27.04 percent and the percentage was even higher than that of Jambi Province (25.12 percent). Future development in investment needs to be a serious concern for Sarolangun Regency government because this sector is the mainstay of the regional economy.

The results of the study contradicted the findings of Wibowo, Darsono & Nurjayanti (2016) that basis sectors in Temanggung Regency during 2009-2013 were agriculture sector, electricity and clean water sector, transportation and communication sector, financial sector, rental and company services sector, and Services sector. Agriculture subsectors which became basis subsectors in Temanggung Regency during 2009-2013 were plantation subsector and livestock and livestock products subsector. Results of another study showed that the leading subsectors were livestock subsector and plantation subsector (Pratama, Sukiyono & Arianti, 2017).

Table 3. Growth rate and distribution of GRDP of Jambi Province and Sarolangun Regency, 2013

Business Fields	Growth rate		Contribution		Comparative Advantage
	Jambi Province	Sarolangun Regency	Jambi Province	Sarolangun Regency	
A. Agriculture, forestry, and fisheries	6.21	5.66	25.12	27.04	Potential
B. Mining and excavating	3.83	6.85	26.57	29.45	Prime
C. Manufacturing	8.17	7.43	11.64	4.29	Underdeveloped
D. Procurement of electricity and gas	8.73	13.32	0.05	0.02	Developed
E. Water Supply, waste management, waste, and recycling	1.87	1.78	0.14	0.13	Underdeveloped
F. Construction	19.49	17.90	7.03	11.86	Potential
G. Large and retail trade; car and motorcycle repair	8.22	8.07	8.77	6.79	Underdeveloped
H. Transportation and warehousing	7.88	8.50	3.03	1.77	Developed
I. Provision of accommodation and foods and beverages	6.40	4.67	0.92	1.79	Potential
J. Information and communication	6.53	4.09	3.24	3.04	Underdeveloped
K. Financial services and insurance	11.81	9.16	2.38	2.64	Potential
L. Real estate	4.93	3.56	1.52	1.29	Underdeveloped
M.N. Company services	2.04	3.54	1.05	0.24	Developed
O. Administration of government, defense and mandatory social security	4.57	5.09	3.27	4.30	Prime
P. Educational services	5.39	6.38	3.31	2.89	Developed
Q. Health services and social activities	8.07	9.16	0.99	1.09	Prime
R.S.T.U. Other services	4.80	3.68	0.99	1.35	Potential

Source: *BPS Jambi Province and Sarolangun Regency (2018) (processed)*

The development of subsectors in Sarolangun Regency has economic development gaps, in addition to physical condition and area accessibility. Classification based on Klassen typology is dynamic because it really depends on the progress of development activities in the study area in the future. It means that in different research periods, the classification will change according to the growth rate and contribution level of subsectors to GRDP in each sector at the time of the study.

Table 4 describes that five-year development (2013-2017) resulted on the increase of prime sectors. These prime sectors were water supply, waste management, waste, and recycling, financial services and insurance, administration of government, defense, and mandatory social security, health services and social activities, and other services sector. In general, economy of Sarolangun Regency during 2013-2017 had been well developed, but in particular it was still not optimal because leading sectors were unable to compete comparatively with other sectors, such as agriculture, forestry, and fisheries sector.

Table 4 also illustrates that mining and excavating sector was no longer classified as prime sector, even though this sector was a leading sector in 2013. Progress of economic development of Sarolangun Regency in 2013-2017 became a reference for future development because there are still many leading sectors that have not received special attention, such as construction sector; large and retail trade, car and motorcycle repair sector; and educational services sector. The results of this study contradict the findings of Suandi, Syekh, Damayanti, Mukhlis & Riswandi (2013). They conducted a study in Muaro Jambi Regency and found that there were five prime subsectors in Muaro

Jambi Regency, namely plantation subsector, livestock and livestock products subsector, forestry subsector, fisheries subsector, and non-oil and gas industry subsector.

The results of other studies found that each regency/city has different subsector classifications depending on the resources and performance of the subsectors. Research conducted by Arianti (2011) showed that, in Bengkulu Province, livestock was prime subsector, plantation was the potential subsector, forestry was developed subsector and food crops was underdeveloped subsector. The findings were proven by the findings of Suandi, Delis & Rainiyati (2015), that agriculture (food crops subsector and plantation subsector) was categorized in potential sector.

The fundamental problem faced by the residents of Jambi Province is the lack of access to basic household needs (food), sources of capital, markets and technology, as well as weak community organizations (Suandi, Napitupulu & Damayanti, 2018). Future development programs must be carried out comprehensively and holistically which are oriented to the concept of sustainable welfare development (Howarth, 2012). These findings are supported by the research of Sari (2018) which stated that agriculture sector (food crops subsector, plantation subsector, and fisheries subsector) has advantages, and these subsectors are progressive subsectors and have competitiveness. Study by Sapriadi & Hasbiullah (2015) showed different results that services sector was the leading sector which has competitiveness, while Yolamalinda (2014) found that manufacturing subsector was the leading subsector and had competitiveness.

Table 4. Growth rate and distribution of GRDP of Jambi Province and Sarolangun Regency, 2017

Business Fields	Growth rate		Contribution		Comparative Advantage
	Jambi Province	Sarolangun Regency	Jambi Province	Sarolangun Regency	
A. Agriculture, forestry, and fisheries	5.43	4.20	26.97	28.95	Potential
B. Mining and excavating	3.77	5.12	23.57	21.20	Developed
C. Manufacturing	3.02	3.52	10.76	4.01	Developed
D. Procurement of electricity and gas	1.70	6.51	0.05	0.03	Developed
E. Water Supply, waste management, waste, and recycling	2.60	3.34	0.13	0.13	Prime
F. Construction	7.22	5.00	7.19	14.34	Potential
G. Large and retail trade; car and motorcycle repair	4.33	4.63	9.61	8.17	Developed
H. Transportation and warehousing	5.91	5.55	3.28	2.01	Underdeveloped
I. Provision of accommodation and foods and beverages	7.95	7.82	1.11	2.14	Potential
J. Information and communication	6.60	5.30	3.61	3.69	Potential
K. Financial services and insurance	3.06	4.05	2.35	2.69	Prime
L. Real estate	4.61	3.93	1.44	1.32	Underdeveloped
M.N. Company services	4.32	5.45	1.05	0.27	Developed
O. Administration of government, defense and mandatory social security	2.52	3.05	3.42	5.64	Prime
P. Educational services	4.24	3.93	3.26	2.71	Underdeveloped
Q. Health services and social activities	5.49	6.60	1.15	1.30	Prime
R.S.T.U. Other services	4.54	5.70	1.03	1.40	Prime

Source: *BPS Jambi Province and Sarolangun Regency (2018)(processed)*

Growth centers of each region have different coverage levels depending on the size and distance between the two sites, namely between the growth center and the surrounding area. According to Refika (2012), through the analysis of the gravity method

using population data of each *kecamatan* and the distance between *kecamatan*, growth centers of *kecamatan* has different hinterland. Type of interactions between growth centers of *kecamatan* and its hinterland also varies, both in economic activities, education, and other activities. The development in one sector will encourage the development of other sectors, so that it will grow the economy as a whole. Sectors can be synergized by making sectors interrelated and mutually supportive and beneficial. For example, a plantation business can synergize with plantation business. Grass/plantation waste can be used as animal feed, otherwise animal manure can be used as fertilizer for plantation crops (Tarigan, 2012).

Sectors that were not in the leading sectors in 2017 were due to the slow growth rate of those sectors compared to the growth rate of sectors at Jambi Province level, even though the contribution rate was much higher than its rate at Jambi Province level (Table 4). Through the analysis using Klassen typology in Kubu Raya Regency period 2008-2013, Hajeri, Yurisinthae & Dolorosa (2015) found that Manufacturing sector, electricity, gas, and clean water sector, and transportation and communication sector were prime subsectors. Meanwhile, agriculture sector, mining and excavating sector, construction sector, financial sector, rental and company services sector, and other services sector were potential subsectors. Agriculture sector and construction sector were sectors that had high growth rate, but had a low contribution. Trade, hotel, and restaurant was underdeveloped sector.

Program and policy based on leading sectors

To improve the economy of Sarolangun Regency in realizing the welfare of farmers and the community in a sustainable manner, a strategic development policy is needed in dealing with each sector. In other words, underdeveloped, developed, and potential sectors are the top priorities in the development program, while leading sectors need to maintain their level of contribution and growth.

From the perspective of budget policy in Sarolangun Regency, there are at least four aspects as restrictions, namely institutions, coordination, coaching, and development acceleration.

From the aspect of institution, law on national education suggests that local government, including Sarolangun Regency, should allocate 20 percent of its APBD (*Anggaran Pendapatan dan Belanja Daerah*/Local government budget) for activities in the education sector even though educational services sector is actually a non-basis sector categorized in underdeveloped group. In other words, educational services sector in Sarolangun Regency does not contribute to the GRDP due to its slow growth rate. According to law, this sector plays an important role for the development of Sarolangun Regency, especially in improving the quality of human resources, which can indirectly enhance development progress in various sectors. Health services and social activities sector is different from other sectors because it is a basis sector and categorized in prime group so this sector is able to fulfill the mandate of Health Act of 10 percent of APBD. Health services and social activities sector has forward and backward linkages because it generates production and GRDP revenue of Sarolangun Regency. This sector has a relatively good growth rate.

The national and provincial development programs must always coordinate so that development of Sarolangun Regency with the help of *Dana Desa* program by Central Government and Government of Jambi Province can be done optimally. With that

program, Sarolangun Regency government made a program known as Serjusade (Seratus Juta per Desa) Program requiring Rp. 31 billion from APBD. Synergy of the program results on the maximum budget absorption to infrastructure activities, especially roads in village, and other productive activities in agriculture sector. It also results on having this sector as basis sector. The analysis showed that the program had not been able to encourage small and medium industries subsector and small and medium enterprises subsectors to become rubber-based and palm oil-based basis sectors of Sarolangun Regency.

In carrying out future development, Sarolangun government needs to do coaching consistently in order to maintain the following sectors as basis and prime sectors, namely (1) water supply, waste management, waste, and recycling sector; (2) financial services and insurance sector; (3) administration of government, defense, and mandatory social security sector; (4) health services and social activities sector, and (5) other services sector, while continuing to provide coaching that can drive the growth rate of (1) agriculture, forestry, and fisheries sector; (2) construction sector; (3) information and communication sector; and (4) provision of accommodation and foods and beverages sector.

Development acceleration needs to be done in non-basis sectors in developed and underdeveloped group. Those sectors are (1) mining and excavating sector; (2) manufacturing sector; (3) procurement of electricity and gas sector; (4) large and retail trade; car and motorcycle repairs sector; and (5) company services sector. The transfer of authority for mining and excavating to provincial government has resulted in the degradation of the sector to be a non-basis sector, even though the natural resources potential of mining in this regency is relatively big.

In the future, there should be strong coordination between local government and provincial government in the joint management of mining and excavating sector so that the local community can get the results of the development from their own natural resources. Local government should accelerate development in (1) transportation and warehousing sector; (2) real estate sector; and (3) educational services sector because they have relatively large potential in terms of budget and regional economic potential.

CONCLUSION AND RECOMMENDATION

Conclusion

Distribution level of leading sectors in Sarolangun Regency was based on the categorizing with Klassen typology. There are prime subsector, potential subsector, developed subsector, and underdeveloped subsector.

a. The analysis showed that from year to year, there were no significant changes in primary, secondary, and tertiary subsector. The results of the analysis showed that there were six prime sectors, namely: (1) mining and excavating; (2) water supply, waste management, waste, and recycling; (3) financial services and insurance; (4) administration of government, defense, and mandatory social security; (5) health services and social activities; and (6) other services. During the period 2013-2017, there was an increase in the number of prime sectors.
b. The distribution of potential and developed sectors in Sarolangun Regency during the 2013-2017 periods did not show significant changes, there were around 8-9 sectors. However, there were changes in the type of sectors in this group. There were some

sectors which, even though they had large contribution and were strategic, they were in potential and developed group. Those sectors were (a) agriculture, forestry, and fisheries sector; (b) mining and excavating sector that was once a prime sector in 2013; and (c) Information and Communication sector.

c. The distribution of underdeveloped sectors in Sarolangun Regency during the 2013-2017 periods was still relatively high, between 3-6 sectors, although in 2017 there were only three sectors in this group. Those three sectors in 2017 were: (1) transportation and warehousing; (2) real estate; and (3) educational services. Specifically for education services sector, although it contributes a little to none to the economy of Sarolangun Regency, this sector has a special role to the long-term and sustainable development progress in Sarolangun Regency. This is because education services sector plays a role in improving the quality of human resources.

Recommendation

The Government of Sarolangun Regency must be able to maintain leading sectors or basis sectors in Sarolangun Regency in the coming years. To increasing regional revenue, the government needs to pay attention to the potential sectors, such as mining and excavation sector that has a large contribution to the regional economy but not categorized in leading sector. Innovation and technology are needed to accelerate development in those sectors. The role of government is also needed in intensify the development in Education Services sector because it is one of resource development institutions. The increasing role of educational institutions will indirectly improve the quality of regional resources.

Development programs need more in-depth research through investment analysis using ICOR (Incremental Capital Output Ratio) approach to improve productivity and efficiency. Analysis of sectorial investment needs can help local government in understanding and knowing how much investment is needed to achieve a certain level of economic growth both in sectorial and regional aggregate development. Furthermore, the availability of investment data and calculation of investment needs is very necessary in designing and formulating regional macroeconomic policies systematically, in realizing the desired level of economic growth.

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Quantitative strategy planning matrix in supporting sustainability of pearl millet *(Pennisetum glaucum)* farming

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Abstract
Pearl millet is not only a potential source of income for farmers but can also support the availability of alternative local food in West Sulawesi. As a potential local food, pearl millet contains good nutrition such us anti-oxidant, bioactive compound and fiber. This research is aim to analyze the internal and external factors, IE matrix and then Quantitative Strategy Planning Matrix (QSPM) in order to figure out the priority strategies of pearl millet *(Pennisetum glaucum)* farming. This research was conducted in West Sulawesi by investigating pearl millet farmers in the production center. The strategy that could be applied is how to support an aggressive growth-oriented strategy. The priority strategies to be implemented are 1) procurement of farming equipment to increase production and productivity, 2) maximizing land potential through efficient farming input, 3) supporting farmers to keep trying to grow pearl millet in an effort to produce alternative food, 4) the use of environmentally friendly farming equipment and input technologies to support sustainability, 5) training to the pearl millet farmers on processing and diversification of pearl millet into industrial products, 6) building adequate infrastructure to facilitate distribution and marketing, 7) plotting pearl millet as a potential superior local food in West Sulawesi, 8) facilitating to access to capital by activating rural-based microfinance institutions, 9) increasing the capacity of farmers and village stakeholders through institutional strengthening, counseling and training and 10) introducing pearl millet to the market and consumers as a local food that is rich in fiber and high antioxidants.

Keywords: *Internal and external factors, Local food, Pearl millet, Quantitative strategy planning matrix*

JEL Classifications: C65, O13, Q10

INTRODUCTION

Pearl millet ranked sixth as the most important grain and consumed one-third on the world's population (Marlin, 2009; Karim, Makmur & Bahmid, 2019). Approximately two-thirds people in Southern Asia is suffering in severe food insecurity in the world (FAO, 2017; Silungwe *et al*, 2019). Because of the climate change, the loss of total harvest belong to farmer is still prevalent (Hoffman *et al*, 2018). Pearl millet *(Pennisetum glaucum)* is a food commodity that has the potential to be developed in an effort to strengthen food security as a source of carbohydrates instead of rice. Pearl millet is originated from the Sahel Region of Africa (United US Department of Agriculture, 2014; Sheahan, 2014) and also this plant can grow in various regions in Indonesia, including in

Figure 1. Pearl Millet (www.floradanfauna.com)

West Sulawesi. Pearl millet has the advantage over other carbohydrate plants that can grow on almost all types of soil including dry and less fertile soils, easy to cultivate, short plant life and its various uses (Suherman, Zairin & Awaluddin, 2005).

Pearl Millet is a high energy cereal that contains carbohydrate, protein, and also fat. It is a food rich in vitamins B and A, high in calcium, iron and zinc, it also contains potassium, phosphorus, magnesium, copper and manganese. The grain of pearl millet has a higher energy, higher protein content than other cereals and foods. Any traditional food in West Sulawesi is produced from pearl millet, such as porridges and traditional cakes. Pearl millet could also processed as foods and beverages such as couscous, flat breads, doughs, gruel, non-alcoholic beverages and beers (Taylor, 2016).

West Sulawesi is one of the potential areas for the development of pearl millet and even it is recorded in the Ministry of Agriculture as local food precisely in Polewali Mandar Regency. Any problem faced to develop of sustainability of pearl millet in Indonesia such as low technology in farming system, limited access to the capital, fluctuation of price and production, limited access to the market. So that, it is important to figure out the most appropriate strategies to increase the sustainability of pearl millet farming both internal and external factors. Another way to improve sustainability, crop enhancement strategies should be prioritized for adoption (Mumo, Yu & Fang, 2018).

METHODS

This research was conducted in Polewali Mandar. The location was defined by purposive as one of the pearl millet centers in West Sulawesi, Indonesia by interviewing three - group, consist of 49 pearl millet farmers who intensively cultivate of it. Data represented with descriptive quantitative by using Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE), IE matrix and then Quantitative Strategy Planning Matrix (QSPM) in order to arrange the appropriate strategies that reliable to be implemented. QSPM is a method for comparing some feasible actions. There is no strategy limit that can be evaluated or the number of strategies that can be examined at the same time in using QSPM (Rangkuti, 2009).

RESULTS AND DISCUSSION

Internal Factors Evaluations (IFE)

Internal factors in supporting the development of pearl millet farming are carried out by identifying internal factors evaluation based on indicators of strengths and weaknesses (Setiady, 2014). This analysis aims to assess and evaluate internal strategic

factors that influence the success of the pearl millet farming recommended in its development strategy. Internal factors are described in the following IFE matrix table.

Table 1. Internal factors evaluation of pearl millet farming

No	Internal Factors	weight	rating	score
A.	**Strengths**			
1	Potentially local food	0.1082	4	0.432
2	Income alternative	0.1122	3	0.340
3	Rich in nutrition	0.1070	4	0.423
4	Resistant to climate change	0.1034	1	0.103
5	Short production period	0.0839	2	0.168
6	Land availability	0.0875	4	0.350
	Total Strengths	**0.6025**		**1.000**
B.	**Weakness**			
1	Farming equipment	0.0835	2	0.167
2	Production cost	0.0838	3	0.251
3	Human resource	0.0768	1	0.076
4	Capital	0,0796	3	0.239
5	Post-harvest processing	0.0735	3	0.220
	Total Weaknesses	**0.3139**		**0,609**
	Total	**1.0000**		**1.609**
Strengths – Weaknesses = S – W = X = 0.391				

Source: Primary data after analyzed, 2019

Based on the analysis of the IFE matrix in Table 1 shows that the factors that influence the development of pearl millet farming in terms of strength have a cumulative value of 0.6025 higher than the cumulative value of the weaknesses of 0.3139. This situation indicates that the development of pearl millet farming in the strength factors are higher than the weakness factors that will inhibit it. Strength and weakness of the organization or company is about how to identify the competitiveness, ability to compete, and in-depth strategy to win the competition among competitors (Rantelino, 2015) and how to manage the potential resources to guarantee sustainable of pearl millet farming.

The internal factors evaluation for developing pearl millet farming in West Sulawesi based on the strengths are potentially local food, income alternative for the local farmers. It is also rich in nutrition such as antioxidant, fibers, fat and higher protein content (Taylor, 2016). Millet is one of the foods which resistant to climate change. In Africa, pearl millet (*Pennisetum glaucum*) is the most dries land food crop (Rowland 1993; Mustafa and Arshad, 2014). The other strengths are short production period, it's around 3-4 months (BPTP Balitbangtan,2016) which is can grow on poor soil elemental or subtropical soil with pH 4-8 (Grubben & Partohardjono, 1996) and also land availability, in this case, most of farmers have enough land to produce pearl millet even most of farmers in West Sulawesi only produce pearl millet, once in a year. According to the Grubben & Partohardjono (1996) millet was cultivated in the end of rainy season.

Although pearl millet has many strengths in order to develop, but some of weaknesses were identified such us farming equipment to produce pearl millet. It's still traditional and low input technology either in on-farm system or post-harvest processing. Technology in agriculture is important to increase farmers' yields (Zulkarnaen, 2016).

External Factors Evaluation (EFE)

External factors evaluation aims to identify external strategic factors that influence in order to develop of the pearl millet farming. External factors are described in the following EFE matrix table:

Table 2. External factors evaluation of pearl millet farming

No	External Factors	weight	rating	score
A.	**Opportunities**			
1	Access to the market	0.1780	4	0.712
2	Assistance of farming equipment	0.1168	2	0.232
3	Developing infrastructure and communication	0.1489	3	0.447
4	Supporting price policy	0.1652	2	0.330
	Total of opportunities	**0.6090**		**1.691**
B.	**Threats**			
1	Competition among food products	0.1389	1	0.138
2	Competition among other commodities	0.1295	2	0.258
3	Innovation and diversification other products	0.1224	3	0.366
	Total of threats	**0.3909**		**0.762**
	Total	**1.0000**		**2.453**
	Opportunities – Threats = O – T = Y = 1.691			

Source: Primary data after analyzed, 2019

Based on the analysis of the EFE matrix in Table 2 above, it shows that the cumulative value of the opportunities (opportunity) of 0.609 is higher than the cumulative value of the threat (treats) of 0.390, this condition shows that the opportunity factor for the development of pearl millet farming is higher than threat factors that will inhibit it. External evaluation is the external audit of performance to develop a finite of list of opportunities that can provide benefits and threats to be avoid (Setiady, 2014). Either IFE or EFE, this analysis bargains to find out the most appropriate strategy applied to the company and it's also possible to applied in agricultural business and farming.

The opportunities to develop of pearl millet farming are access to the market which is so far, pearl millet production purpose for consumption needed than for distribution to the market. The problem is found that in supporting production process, farmers still use the traditional equipment so that assistance of farming equipment are also needed by the pearl millet farmers. Actually, for distribution activities, it's urgent to develop infrastructure and communication. Another case is about supporting price policy. In this case, weak farmers will lead to asymmetric price information and the powerlessness of marketing management in buying and selling transactions is still a problem (Kementerian Pertanian, 2017).

Otherwise, the threats are also identified such us competition among food products and other commodities. Then, innovation and diversification other agricultural products. With so many competitors, both rice and non-rice products, the added value of pearl millet needs to be focused. For sure, production through innovation and technology needs to be done consistently and sustainably in increasing food quality (Kementerian Pertanian, 2017) and how plotting pearl millet as a market oriented products.

Internal and external matrix

After the internal and external factors evaluation, the next is the Internal and External (IE) Matrix. The internal and external matrix is used to position the various divisions within a company against nine cell strategies. It is also specifically designed to assist the effort of multidivisional companies in formulating strategy (David, 2010; Fitri, 2014). Each cell size strategy describes the condition of the pearl millet farming. In positioning IE matrix based on two-key dimensions which the total IFE score on the X axis (horizontal) and the EFE weight score on the Y axis (vertical) (Budiyono, 2017).

From the results of the total score of strength and weakness factors in the IFE matrix is 1,609 and the total score of the opportunity and threat factors in the EFE matrix is

2,453. The pearl millet farming strategy position is in cell the strategy 6 which is ***divestment***, in which productivity of pearl millet is low and possibility loss because of any problem such us farming equipment, capital, human resources and post-harvest handling. In addition, access to the market, infrastructure and government policy are also the main problem for developing of millet in West Sulawesi. The strategy to solve these conditions are to raise capital for the improvement of pearl millet farming so that it needs to sell productive assets such as land, buildings and other assets to obtain fresh funds. Another source of capital is actually from the micro-finance which is gotten from banking sector or another finance supporting. Capital is needed to fund pearl millet farming in supporting on-farm activities and post-harvest handling where the pearl millet farming needs additional resources to improve existing conditions, as illustrated in the following matrix. This condition described that to sustain of the pearl millet farming faced a serious problem base on the matrix position, it is a combination of weak and low cell based on the matrix position.

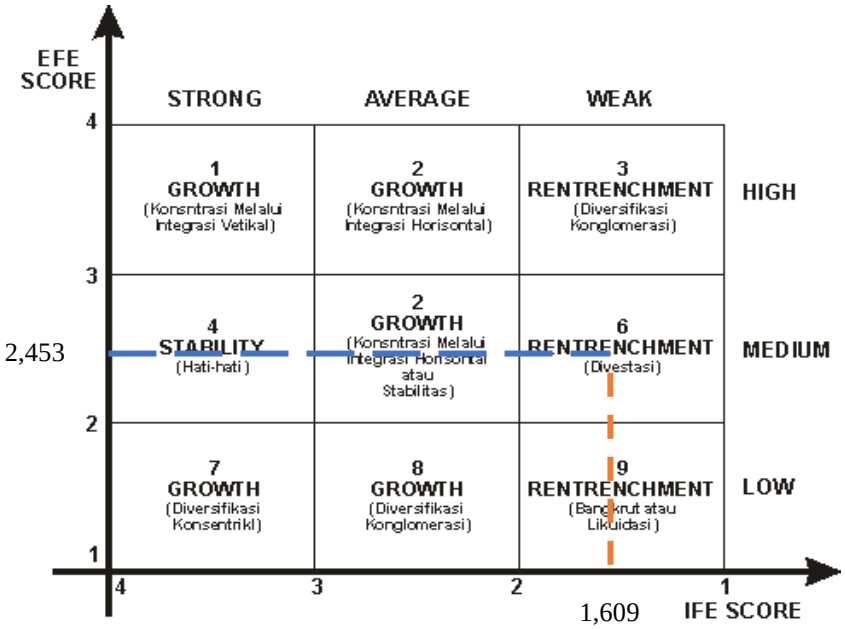

Figure 2. Internal and External Matrix

In this case, pearl millet farmers have not been able to do a farming business well so some strategies that are considered important in the divestment for the development of pearl millet farming in Polewali Mandar are:

- Avoid savings, to restore the existing conditions
- Farming needs more resources than currently available
- pearl millet farmers are responsible for the overall poor business performance
- Farmers do not engage their farming as they should
- Farming requires a substantial source of capital than is available, obtained through the sale of productive assets owned by farmers.

Quantitative strategy planning matrix

Quantitative Strategy Planning Matrix (QSPM) is an analysis tool used to determine priority strategies to be implemented. After the SWOT analysis is formulated strategies based on key factors in the IFE and the EFE matrix, then further determine the priority of the strategy to be implemented in increasing production in pearl millet farming both in quantity and quality. Selection of alternative strategies within QSPM, using

Attractive Score (AS) and the Total of Attractive Score (TAS) based on the weight score from the IFE and EFE Evaluation where AS value using the Likert scale; 1) not acceptable, 2) probably acceptable, 3) possibly acceptable, 4) acceptable, 5) not relevant or by value 1) Not attractive, 2) rather interesting, 3) quite interesting, 4) very interesting (Alamanda, Anggadwita, Raynaldi, Novani & Kijima, 2019).

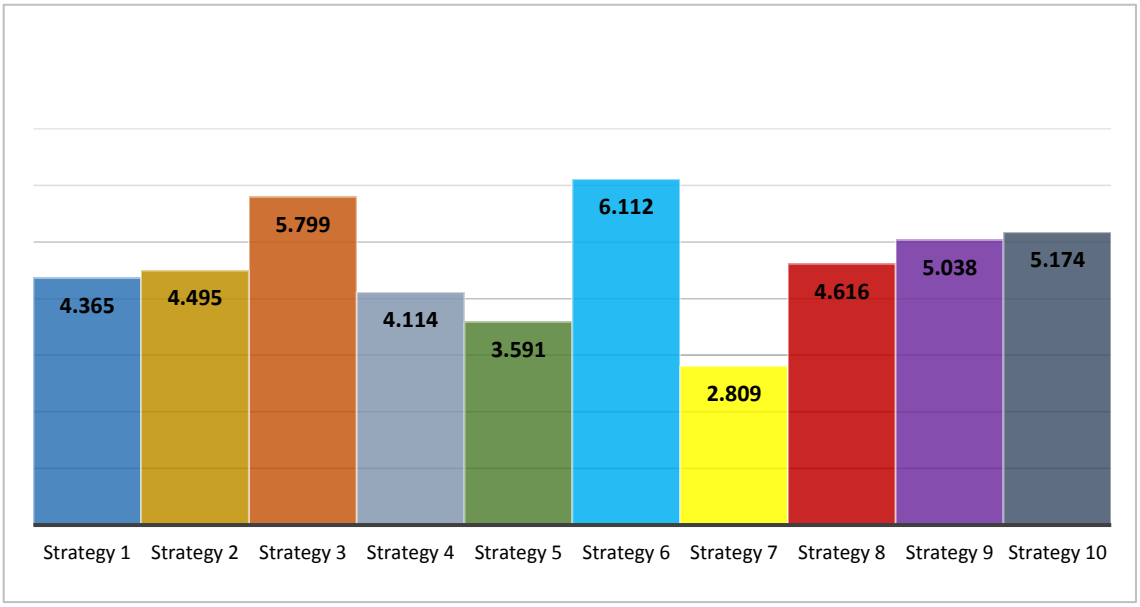

Figure 3. Total Attractive Score (TAS) of Quantitative Strategy Planning Matrix (QSPM)

Based on figure 3, it appears that the order of the most priority strategies based on the Total Attractive Score (TAS) from highest to lowest are as follows:

- Strategy 6 has a total attractive score (TAS) of 6.112, the procurement of farming equipment to facilitate farmers in increasing production and productivity.
- Strategy 3 with a total attractive score (TAS) of 5.799, maximizing the potential of land through efficient farming input.
- Strategy 10 has a total attractive score (TAS) of 5.174, supporting farmers to keep trying to grow pearl millet in an effort to produce alternative food.
- Strategy 9 has a total attractive score (TAS) of 5.038, the use of environmentally friendly farming technologies and inputs to support sustainability.
- Strategy 8 has a total attractive score (TAS) of 4.616; training on processing and diversification of pearl millet into industrial products.
- Strategy 2 with a total attractive score (TAS) of 4.495; building adequate infrastructure to facilitate distribution and marketing.
- Strategy 1 with a total attractive score (TAS) of 5,365; plotting pearl millet as a potential superior food in West Sulawesi.
- Strategy 4 with a total attractive score (TAS) of 4.114, accessing to capital by activating rural-based microfinance institutions.
- Strategy 5 with a total attractive score (TAS) of 3.591, increasing the capacity of farmers and village stakeholders through institutional strengthening, counseling and training.
- Strategy 7 has a total attractive score (TAS) of 2.809, introducing pearl millet to the market and consumers as a local food that is rich in fiber and high antioxidants.

These priority strategies are important to maintain and recommend to the government as one of the support systems who will bring pearl millet as the superior local food in West Sulawesi which is not only for food security (Karim, Makmur & Bahmid,

2019) but also for industrial needed. This period time, pearl millet has expanded its cultivation in several major countries in East Asia. From China, then this plant spread to another Asian Country such us Indonesia, Japan, India, Africa, Egypt, Greece, Italy and America. Some countries are used as human diet, some are as birdseed. actually, pearl millet is an alternative for food consume and other potential industrial products in which the production extremely limited. Total production in the world reached 28,38 million tons (FAO, 1991).

CONCLUSION AND RECOMMENDATION

Conclusion

To sum up, the pearl millet farming strategy based on internal dan factor matrix is the strategy 6 (six) which is divestment strategy. Then, the most priority strategies for the pearl millet farming are the procurement of farming equipment to facilitate farmers in increasing production and productivity, maximizing the potential of land through efficient farming input, supporting farmers to keep trying to grow pearl millet in an effort to produce alternative food, the use of environmentally friendly farming technologies and inputs to support sustainability, training on processing and diversification of pearl millet into industrial products, building adequate infrastructure to facilitate distribution and marketing, plotting pearl millet as a potential superior food in West Sulawesi, accessing to capital by activating rural-based microfinance institutions, increasing the capacity of farmers and village stakeholders through institutional strengthening, counseling and training, and introducing pearl millet to the market and consumers as a local food that is rich in fiber and high in antioxidants.

Recommendation

The development of local food products such as pearl millet is encouraged and been the focus of government's and private sectors attention in increasing both at the farmers and regional income. Moreover, it can be encouraged as a local food excellence of West Sulawesi which is needed for food security and industry.

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Speed strategy of public administration services in fulfilling the basic rights of citizens in rural areas in Indonesia

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Abstract

The main purpose of this research is to examine the speed strategy of public administration services in fulfilling the basic rights of citizens in rural areas in Indonesia. The method in this research is descriptive type with quantitative approach and use explanatory survey. The target of the research was villagers in four districts in Jambi Province. The instrument used to collect the data is by using a structured questionnaire given to the sample respondents. The statistical tool to examine the hypotehsis is by using Partial Least Square (PLS) method with smart-PLS as the software. The study found that the speed strategy of public administration services has a positive and significant influence on fulfilling the basic rights of citizens in rural areas. However, these positive and significant effect towards fulfilling the basic rights of citizens are mediated by public administration services. These suggest that the role of public administration services in rural areas should be transparent, accountable, and it needs to accommodate public participants and public right equally.

Keywords: *Basic rights, Public administration, Rural areas, Speed strategy*

JEL Classifications: H83, O18

INTRODUCTION

Public service is one of the fundamental aspects at the national, provincial and rural levels of government. Public services are not only discussed bureaucratic management but discusses fulfillment the needs of the community. Public services administrations to more open, transparant, accountable, cost effective and responsive (Bala, 2017). One form of public service provided is public administration services. Public administration services related to community needs related to ownership of official documents as proof of authenticity and validity from identity as a citizen and obtain legal recognition (Mosso, Singkoh & Sumampow, 2018).

The research results from Angkat, Kadir & Isnaini (2017) show that public administration services are well implemented that are according to the requirements and applicable procedures so that the community feels unbearable and services are provided free of charge. Saputra, Afifuddin & Widodo (2019) the community is satisfied with administrative services provided because the service officer able to handle complaints from the public, reliable in terms of time and the accuracy of the service process, communication between service officers and the community during administration files, the community feels comfortable when handling administrative files. People who are taking care of administrative files served by heart if there are people who experience difficulties in filing, there are criticisms and complaints that need to be conveyed, then

the service officer willing to accept the input as introspection to give better service. The research conducted by Brinkerhoff, Wetterberg, Wibbels (2017) which states that citizen satisfaction with public administration services influenced by the distance of access to services.

However different results are shown from the research conducted by UGM Center for Population and Policy Studies with the Yogyakarta City Government, States that the community as users of public services does not feel satisfaction from the services provided, this is triggered by reasons related to regulations and service systems determined unilaterally by the related bureaucracy regardless of community needs, the bureaucracy does not try to understand the difficulties faced society and has not been able to accommodate community aspirations, this research is in line with the research conducted by Rukayat (2017) which states that the public services provided are still unsatisfactory because if viewed in terms of facilities still less attention, so that people feel they are not being served well. Unavailability of information facilities make service slower so that in taking care of administrative files people have to wait in line for their turn. In fact there are still many bureaucracies that provide public services can not satisfy the community. So that the public services provided can run well and have reliable quality and able to create community satisfaction, a service improvement strategy is needed. Strategies for improving public services are needed in government agencies, because of the service improvement strategy then government agencies are able to fulfill the basic rights of every community.

Fadillah & Sujianto (2018) research show that the strategy used for improve and accelerate public services with use technology strategies, innovation strategies, and operating strategies with results there is a service system and information sources obtained through electronic and non electronic media, can do licensing online, the announcement of service, there is a strategic plan from the organization, the community can provide complaints online, conduct a community satisfaction survey by online so that it can be ascertained that the community has obtained quality services in accordance with the principle of public service that is; fast, efficient, responsive, integrity, and accountable.

Public administration services carried out should be improved so that people can easily access all needs related to administrative matters. Improve the quality of administrative services carried out by making a special strategy so that can achieve goals effectively. The strategy to improve and speed up administrative services will be able to improve the quality of services provided so that it can fulfill the rights of the community as citizens. Citizens' rights are everything that is obtained by the community and one of the citizens' rights is to obtain public services. The services provided to the community are still not effective so the right of citizens to obtaining quality services has not been fulfilled, so a speed service administration strategy is needed in order to fulfill the basic rights of citizens.

Implicitly, the variable speed strategy, public administration service and fulfillment of basic rights of citizens are very interesting to be examined and studied further. This research aims to examine: 1) Speed strategy with fulfilling the basic rights of citizens in rural areas; 2) The speed strategy of public administration services in fulfilling the basic rights of citizens in rural areas.

THEORETICAL FRAMEWORK

Strategy is a tool that will be used together to achieve the desired goals. The strategy shows the form of activities that will be carried out by the organization as an effort to achieve the set goals and objectives (David, 2011). Rangkuti (2013) defines strategy as a

priority effort that must be carried out by the organization with expectations able to reach all destinations which is in accordance with the organization's mission. Strategy simplifies the organization to achieve a set of goals and objectives. Efforts to achieve organizational goals done by designing effective strategies especially the strategy to improve accelerate public services, using strategy in carrying out public services it will be able to and realize community satisfaction and able to improve the quality of public services.

There are several strategies that can be done to improve public services, the strategy consists of (Ibrahim, 2008):

1. Self-esteem that is related to public services provided. Agencies must place officers or service officials who has the skills and qualified expertise in the field, provide services that can reach all levels of society and guided by the principle of success that is seeing success for tomorrow not only today.
2. Meet expectations that is provide the best service to the community by making adjustments for service standards that have been set in order to be able to keep up with the environment
3. Settling and rediscovery of things that is service officer having duties include accepting criticism, suggestions, and complaints from the public. The agency will try to make improvements, if old service standards cannot improve service quality.
4. Outlook that is agencies will try to continue to provide services in accordance with future demands by using various technologies which can support improvement and accelerating the quality of public services making it easier for the public to access it and become more effective and efficient.
5. Continuous improvement that is in improving public services, then the agency must be able to adjust it with environmental changes. Agencies must create a conducive atmosphere in a way provide excellent service to the community responsively.
6. Attention that is agencies must pay attention what things are needed by the community especially those relating to public services, must be able to provide service which can make people satisfied, must use the right benchmarks in answering community needs in order to be able to comply with public service standards.
7. Empowerment that is one effort in making improvements and acceleration of service by improving the performance of service officers. Service personnel should be provided education and training in order to better understand tasks as a service provider and improve skills in mastering information technology. In addition, awarding can also improve the performance of service personnel so that it can better serve the community.

According to Government Regulations Republic of Indonesia Number 96 of 2012, public service is an activity or series of activities in order to fulfill service needs in accordance with the laws and regulations for every citizen and resident for goods or services or administrative services organized by public service providers. According to Hardiansyah (2011) public service refers to giving for services both done by the government and the private sector on behalf of the government or private sector towards the community either by making a payment or not with the intention of to fulfill what is needed or which is in the interests of the community.

Public administration offers quality services, then a strategy is needed increase activities in public administration. The results of the study Kerlinováa, Tomáškováb (2014) show that public administration has obstacles in the development and implementation of strategies. Sinambela (2012) states that excellent quality of public services can be shown through several aspects, which consist of:

1. Transparency that is adhering to the principle of openness. In providing a service to the community should have an open nature disseminate information so as to obtain

convenience to access services needed by the community, and provide services adequately so that the community is able to understand the service.

2. Accountability that is shows the level of accountability. Services provided can be justified in accordance with the provisions of the applicable legislation.
3. Conditional that is indicates that the service provided has been in accordance with its capacity service provider and recipient who are guided by the principle of effectiveness and efficiency.
4. Participatory that is indicates that the service provided impact the community to participate in making public services successful by focusing on the aspirations conveyed, the need and expectations of the community.
5. Equal rights that are all people who enjoy service will get the same handling without exception. No community can get discriminatory action which distinguishes ethnicity, religion, race, gender, class, social status, and so on.
6. Balance of rights and obligations that is service that always prioritizes justice that is considering aspects of justice for the giver and recipient of the service.

According to UNDP (2015) public services require a fundamental change in mindset on the part of public officials, where reform is directed at changing values and behavior and increasing administrative capacity, centered on efforts to deepen motivation and instill an ethos of public service. Based on Government Regulation of the Republic of Indonesia Number 96 of 2012 the administration of public servants must be based on principles;

1. Public interest involving the interests of many people but does not require a certain burden. Public interest or mutual interests must take precedence from individual interests and other interests. But still pay attention important proportion and still respect the interests of others.
2. Legal certainty in carrying out public services, automatically related to legal certainty because the law is one of the cornerstones of implementing public services which is carried out in accordance with the applicable legal rules. In addition, the behavior between the giver and the recipient of the service is bound by the law.
3. The equal rights in providing services do not discriminate.
4. The balance of rights and obligations between service providers and service recipients must meet their rights and obligations.
5. Professionalism is a skill and ability the most prominent in one particular field.
6. Participatory in the implementation of public services by paying attention to needs and expectations and aspirations of the community.
7. Equation handling or non-discriminatory handling obtained in carrying out public services is the same without looking at social strata.
8. Openness all information regarding public services delivered transparently so that it is more easily understood by the community.
9. Accountability of public services provided must be legally accountable.
10. Facilities and special handling for groups, everyone gets the same service and there is no handling which is specific to certain groups.
11. Vulnerable because it's very easily carried away and affected by things that will make people distrust.
12. Timeliness the implementation of public services must be completed according to the predetermined target by service providers.
13. Speed, convenience and affordability of facilities and infrastructure adequate so that services can be affordable by all levels of society and more facilitated with the presence of information technology.

According to Munhurrun, Bhiwajee Naidoo (2010) there are 5 dimensions of service quality in the public service, are: 1) Tangibles; 2) Reliability; 3) Responsiveness; 4) Assurance; and 5) Empathy. In line with research Hardiyansyah (2011) there are 5 dimensions of the quality of public services, that is:

1. Physical evidence that is the government's ability to demonstrate its existence to the community. Appearance and ability of facilities and infrastructure physical government and the state of the surrounding environment is proof of the service provided by service providers that include physical facilities (buildings, warehouses, etc), equipment and equipment used (technology), and the appearance of its employees.
2. Reliability that is the government's ability to provide services according to the promised accurately and reliably. Performance must be in accordance with community expectations which means timeliness, the same service, for all customers without mistakes, a sympathetic attitude, and with high accuracy.
3. Responsiveness that is the ability to help and provide services that are fast (responsive) and appropriate to the community, with clear information. Do not let the public wait without a clear reason cause negative perceptions in service.
4. Guarantee and certainty that is knowledge, courtesy, and ability of government employees to foster community trust in the government. Consists of several components including communication, credibility, security, competence, and courtesy.
5. Empaty that is give sincere attention and individual or personal given to the community by trying to understand people's desires. Where the government is expected to have understanding and knowledge of the interests of society, understanding community needs specifically, and have a comfortable operating time for the community.

Law Number 25 of 2009, states that service standards are the benchmark used as guidelines for the implementation of services and references for evaluating service quality as the obligation and promise of the organizer to the community in the framework of quality, fast, easy, affordable and measurable services. One form of public service system is integrated service. Based on Government Regulation of the Republic of Indonesia Number 96 of 2012, integrated service system is one management unit in service delivery implemented in one place and controlled by a management control system to simplify, accelerate, and reduce costs. Integrated service systems are very important to run because they have many goals and benefits that is; 1) Providing legal protection and certainty to the community, 2) Bringing service closer to the community, 3) Shortening the service process, 4) Realizing a fast, easy, cheap, transparent, sure, and affordable service process, 5) Provide wider access to the community to obtain services. Integrated service system can be done based on the principle of integration, economics, coordination, delegation or delegation of authority, accountability, and accessibility.

Scope of public services consists of three activities which includes service of public goods, public services, and public administration services. The following is an explanation in more detail:

1. Service of public goods covering several activities that is; a) Procurement and distribution of public goods carried out by government agencies part or all of the funds sourced from the regional income and expenditure budget, b) Procurement and distribution of public goods carried out by a business entity the capital of its establishment partially or wholly sourced from state wealth and or regional assets separated, c) Procurement and distribution of public goods whose funding is not sourced from the regional income and expenditure budget or business entity whose

capital is established partially or wholly sourced from regional assets separated, but its availability is a state mission stipulated in legislation.

2. Public services include several activities that is; a) Provision of public services by government agencies part or all of the funds sourced from the state's income and expenditure budget and or regional income and expenditure budgets, b) Public service providers by a business entity the capital of its establishment partially or wholly sourced from state wealth and or regional assets separated, c) Public service providers the financing not sourced from the state revenue and expenditure budget or regional income and expenditure budget or business entity whose capital is established partially or wholly sourced from state wealth and or regional wealth separated, but its availability is a state mission stipulated in the laws and regulations.
3. Public administration services covering several activities that is; a) Government administrative actions which is required by the state and regulated in laws and regulations in order to realize protection personal, family, honor, dignity and property of citizens, b) Administrative actions by non-government agencies which is required by the state and regulated in legislation and applied according to the agreement with service recipients.

According to the Republic of Indonesia Government Regulation Number 96 of 2012, administrative service is services organized by the organizer and produce various forms of official documents needed by the community. Lack of good data about governance in rural areas, Jairo, Nguyen, Tran and Phung (2015) in their research measured the quality of governance by using the public administration with 6 dimensions, are: 1) Participation at local levels; 2) Transparency of information; 3) Vertical accountability; 4) Control of corruption; 5) Public administrative procedures; and 6) Public service delivery.

According to Laws and Regulations Number 96 of 2012, public administrative services carried out by government agencies can be held in two forms, that is;

1. Public administration services in the form of licensing, namely: a) a. Building Construction Permit; b) Trading Business License; c) Other permissions; d) Approval letter
2. Public administration services in the form of non-licensing, namely: a) Identity Card; b) Taxpayer Identification Number; c) Vehicle Ownership Proof; d) Land certificate

Administrative Services is a service carried out by a particular unit by covering activities recording and data collection, researching, making a decision, and documented and implementing various activities related to comprehensive administration which will eventually produce products in the form of documents, such as an annotated document, permission, and recommendations and so on. Public administration services can be in the form of providing services for making ID cards, loading family cards, domicile information, making land documents, recommendation for business place permits, legalizing, moving letters, making birth certificates (Pasolong, 2014). Public administration services will produce various types of official products which is for the whole community.

Administrative processes according to Chatzoglou, Chatzoudes, Vraimaki & Diamantidis (2013) such as passports, visas, driver's licenses, military status certificates, birth certificates, marriages status certificates, duplicate criminal records, public transportation permits, applications for seasonal unemployment benefits, passenger vehicles, various procedures regarding public financial services, etc. through a citizen service center (CSC) citizens can make requests about the process and staff fill out applications through electronic applications thus saving a lot of time. Citizen service

centers can reduce the level of government bureaucracy and increase the overall efficiency of the public sector

Citizens are one element of the formation of a country. Citizens consist of people who occupy an area and have relations with the state. Every individual who has settled in a country, will become citizens and will have rights and obligations as citizens. Rights are things that will be obtained and obligations are things that must be done. Citizen rights are things that are accepted by citizens after carrying out all obligations as citizens while the obligations of citizens are all things that must be carried out by citizens in order to obtain rights.

One of the rights owned by citizens is the right to obtain public services. Based on Law Number 25 of 2009, citizens' rights in public service, consisting of: 1) Know the contents of the truth of service standards; 2) Oversee the implementation of service standards; 3) Get responses to complaints submitted; 4) Obtain advocacy, protection and / or fulfillment of services; 5) Notify the organizer of the leader to improve service if the service provided is not in accordance with the standard of service; 6) Notify the executor to improve service if the service provided is not in accordance with the standard of service; 7) Complaining with implementers, who make service standard deviations and or not improve services to organizers and ombudsmen; 8) Complaining about the implementation of a service standard deviation and / or does not improve service to the organizer of the organizer and the ombudsman; 9) Get quality service in accordance with expectations and service goals.

Based on previous research regarding speed strategies, public administration services, and fulfillment of basic rights of citizens which has not been conclusive because of the limitations of empirical research. Therefore, this study estimates that the service speed strategy is able to fulfill the basic rights of citizens through public administration services. So the scheme of the basic research framework used in this research can be presented in the following figure:

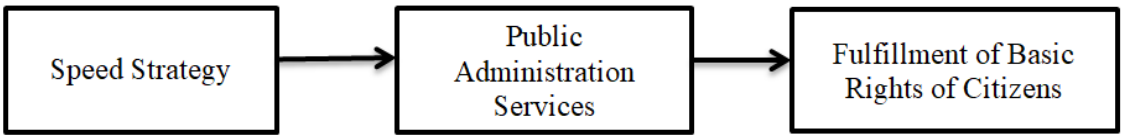

Figure 1. Research framework model

The model used in this research will be formulated into two models. Direct influence model relating to the construct of speed strategy and the consequences of consequences towards fulfilling the basic rights of citizens. Indirect influence model service speed strategy in fulfilling the basic rights of citizens through public services.

Based on the formulation of the problem that has been observed and review the theories contained in this research then the conceptual model is obtained so the hypothesis in this study can be formulated as follows:

1. Speed strategies have a positive and significant influence on fulfilling the basic rights of citizens in rural areas.
2. The speed strategy has a positive and significant influence on fulfilling the basic rights of citizens through public administration services in rural areas.

METHODS

This research was conducted using survey design and use research methods in quantitative form. The target population is the villagers located in several districts in Jambi Province that is Tanjung Jabung Barat, Batanghari, Muara Jambi and Sarolangun,

the reasons for choosing the four districts as a target population because the four districts are districts with the largest population growth rate in Jambi Province.

Total samples was taken based on simple random sampling technique by using Slovin formula with a confidence level of 90% so that a sample of 100 people was obtained.

The data used to test the hypothesis is primary data generated from structured questionnaires which is the instrument of this research. Operational variables are consists of variables contained in the research hypothesis. Tests carried out in this study using data analysis tools that is Partial Least Square (PLS) using smart-PLS software. Operationalization of variables can be seen in detail in Table 1.

Table 1. Operational variables

Variable	Dimension	Scale	No Item
Speed Strategy (SK)	1. Self-esteem 2. Meet expectations 3. Revamping and rediscovering various things 4. Outlook 5. Continuous improvement 6. Attention 7. Empowerment	Ordinals	1-7
Public Administration Services (AP)	1. Transparency 2. Accountability 3. Conditional 4. Participatory 5. Equal rights 6. Balance of rights and obligations	Ordinals	1-6
Fulfillment of Basic Citizens' Rights (HD)	Basic rights of citizens in public services	Ordinals	1-9

Structural equations formulated to state causality relationships between various constructs. Structural equations are:

$$HD = \beta 1SK + e1 \quad \text{..... (1)}$$

$$HD = \beta 2SK\ AP * \beta 3AP\ HD + e2 \quad \text{..... (2)}$$

Furthermore, the construct contained in this study will be grouped according to the level of each construct. To find out increase in each construct it can be done in a way comparing between actual values and ideal values. Actual value is the value obtained from the calculation results the respondent's answer as a whole. While the ideal value is the value obtained from the estimated maximum or highest score multiplied by the number of questions listed on the questionnaire then multiplied again by the total number of respondents.

$$Score\ value = \frac{Actual\ score}{Ideal\ score}\ x\ 100\% \quad \text{..... (3)}$$

Score value can be determined according to the distribution of scores which can be seen in Table 2.

Table 2. Distribution of scores

Score	1	2	3	4	5
Level	Very Low	Low	High enough	High	The tallest
Score value	20 - 35.9	36 - 51.9	52 - 67.9	68 -83.9	84 - 100

Based on Table 2, can be seen that number 1 is the minimum value or the lowest value from the scores contained in the questionnaire with score values at intervals or range 20 - 35.9. Furthermore, it is known that number 2 is included in the low category from the scores contained in the questionnaire with score scores at intervals or ranges 36 - 51.9. Then number 3 is in a fairly high category from the scores contained in the questionnaire with score scores in intervals 52 - 67.9. Number 4 is in the high category from the scores contained in the questionnaire with score scores at intervals or ranges 68 - 83.9 and number 5 is the maximum value or the highest value of the scores found in the pastry with a score score in the interval 84-100.

RESULT AND DISCUSSION

Result

Description of the speed strategy variable has been implemented as presented in Table 3.

Table 3. Description of speed strategy variable

Sub Variable	Item	Actual Score	Max. Score	(%)	Information
Self-esteem	SK1	393	500	78.6	High
Meet expectations	SK2	386	500	77.2	High
Revamping and rediscovering various things	SK3	389	500	77.8	High
Outlook	SK4	402	500	80.4	High
Continuous improvement	SK5	408	500	81.6	High
Attention	SK6	403	500	80.6	High
Empowerment	SK7	399	500	79.8	High
Average value speed strategy				79.4	High

All items of speed strategy variable have been implemented in a high way. The comprehensive service speed strategy implemented in rural areas consists of; 1) self-esteem is the service officer or official in accordance with the skills and expertise possessed, 2) meet the expectations of the officer making service standard adjustments with the times and adapt them to the expectations of society, 3) revamping and rediscovery of various things is service officers receive all complaints from the public regarding the services provided, then analyze the complaint and improve the service to be implemented, 4) foresight is a public service officer utilizing technology so that work becomes more effective and efficient, 5) continuous improvement is service personnel create a good work environment and implement the best service in meeting the needs of the community, 6) attentive is a service officer providing services that are able to provide satisfaction to the community and 7) empowerment, that is, the government provides training, education, and appreciation to service officers so that they can better serve the community.

Description of variable public administration services has been implemented as presented in Table 4.

Table 4. Description of public administration services variable

Sub Variable	Item	Actual Score	Max. Score	(%)	Information
Transparency	AP1	398	500	79.6	High
Accountability	AP2	397	500	79.4	High
Conditional	AP3	385	500	77.0	High
Participation High	AP4	375	500	75.0	High
Similarity of Rights	AP5	395	500	79.0	High
Balance of Rights and Obligations	AP6	400	500	80.0	High
Average value of public administration services				78.3	High

All items of public administration services have been implemented in a high way. Comprehensive public administration services implemented in rural areas consist of: 1). Transparency is services provided to the community is open and can be known by the general public. 2). Accountability is the service provided can be accounted for in accordance with the provisions of the applicable laws and regulations. 3). Conditional is a service provided in accordance with the capacity owned based on the principle of effectiveness and efficiency. 4). Participatory is the service provided focused on having the aspirations conveyed, the needs and expectations of the community. 5). Equality of rights where the people who enjoy the service will get the same treatment without exception. 6). Balance of rights and obligations is service always puts justice first.

The description of the variable fulfillment of basic rights of citizens has been implemented as presented in Table 5. The comprehensively basic rights of citizens in public services implemented in rural areas the overall basic rights of citizens in public services has been implemented. The community oversees the implementation of service standards, gets a response to the complaint filed, protection, and fulfillment of services. The community notifies the office leader to improve service to the community if the service provided is not in accordance with the standard of service. The community notifies service personnel to improve service if the service provided is not in accordance with the standard of service, complained about the implementers who committed irregularities service standards that do not improve service to organizers. The community complained about the service office to people who make service standard deviations and does not improve service to the community. The community gets quality services according to the government's goals.

Table 5. Description of fulfillment of basic rights of citizens variable

Sub Variable	Item	Actual Score	Max. Score	(%)	Information
Basic rights of citizens in public services	HD1	375	500	78.0	High
	HD2	366	500	73.2	High
	HD3	395	500	79.0	High
	HD4	407	500	81.4	High
	HD5	396	500	79.2	High
	HD6	400	500	80.0	High
	HD7	385	500	77.0	High
	HD8	374	500	74.8	High
	HD9	405	500	81.0	High
The average value of fulfilling the basic rights of citizens				77.8	High

The outer loading value in each statement on the speed strategy construct, construct of public administration services, and the construction of fulfilling the basic rights of citizens categorized as valid because it is above the value of 0.50 (Table 6).

Table 6. Outer loading

Public Administration Services (AP)		Fulfillment of Basic Citizens' Rights (HD)		Speed Strategy (SK)	
AP1	0.741	HD1	0.819	SK1	0.828
AP2	0.858	HD2	0.754	SK2	0.877
AP3	0.827	HD3	0.833	SK3	0.814
AP4	0.880	HD4	0.846	SK4	0.831
AP5	0.895	HD5	0.797	SK5	0.830
AP6	0.846	HD6	0.790	SK6	0.836
		HD7	0.788	SK7	0.706
		HD8	0.655		
		HD9	0.685		

Next to find out if there are still problems related to measurement then it can be tested for unidimensionality. Test for unidimensionality is a test done to measure indicators on composite reliability and cronbach's alpha. The function of composite reliability is to measure the value of reliability on each indicator which is included in a construct. Constructions are said to meet the criteria if composite reliability has a value that is composite reliability > 7 (Table 7)

Table 7. Composite reliability and Cronbach's Alpha

	Composite Reliability	Cronbach's Alpha
Public Administration Services (AP)	0.936	0.918
Fulfillment of Basic Rights of Citizens (HD)	0.931	0.917
Speed Strategy (SK)	0.934	0.917

Based on Table 7, it can be seen that composite reliability to construct service strategies, construct of public administration services, and the construction of fulfilling the basic rights of citizens get a value above 0.7, therefore it can be categorized as fulfilling the requirements. In addition, the resulting value also affects the cronbach's alpha value.

Based on Table 7, it can be seen that the value of cronbach's alpha to construct speed strategies, construct of public administration services, and fulfillment of basic rights of citizens is at a value that is above 0.6 so the measurements taken are categorized as reliable.

Path coefficient value obtained from the results of tests conducted on the model. The model was tested using sequential equation modeling through the smart 3.0 PLS program. The value of the path coefficient obtained shown in Figure 2.

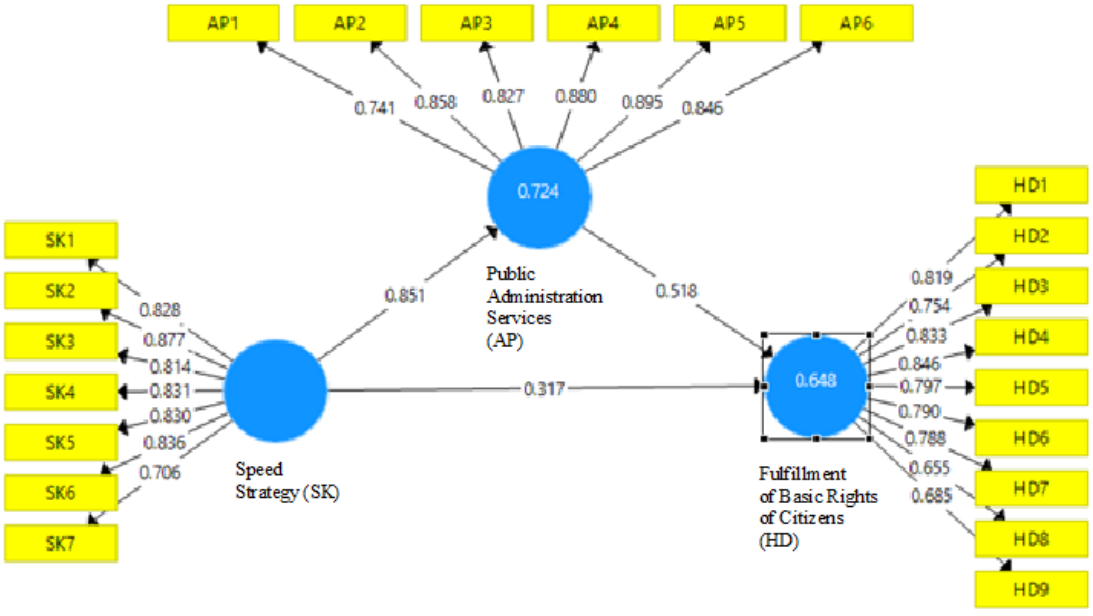

Figure 2. Path coefficients for speed strategies, public administration services, and fulfillment of basic rights of citizens

Research Model 1 HD = 0.317 SK + e1 ..... (4)

Parameter coefficient value obtained for construct speed strategy (SK) towards the construct of fulfilling the basic rights of citizens (HD) that is equal to 0.317 so that it can

be stated that speed strategy is able to have a positive influence towards fulfilling the basic rights of citizens that can be known from responsiveness provided by service personnel in response to all community needs and it can be said that fulfillment of basic rights of citizens will increase with the speed strategy.

Research Model 2 HD = 0.851 SK AP * 0.518 AP HD + e2 ..... (5)

Parameter coefficient value obtained for construct speed strategy (SK) towards the construct of fulfilling the basic rights of citizens (HD) through public administration services (AP) can be known based on the parameter coefficient value to construct speed strategy (SK) towards public administration services (AP) that is equal to 0.851 and parameter coefficient values for the construction of public administration services (AP) towards fulfilling the basic rights of citizens (HD) amounting to 0.518. The results of data processing using PLS regarding the construct of speed strategy (SK) towards the construct of fulfilling the basic rights of citizens (HD) through the construct of public administration services (AP) by showing an indirect effect that is equal to 0.441. These results indicate that the parameter coefficient value between the speed strategy (SK) of the construct of fulfilling the basic rights of citizens (HD) through public administration services can be interpreted that speed strategy (SK) applied by the organization has positive benefits for the fulfillment of basic rights of citizens (HD) which is implemented through public administration services (AP).

Hypothesis testing is done statistically can be known by looking at the output parameter values of the hypothesis test which corresponds to the table of total influence which can be seen in Table 8.

Table 8. Total influence

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AP -> HD	0.518	0.515	0.112	4.640	0.000
SK -> AP	0.851	0.848	0.037	22.922	0.000
SK -> HD	0.757	0.754	0.068	11.173	0.000

Hypothesis 1: Speed strategy has a positive and significant effect towards fulfilling the basic rights of citizens in rural areas.

The hypothesis which states that the speed strategy has a positive and significant effect on the fulfilment of the basic rights of citizens in rural areas has strong support (hypothesis is acceptable). These results are in accordance with the initial prediction (hypothesis), the speed strategy of officers in providing services is in accordance with service standards and implementing services that best meet the needs of the community so that the basic rights of citizens in rural areas are getting better.

Hypothesis 2: The speed strategy has a positive and significant influence on fulfilling the basic rights of citizens through public administration services in rural areas.

The hypothesis which states that the Speed Strategy has a positive and significant influence in fulfilling the basic rights of citizens through public administration services in rural areas has strong support (hypothesis is acceptable). This result is in accordance with the initial prediction (hypothesis), public administration services with the main goal of satisfying citizens can be a mediator between speed strategies which is a means in fulfilling the basic rights of citizens.

Discussion

This research shows that the speed strategy is able to have a positive influence on the fulfillment of the basic rights of citizens which can be seen from the responsive

attitude given by service officers in responding to all community needs. Fulfillment of basic rights of citizens will increase with the speed strategy. The service speed strategy has been implemented in rural areas.

The speed strategy in carrying out public services fulfills the basic rights of citizens in rural areas. The community already knows the contents of the truth of service standards and oversees the implementation of service standards. In the complaints submitted, the public received a satisfying response and protection. If the services provided are not in accordance with service standards, the community notifies the service officer to improve services and the public can complain the implementer who deviated service standards to the organizer.

Communities can complain about service offices that deviate service standards and do not improve services to the community. The speed strategy of public administration services in fulfilling the basic rights of citizens in rural areas shows that public administration services in the countryside are transparent, accountable, conditional, participatory, equality of rights and obligations so the services provided to the community is open and can be accounted for in accordance with the provisions of the legislation in force. Owned capacity is guided by the principles of effectiveness and efficiency, focus on the aspirations conveyed. The community enjoys services and gets the same treatment without exception. The services provided prioritize justice.

This research is in line with the research conducted by Angkat, Kadir, & Isnaini (2017) and Saputra, Afifuddin & Widodo (2019) which shows that public administration services have been carried out properly in accordance with applicable requirements and procedures, service officers handle community complaints and the community feels comfortable when handling administrative files.

CONCLUSIONS AND RECOMMENDATIONS

Conlucsions

1. Speed strategy with fulfilling the basic rights of citizens in rural areas.
   The speed strategy has a positive and significant influence on fulfilling the basic rights of citizens in rural areas or in other words fulfillment of basic rights of citizens in rural areas can be improved through a strategy of speed of public service.
2. The speed strategy of public administration services in fulfilling the basic rights of citizens in rural areas.
   Speed strategy has a positive and significant effect towards fulfilling the basic rights of citizens through public administration services in rural areas or in other words public administration services is a mediation between the speed strategy and the fulfillment of the basic rights of citizens in rural areas.

Recommendations

1. The speed strategy in fulfilling the basic rights of citizens is in accordance with the service standards set by the government but it would be better if in fulfilling the basic rights of citizens through public administration services which can directly show the satisfaction of citizens in obtaining these services.
2. Research the strategy of the speed of public administration services in fulfilling the basic rights of citizens in rural areas still leaves potential results for further study where in this study the speed strategy has a greater influence if mediated by public administration services in rural areas rather than a direct relationship to the fulfillment of the basic rights of citizens. So for future research it is recommended to be able to focus on public administration services in fulfilling the basic rights of citizens.

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The structure and the leadership: The actualization of good management of Indonesian University

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Abstract

The objective of this paper is to discuss the concept of good university governance and the structure of university in Indonesia. In particular, the paper focuses on the structure of university in order to improve the good university governance in Indonesia. Good University Governance is basically setting the organizational structure, the process of business, as well as program and activities in the planning procedure. Leaders are different from managers. The leader is chosen and earned the academic leadership and the authority. Academic leaders are mandated to lead and a combination of academic leaders and managers. A university should apply academic leadership in every level. It is necessary to implement the checks and balances of executive authority, which can be performed by the university and faculty academic senate. Avoid conflicts of interest as well as multiple positions in implementing good governance in a university.

***Keyword**: Good university governance, University structure, University leadership*

JEL Classification: M1, L3

INTRODUCTION

Education is an important part in a country and became one of the main indicators to measure the progress of a country. Through the education as well, a country strives to improve the competitiveness of human resources that can provide a positive impact for the country. As an educational institution, the university became a major institution to generate human resources quality.

However, over the times, in order to face the economic transformation, technological and social conditions, the university is required to balance its role. Not only for knowledge transfer, but it may become an intellectual center while stays relevant to the environment, technology and social conditions (Stevenson, 2004). The objective of a universities is expected not only to create qualified human resources and ready to work, but more than that, becoming the nation's agents in manage and directing the changes in the nation (Sadjad, 2004; Stevenson, 2004).

Organization of universities have an extensive coverage that includes the management of science, lecturers, human resources support, students, facilities and infrastructure of academic, academic programs, academic information on the three fundamental tasks of university (education, teaching and public services) (Sadjad, 2004).

Universities in Indonesia is an educational institution that aims to prepare qualified human resources who have the academic ability and professional capability in order to

improve and ensuring the national life (Muhi, 2010). Generally, the university in Indonesia may consist of colleges, institutes, and polytechnics. Universities can organize academic, professional and vocational education programs diploma (D1, D2, D3, D4), undergraduate (S1), master (S2), doctorate (S3), and specialists. According to Undang-Undang No. 12 Tahun 2012 pasal 1 ayat 1 on higher education, the university is an institution of higher education with the level of education after secondary education which includes diploma, undergraduate, master program, doctoral and professional programs, as well as specialist program.

Good governance is one of the important aspect on the management of university these days. Good governance is a system that will guide and controls the university organization. With the implementation of good governance, the university is expected to improve its image to the public, that eventually will increase the public trust and participation on the role of universities (Muhi, 2011; Sumarni, 2010). Hence, every university should start and establish good governance with the principles of transparency, independence, accountability, and responsivness. The fourth perspective can be a good indicator in order to implement good governance at university in Indonesia (Jalal & Supariadi, 2001).

The implementation of good governance on university in Indonesia cannot be separated from issues of accountability and program planning activities, as well as indicators of performance assessment. The Government of the Republic Indonesia requires the implementation of good governance in all public and private universities in Indonesia (Sumarni, 2010). However, the implementation of good governance is faced several challenges in particular areas, especially the issue of transparency and accountability to implement certain activities. Based on the audit report of the Supreme Audit Agency (Badan Pemeriksa Keuangan) in 2013 noted that several issues regarding transparency, accountability and responsibility, as well as the irregularities in several public universities in Indonesia (Badan Pemeriksa Keuangan Republik Indonesia, 2013).

The purpose of this paper is to discuss the concept of good university governance and the structure of university in indonesia. In particular, the paper focuses on the structure of university in order to elevate the good university governance in Indonesia. Moreover, this paper consists of four section as follows. Section one present the introduction of the university, good university governance and several issue in the implementation of good university governance in Indonesia. Section two provide a brief discussion related to the university in Indonesia and the structure of university in Indonesia. Section three discusses the leadership in higher education. Section four provide discussion related to the actualization of good management in the university. Finally, section five present a summary and recommendation.

STRUCTURE OF PUBLIC UNIVERSITY IN INDONESIA

Higher education throughout the world has undergone intensive changes during these decades, including in Indonesia. In general, most of the Western countries attempt to deal with the changes by implementing a large-scale structural reformation program, which aims to change the pattern of regulation and structure of higher education (Davidovitch & Iram, 2015; Norton, 2014). Meanwhile, in European countries, various higher education reformation programs have been carried out since the early 1980s, the objective is to restructure the relationship between the government, society, and institutions of higher education (Dobbins & Knill, 2009). In addition, in Australia, a

committee was formed with the purpose of evaluating and examine the governance structures and the changing needs for the management of higher education institutions in the context of the new global economy (Bradley, Noonan, Nugent, & Scales, 2008).

Currently, various countries such as France, Sweden, Turkey, and Russia tend to use higher education structure patterns towards a country-centered structural approach (Mizikaci, 2006; Panova, 2008). This structural approach views a higher institution as a public institution operated by the government with the aim of meeting national objectives (Davidovitch & Iram, 2015). Moreover, the government directly operates and coordinates entire aspects of higher education programs, including admission requirements, determining candidates, and admission of academic faculties, examinations, curriculum, and other academic programs (Davidovitch & Iram, 2015; Dobbins, Knill & Vögtle, 2011). The university is strictly monitored, the administration is controlled by the government, and the university is given sufficient autonomy (Dobbins, Knill & Vögtle, 2011).

Meanwhile, in Australia, a university is viewed as a large industry and capable of generating high profits. In this country, higher education structure patterns are generally based on market-oriented structure approaches or also known as entrepreneurial universities (Bradley et al., 2008; Davidovitch & Iram, 2015). According to this structural approach, the government does not take steps or decisions related to the design and planning of the higher education system (Bradley et al., 2008). Instead, the government promotes the competition and increases the quality assurance as well as transparency in academic institutions level (Davidovitch & Iram, 2015; Lokuwaduge & Armstrong, 2015).

In the context of Indonesia, according to the law of the Republic of Indonesia number 12 of 2012 article 4 which regulates the function of higher education, the function of universities in Indonesia are: 1) Develop the character, capacity, and civilization of the nation's dignity in the context of the intellectual life of the nation; 2) Developing innovative, responsive, creative, highly-skilled, competitive, and cooperative academic community through the implementation of Tridharma; 3) Developing science and technology by observing and apply the value of humanities.

In addition, the law of the Republic of Indonesia number 12 of 2012 article 5 which regulates the objective of higher education have mentioned four main objectives of universities in Indonesia, namely: 1) Developing the potential and talents of students in order to become a qualified human resource for the interests of the nation; 2) Generates the best graduates who master science and technology to meet the national interests and increase the nation's competitiveness; 3) Generates science and technology through the research and apply the value of humanities for the benefit of the national progress; 4) The realization of community service based on reasoning and research works that are beneficial in promoting the general welfare and educating the nation.

In order to understand the good university governance in Indonesia, there are several important points that need to be explored (Tamin, 2015), namely: 1) The higher education system and the position of the university; 2) The dignity of the university; 3) The governance and the university accountability framework; 4) The organization and governance; 5) Leadership and election of university leaders

Currently, the management and regulation of universities in Indonesia conducted by the Ministry of Research, Technology and Higher Education. Moreover, based on the laws and regulations, every university in Indonesia must have a Board of Legal Education,

which serves delivering fair and quality to the students, non-profit, and independent in order to promote national education (Muhi, 2011; Sumarni, 2010; Tamin, 2015).

According to the Indonesian Government Regulation No. 60 of 1999 on higher education, the public university is part of the government bureaucracy in education, the organizational structure of public universities in Indonesia consist of the Board of Trustee (*Majelis Wali Amanat),* the audit board (*Dewan Audit),* the university academic senate *(Senat Akademik Universitas),* The rectorate *(Pimpinan Universitas),* the dean of faculty *(Dekan Fakultas),* the directorate of planning and development *(Badan Perencanaan dan Pengembangan),* and the internal audit unit *(Unit Audit Internal)* (figure 1). In the organizational structure, the functions and role of these new bodies such as the Board of Trustee, the audit board, the university academic senate and the internal audit unit is very essential because it is the key of good governance implementation on public university in Indonesia.

The structure has adopted a the structure of government with the executive and legislative bodies that reflect elements of democracy and the mechanism of checks and balances in the decision making process, as well as the application of accountability principle.

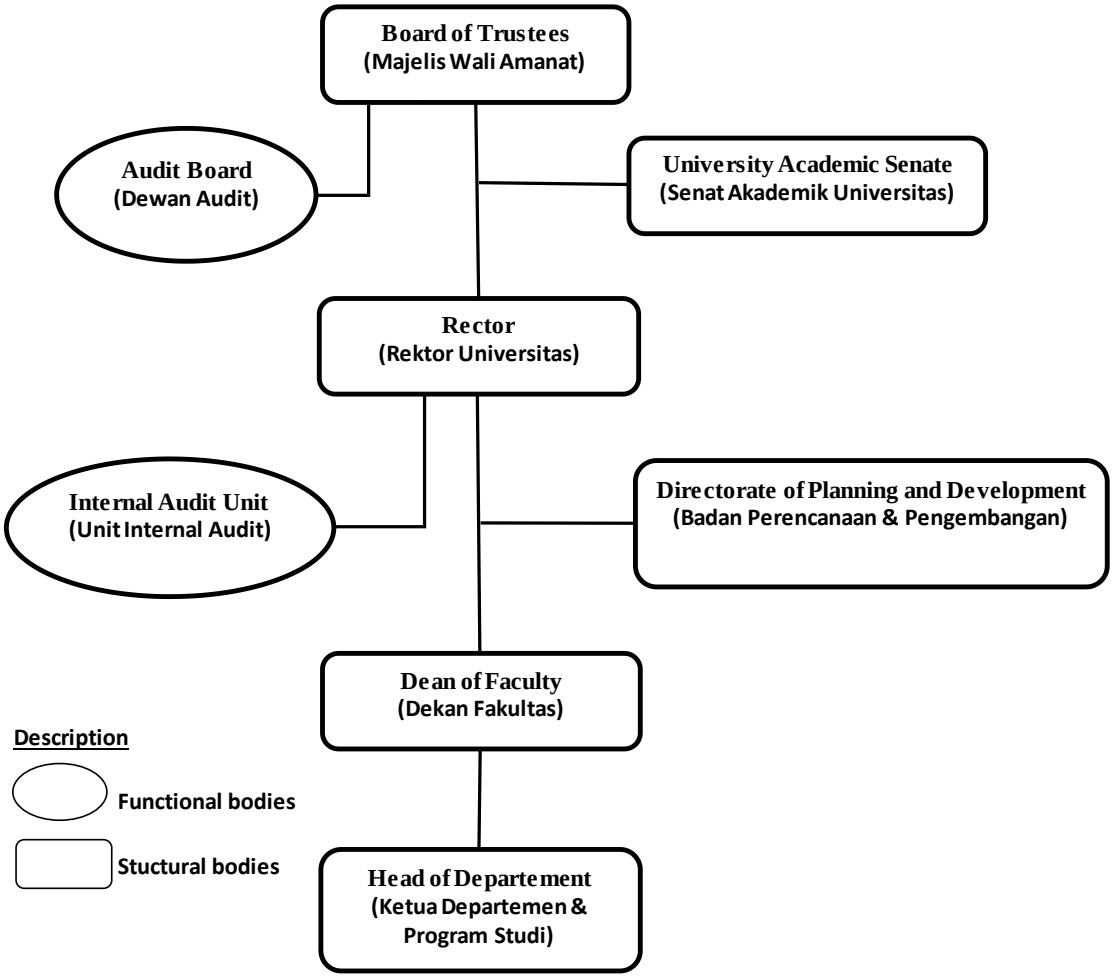

Figure 1. Organizational Structure of Public University in Indonesia
Source: Indonesian Government Regulation No. 60 of 1999

The organizational structure of public university above provide several important part on the management of university. The board of trustee is the highest governing body of the university, which is a forum of deliberation that represents the interests of the various parties (public, government, and academic society). The board of trustee is also an entity that also represents the principles of transparency, public accountability and professionalism in the management of the university. In general, the principal task of the board of trustee is to provide guidance to the management of the university, in the form of determining the general policy of the university both academic and non-academic, monitoring and control of the general university activities, and provide feedback improvements to the university, so the university has always in the path of vision and mission that has been determined.

The audit board is a functional unit that is implement the tasks and functions of the board of trustee to conduct an audit, both in academic and financial for the organization of the university. As a body established by the board of trustee, the tasks and functions of the audit board is comprehensive, they can perform independent audit of organs and work units throughout the university, and the results will be used to make improvements and corrections to the university, based on the principle of continuous improvement.

Meanwhile, the principal task of the university academic senate is to formulate academic policies and regulations that will be implemented by the university leaders and its staff. Every policy or academic processes are discussed and arranged by the university academic senate through plenary and commission meetings. The chairman and secretary of the university academic senate is a facilitator and catalyst for the realization of the detailed and transparent decisions. Hence, all policy will be submitted to the relevant internal organs.

The leader of university consists of the rector and vice rector. The key functions of the leader of university is implementing general policy of the board of trustee, academic policies of the university academic senate, and prepare a work plan and budget annually.

In preparing the academic program, the rector assisted by the directorate of planning and development that provide input to the integrated work program of the university, based on the university vision, mission, and goals universities. Hence, the work program will be implemented by the rector and its staffs. Thereby, there is a separation between planning and assignment as well as the implementation of the work plan by the rector with the rest of its work units. These mechanisms can be audited by the board of trustee through the audit board, and/or the results will be forwarded to the university academic senate as a feedback for further improvement.

The internal audit unit is the unit that will conduct regular audits on all unit under the Rectorate, monitoring the implementation of academic activities, budgets, rules and standard procedures, and control systems work in the university environment. Audit results from the internal audit unit will be used by the rector in policy making and subsequent decision, implement the Good Governance and as feedback to improve the mechanisms and procedures for the technical implementation of academic programs, financial and performance of every head of work units. The head of UAI appointed and responsible to the Rector, and the procedures, assignment, and position is regulated in the constitution and bylaws of the university.

The dean of faculty is one of the university organs and is under the Rector that facilitate, coordinate and lead the implementation of vocational education programs, academic, professional and continuing education, in a single or multi program, which are

supported by the infrastructure of education. The dean of faculty also lead the implementation of academic and human resource development, both lecturers and staff, and responsible to the Rector. The structure of faculty may consist of one or more study program with academic coordinated implementation into a department, which plays a role in assisting the dean of faculty on the implementation of academic activities.

THE LEADERSHIP IN HIGHER EDUCATION

Based on the previous discussion above, leaders in a university become the spearhead that determines the success of an organization. Indeed, the participation of subordinates is also very important. However, it is the command of the leader that will guide the direction and objectives of the organization. In the Indonesia higher education environment, the role of the rector or director as a leader seems to be key in the success of a university (Tamin, 2015). Therefore, the variety of academic products generate by a university, for instance graduates, research, and innovation can provide value added to the development of the country and nation (Sumarni, 2010).

The leadership distinguish between managers and leaders. Managers usually focus on the process of planning, organize, direct, coordinate and control (Austin & Jones, 2016). Meanwhile, leaders may include managers who focus on vision, align, coach & trust, empowerment, and care. The managers are appointed, authority is given to carry out their functions and duties (Tamin, 2015).

In a university environment, leaders can be called as the academic leaders (Tamin, 2015). An academic leaders are: 1) Have the academic authority; 2) His authority is recognized because it is trusted by his partner; 3) Based on their high capacity and excellent track record; 4) His leadership is earned; 5) Academic leaders are given the mandate to lead, not asking to be elected; no campaign and branding required.

According to the Indonesian Government Regulation No. 60 of 1999 on Higher Education, the structural academic leader may consist of the Chairperson of the university academic senate and or the faculty academic senate. Moreover, a functional academic leader usually consists of lecturer, associate professor and professor. The leadership is achieved because of their achievements/competencies, their authority is recognized because they are trusted by their colleagues and given the mandate to lead. A university needs to apply academic leadership (functional) everywhere (Tamin, 2015). According to Tamin (2015), all lecturers, associate professor, and professors are leaders, especially for students. An academic leader must be trusted, become a role model, visionary; broad dimensions (natural, human and social) and high wisdom (Sadjad, 2004).

At the university level, the university's executive leadership (Rector and Dean) is a combination of the abilities of academic leaders and manager skill (Austin & Jones, 2016). The university executive leaders must have a guarantee of competence (capacity to lead) and a good track record (Austin & Jones, 2016). Since it is transparent, open and there are many candidates (from entire lecturers) in the nomination of the university's executive leadership, it is necessary to find and do the election through a selection committee (Tamin, 2015).

The election process is based on selection rather than election based on capacity as well as track record and does not require campaigning and imaging (Tamin, 2015). Moreover, it needs an acceptability that is an acknowledgment of competence and achievements (earned), instead of acceptability through ballots and can also be

demonstrated through the support of the university academic senate and the faculty academic senate (Austin & Jones, 2016; Tamin, 2015).

THE ACTUALIZATION OF GOOD MANAGEMENT IN THE UNIVERSITY

In order to elevates the good management at the higher education environment, there are a number of important points (Tamin, 2015) that must be considered, namely:

1. The implementation of a governance system that guarantees a mechanism of check and balance as well as shared governance and collegiality. In the perspective of checks and balances, the governance is a process of delegation of authority for decision making. The delegation process requires the checks and balances on the authorized party to make decisions. Intrinsically, it will be associated to the perspective of decision making, where the governance will be related to the effectiveness of decisions making.
2. Implement a transparent management system. Implement a system that aims to avoid conflicts of interest and dual positions, reduce the practice of corruption, collusion and nepotism. improve efficiency and effectiveness, and use the principles of meritocracy and transparency in the appointment/dismissal of structural officials and staff. This also includes implementing a system of accounting and financial management that can be audited. Then, there are academic annual reports, and annual financial reports that are audited by public accountant.
3. Management system which includes academic management systems and resource management systems. The management system should include the functional areas of the university, including academic management system (*tri-dharma* university) and resource management system that includes, human resource systems, financial systems, infrastructure, data and information systems.
4. The leadership of the university is obliged to comply with applicable regulations. University leaders is mandatory and subject the laws and regulations, and adhere to the strategic policy framework (e.g. the planning system of long-term, medium-term/RENSTRA, and annual/RKAT) that has been established by the governing legal entity. Then apply the strategic planning system effectively and efficiently at the beginning of the academic year. University leaders define and fullfill the performance targets (based on the key performance indicators) that have been proposed and approved by the governing legal entity. The university leader should implement and execute quality standards mandated by the National Accreditation Board for Higher Education. University leaders are responsible for the submission of annual reports, which consist of audited annual financial reports and annual academic reports.

Moreover, the leadership of the university (the rector along with the deputy) and the university academic senate are important elements (Tamin, 2015). The academic senate has primary authority, not only academic, but also the direction and policy of higher education. The academic senate organization is also collective, and decision making is done together. The rector is the executive who is responsible for operational actions, protecting the interests of the university institutions and making execution decisions. In addition, the interaction on campus is based on academic interaction (scientific authority), not executive or bureaucratic authority (Sumarni, 2010).

In general, the organization of a university is a matrix, so it is necessary to differentiate between the resource organization and program organizations (Tamin, 2015). The resource organizations refer to managing resources (lecturers, education staff, educational facilities). Generally have a normative body (e.g. the faculty has a faculty academic senate) and manage the program. Meanwhile, the program organizations refer to program implementation (study programs, research & community service); transfer of resources, especially lecturers from program organizations (e.g. Research & Community Service Institute). Thus, resource organizations and programs must be able to work together in all academic activities. In particular, resource organizations must adapt and accommodate various management needs. As well, it must be implemented in a transparent, accountable and efficient.

Therefore, Muhi (2011), Sumarni (2010) and Tamin (2015) suggest several important points that must be considered in order to improve good management in the university, among others, first, the university leaders need to be equipped with the function of monitoring and quality assurance. Secondly, the checks and balances of executive authority (rector and dean) are required, which can be carried out by the university academic senate and the faculty academic senate. Finally, the conflicts of interest must be avoided as well as dual positions. Thus, the implementation of good university governance is expected to improve the quality of the organization of higher institutions as a whole, so that the higher institutions can meet the expectations of the community in order to educate the nation's life.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Good University Governance is basically setting the organizational structure, the process of business, as well as program and activities in the planning procedure. In order to achieve this, it is necessary to pay attention to principles such as transparency, accountability (to stakeholders), responsibility, independence (in decision making), fairness, quality assurance and relevance, effectiveness and efficiency.

Leaders are different from managers. The leader is chosen while the manager is appointed. Earned the academic leadership, authority is obtained because it is recognized by the colleague. Academic leaders are mandated to lead, not ask to be elected and no campaign or branding required. Rector is a combination of academic leaders and managers.

Recommendations

A university should apply academic leadership everywhere (become a role model for students). The appointment is more selection rather than election and its implementation through a selection committee. It is necessary to implement the checks and balances of executive authority, which can be performed by the university and faculty academic senate. Provide the function of monitoring and quality assurance in the organization. Avoid conflicts of interest as well as multiple positions. The points mentioned above need to be considered in designing governance and development as well as implementing good management in a university.

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Financial capacity of provinces in Sumatra during regional autonomy era

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Abstract

The regional autonomy policy gives greater authority to regencies and cities to take responsibilities both in terms of regional revenue or regional expenditure. Ideally, all the local government expenditures can be fulfilled with their Local Own-source Revenue, so that the region fully becomes an autonomous region which means that the dependence of central government to local decreases. According to the percentage of direct expenditure to total regional revenue of provinces in Sumatra, the average amount is less than 50 percent of regional income. Meanwhile, more than 50 percent of the total regional revenue of provinces in Sumatra is used for indirect expenditure. The average degree of fiscal decentralization of provinces in Sumatra from 2015 to 2017 has amount about 37 percent. It means that the fiscal decentralization degree was low, thus the budgeting performance was poor/bad. Financial independence level of provinces in Sumatra is 57.36 percent which means that the regions are considered to be independent enough in implementing regional autonomy. Financial dependence level of region is about 63.55 percent which means that the fiscal dependence of provinces in Sumatra is great enough and its budget performance is not so good. This shows that the region dependence in Sumatra on the aids from central funds is still very much felt and noticeable.

Keywords: *Financial capacity, Local Own-source Revenue, Regional revenue, Regional expenditure*

JEL Classifications: E62, H30, H72

INTRODUCTION

The regional autonomy policy gives greater authority to regencies and cities to take responsibilities both in terms of regional revenue or regional expenditure. According to Altunbas & Thornton (2011), several economists have made the case for fiscal decentralization (regional autonomy) as a means to promote better governance

Ideally, all the local government expenditures can be fulfilled with their Local Own-source Revenue (PAD), so that the region fully becomes an autonomous region which means that the dependence of central government to local decreases. However, in reality, after implementing fiscal desentralization there was an increase in the role of transfer mechanism from central government through balancing fund (Mahi, 2005). In addition, Thornton (2007) stated that results from a cross section study of 19 OECD member countries suggest that when the measure of fiscal decentralization is limited to the revenues over which sub-national governments have full autonomy, its impact on economic growth is not statistically significant

Mardiasmo (2002) stated that before the autonomy era, there was a high expectation from regional governments to be able to develop their region based on their own ability and motivation. However, the real condition is getting further from year to year. There are fiscal dependency and subsidies as well as central government support as the manifestation of the inability of PAD in financing regional expenses.

Sumatra is one of the four biggest islands in Indonesia. This island has an area of 473,481 km^2 with 10 provinces and 55,700,000 inhabitants in 2017, which is the second largest population after Java. In terms of PAD in 2015, North Sumatra Province has the highest PAD at 4.883 trillion rupiah, followed by Riau Province at about 3.476 trillion rupiah, and South Sumatra Province at about 2.534 trillion rupiah. Bengkulu Province has the lowest Local Own-source Revenue in Sumatra at 701.330 billion rupiah. In 2016, the highest PAD was owned by North Sumatra at 4.630 trillion rupiah or it was decreasing by 5 percent from the earlier year, Riau Province's PAD was 3.495 trillion rupiah, and South Sumatra Province's PAD experienced an increase of 8 percent compared to the previous year.

In terms of the total amount of balancing fund provided by the central government, Riau got the highest balancing fund in Sumatra in 2015 amounting to 2.548 trillion rupiah, followed by South Sumatra at 2.329 trillion rupiah and Aceh at 1.561 trillion rupiah. In 2016, the highest balancing fund was still given to Riau of 4.085 trillion rupiah, followed by South Sumatra at 2.713 trillion rupiah and West Sumatra at 2.649 trillion rupiah.

In 2016, the biggest regional expenditure was owned by Aceh at about 12.874 trillion rupiah and North Sumatra at about 9.950 trillion rupiah. Based on the above conditions, it is considered that regional autonomy implementation will carry some consenquences to the regional financial capacity or PAD that will differ according to its region capabilities and potential.

Regional expenditure that increases every year requires each region to increase their income. This case is also applied to provinces in Sumatra. From 10 provinces in Sumatra, it is found that revenues from PAD have not been able to finance region expenditure and the shortfall is covered by central government through balancing funds given to all provinces in Sumatra and from other regional revenues. As statement aforementioned, it can be concluded that the problem in this research are: 1) How is the budgeting allocation and regional expenditure of provinces in Sumatra?; 2) How is the financial capacity of the region, including degree of fiscal decentralization and financial independence/ dependence level of region?

METHODS

The data used in this study are secondary data, namely time series data from 2013-2017. Main data were obtained from relevant agencies, such as Directorate-General of Regional Fiscal Balance (Ministry of Finance of the Republic Indonesia), Indonesian Central Bureau of Statistics and Indonesian National Development Planning Agency.

The descriptive statistics were used in analyzing the data. This research uses measurement of financial capacity that includes of:

Degreee of fiscal desentralization calculated as: DDF = PAD / TPD

where: DDF = degree of fiscal decentralization
PAD = local own-source revenue
TPD = total of regional income

The measurement criteria are as in the Table 1.

Table 1. Classification of degree of fiscal desentralization

Ratio (%)	Summary
≤ 25	Fiscal capacity or degree of fiscal decentralization (DDF) is stated very low so that the budgeting performance is very low/bad as well.
25 – 50	Fiscal capacity or degree of fiscal decentralization (DDF) is stated low, so that the budgeting performance is low as well.
51 – 75	Fiscal capacity or degree of fiscal decentralization (DDF) is stated in medium, so that the budgeting performance is also medium or good enough.
76 - 100	Fiscal capacity or DDF is stated high, so that the budgeting performance is stated high or good.

Financial independence level of region calculated as: TKD = PAD/TPT
where: TKD = level of financial independence
PAD = Local Own-source Revenues
TPT = Total of transfer revenues

The measurement criteria are as in the Table 2.

Table 2. Classification of financial dependence level

Ratio %	Summary
≤ 25	The region is considered incapable
25 – 50	The region is considered not independent enough
51 – 75	The region is considered independent enough
76 - 100	The region is considered independent

Financial dependence level of region calculated as: TKtD = PT/TPD

where: TKtD = Level of financial dependence
PT = Transfer revenue
TPD = Total of Local Revenues

The measurement criteria are as in the Table 3.

Table 3. Classification of financial dependence level

Ratio (%)	Summary
≤ 25	Fiscal dependence is very little, which means that budgeting performance is excellent.
25 - 50	Fiscal dependence is good enough, which means the budgeting performance is good enough.
51 – 75	Fiscal dependence is great enough, which means the budgeting performance is not so good.
76 - 100	Fiscal dependence is very great, which means the budgeting performance is very bad.

RESULTS AND DISCUSSION

Allocation of income and regional expenditure in Sumatra

Prior to the era of regional autonomy, the government expenditure consisted of routine expenditure and development expenditure. The amount of routine expenditure is greater than that of development expenditure. After implementing regional autonomy,

routine expenditure of local government still has a dominant contribution if it is compared to the development expenditure. In the structure of routine expenditure, employee expenditure is still dominant, while in the structure of development expenditure, the biggest role comes from the transportation sector (Kusriyawanto, 2014).

Before the implementation of regional autonomy in 2000, there were eight provinces in Sumatra. In terms of the proportion of direct expenditure and indirect expenditure to the total income prior to regional autonomy, it shows that direct expenditure was greater than indirect expenditure to the total of regional income.

Allocation of direct expenditure was lower than indirect expenditure in 1997/1998. Regions that had allocation of direct expenditure of more than 50 percent were Jambi and Bengkulu, while other regions allocated their direct expenditure under 50 percent. In 1998/1999, even though the proportion of direct expenditure was still under 50 percent from the total income, there was a slightly increase from the previous period. Meanwhile there was a decline in indirect expenditure in 1998/1999. The increase was due to a decrease in total income and in indirect expenditure (Table 4).

The allocation of direct expenditure had bigger amount than indirect expenditure in 1999/2000. Most of provinces in Sumatra experienced an increase in direct expenditure. The increase of direct expenditure allocation in Sumatra had reached 50 percent. Along with the increase in direct expenditure allocation, the allocation of indirect expenditure experienced a decline as well. Increasing direct expenditure allocation is a commitment form between central government and regional governments to further enhance regional development and also the start of the implementation of regional autonomy.

Table 4. Allocation of direct expenditure and indirect expenditure provinces in Sumatra, before and after implementing regional autonomy (%)

Provinces	Before						After					
	1997/1998		1998/1999		1999/2000		2015		2016		2017	
	D	I	D	I	D	I	D	I	D	I	D	I
Aceh	28.99	63.35	39.67	60.14	59.09	43.16	43.29	60.6	54.42	48.16	52.20	50.89
North Sumatra	25.24	76.38	40.76	57.72	47.84	42.89	22.66	71.19	28.99	70.78	35.19	71.91
West Sumatra	44.17	56.99	38.26	51.52	39.14	49.20	41.03	58.22	45.98	57.90	33.37	68.51
Riau	45.31	43.48	44.32	40.52	42.85	44.13	47.71	64.58	73.58	71.01	63.26	61.00
Jambi	56.13	37.56	55.51	37.26	54.94	34.21	46.4	63.06	58.21	50.51	47.29	57.00
South Sumatra	41.63	48.48	34.61	55.64	43.02	44.98	34.75	51.89	31.68	50.23	39.90	43.62
Bengkulu	54.64	44.22	44.14	47.37	51.20	44.37	50.69	53.97	57.75	45.34	54.92	55.06
Lampung	43.75	60.03	45.59	48.24	46.95	51.43	44.00	55.87	41.66	58.49	34.82	66.36
Bangka Belitung	-	-	-	-	-	-	41.82	57.28	56.23	64.79	49.94	63.25
Kepulauan Riau	-	-	-	-	-	-	48.6	54.97	53.50	47.49	59.74	45.24

Notes: D = direct expenditure; I = indirect expenditure

Source: Directorate-General of Regional Fiscal Balance - Ministry of Finance of the Republic Indonesia (data processed)

In 2015 – 2016, there was an increase for direct expenditure allocation of provinces in Sumatra, goods and services expenditure and capital expenditure accounted for half of direct expenditure. Regions that had big portion of direct expenditure were Aceh, Riau, Bengkulu, Bangka Belitung and Riau Island as the developing provinces.

The amount of direct expenditure is an illustration of the government's commitment to the community development. Ideally, direct expenditure takes 70 percent of the total regional expenditure. From the allocation of direct expenditure, it is found that goods and services expenditure has the largest part, followed by capital expenditure and employee expenditure. The decline of goods and services expenditure is followed by an increase in capital expenditure and employee expenditure. Unfortunately, the increase in employee expenditure is greater than the increase in capital expenditure.

Apart from direct expenditure, another regional expenditure is indirect expenditure. Allocation of indirect expenditure for each province in Sumatra is not equal. Allocation of indirect expenditure has an average number of more than 50 percent of total income. Most of indirect expenditure in Sumatra was approximately 60.71 percent in 2015, 57.58 percent in 2016, and 58.8 percent in 2017. This decline was due to a decrease in some components of indirect expenditure such as grant expenditure, profit sharing expenditure with provinces/regencies and cities.

Even though there was a decline in three components of indirect expenditure, employee expenditure has the biggest portion in indirect expenditure and experiences an incline every year. The increase is caused by the increase in the number of employees, civil servant in region and contract employee, which would cause additional amount of employment expenditure.

In terms of the percentage of direct expenditure to the total of regional income of provinces in Sumatra, less than 50 percent of the regional income is used for direct expenditure. Large amount of indirect expenditure shows that expenditure budget for each province in Sumatra is not yet on target. Ideally, the budget allocation for indirect expenditure is about 30 percent of the total expenditure allocation.

Employee expenditure that takes in indirect expenditure allocation does not give any positive impact on the region expenditure because it is not giving any good impact on community development. Regional expenditure should not only be spent on paying employee salaries as well as useless events, but it should be directed towards activities that have a direct impact on the development of local communities.

Financial capacity of provinces in Sumatra

Degree of fiscal decentralization

Prior to the implementation of fiscal decentralization in 1999 - 2000, local governments still relied on and mobilized the existing local revenues and expenditure budget to enhance economic development. This was due to the central government role in regulating and controlling the regional government budgeting. Entering fiscal decentralization in 2001 – 2004, the effect of decentralization has increased on economic growth. This is because local governments have been given authority to utilize their own financial resources and supported by balancing funds from central to region (Kharisma, 2013). Ideally, through regional autonomy, each region is expected to be able financing its own region in accordance with their local/Local Own-source Revenues.

Prior to regional autonomy, local own-source revenues in all provinces in Sumatra made a very small contribution. In 1997/1998, the average degree of fiscal decentralization of provinces in Sumatra was about 28.97 percent. It experienced a decline in 1998/1999 to 24.12 percent, and to 22.85 percent in 1999/2000. During these years before regional autonomy era, DDF experienced a decline. It was due to the low income from locally generated revenue (own-source revenue) such as regional tax and retribution. DDF of provinces in Sumatra before regional autonomy was very low with DDF ratio less than 25 percent (Table 5). It means that the budgeting performance was bad/poor as well and its Local Own-source Revenues gave a very small contribution to the total regional income.

The degree of fiscal decentralizationafter regional autonomy experiences an increase, from a very low to low budgeting performance. From Table 2 it can be stated that DDF of provinces in Sumatra during 2015 – 2017 has an average of 37 percent. It means that DDF is low so that the budgeting performance is still low/bad.

Table 5. Degree of fiscal decentralization of provinces in Sumatra, before and after implementing regional autonomy (%)

Provinces	Before			After		
	1997/1998	1998/1999	1999/2000	2015	2016	2017
Aceh	15.15	26.00	13.06	16.88	16.39	15.58
North Sumatra	27.55	35.33	36.36	57.59	46.43	40.47
West Sumatra	36.52	26.54	25.74	46.31	41.23	33.46
Riau	38.96	26.60	23.52	50.31	46.06	42.17
Jambi	25.66	16.91	20.40	39.66	37.01	33.46
South Sumatra	33.49	18.78	23.63	42.31	38.84	36.80
Bengkulu	18.28	14.96	14.09	32.16	30.84	29.77
Lampung	36.16	27.85	26.04	46.94	45.71	39.40
Bangka Belitung	-	-	-	30.30	28.16	28.82
Kepulauan Riau	-	-	-	40.30	36.64	34.49
Average	**28.97**	**24.12**	**22.85**	**40.28**	**36.73**	**33.44**

Source: Directorate-General of Regional Fiscal Balance -Ministry of Finance of the Republic Indonesia (data processed)

This case can be intrepreted that the performance of provinces in Sumatra to implement autonomy is still very low. DDF was about 40.28 percent in 2015, 36.37 percent in 2016, and 33.44 percent in 2018. This means that the Local Own-source Revenues were still lower than the Total Regional Income.

Even though there is an increase on DDF of provinces in Sumatra after regional autonomy, the budgeting performance is still low which means that the Local Own-source Revenue still gives low contribution to the total regional income.

As stated by Setiaji & Hadi (2007), the contribution of Local Own-source Revenue to the regional expenditure during regional autonomy era is not much better than when it was before autonomy era, caused by the strong dependence of local governments on the central government. However, the growth of PAD during autonomy era has a positive difference compared to before autonomy.

Financial independence level of regions in Sumatra

Financial independence level of region is a ratio between Local Own-source Revenue and the total transfer revenue from central government. The bigger the value of TKD, the more independent the region is good enough.

Local Own-source Revenue before regional autonomy was smaller than in the earlier period of regional autonomy, which means that PAD experienced a big enough increase in the era of regional autonomy.

Level of regional independency of provinces in Sumatra before the regional autonomy was considered to be not independent enough. It can be seen from its average ratio of financial independence which was about 47.78 in 1997/1998, 35.15 in 1998/1999 and 35.30 in 1999/2000. TKD value less than 50 percent indicates that the Local Own-source Revenue is still very small compared to the transfer funds from central government. The support from the central government is used by the regional government to finance total regional expenditure that cannot be met by the Local Own-source Revenue (Tabel 6).

Level of financial independence of region of provinces in Sumatra during 2015 – 2017 (after regional autonomy) in average experienced a decline every year. Financial independence of region was 66.35 percent in 2015, 56.79 percent in 2016, and 48.94 percent in 2017. The TKD value shows that the regions are considered independent enough, which means that the role of central government has been decreasing and PAD's ability to finance the region development is good enough.

Table 6. Financial independence level of provinces in Sumatra, before and after implementing regional autonomy (%)

Province	Before			After		
	1997/1998	1998/1999	1999/2000	2015	2016	2017
Aceh	19.30	35.74	15.04	20.45	19.62	18.49
North Sumatra	38.92	55.02	75.85	136.31	87.21	68.08
West Sumatra	65.92	38.38	38.38	87.54	70.41	50.59
Riau	79.24	44.32	35.34	101.38	85.46	72.96
Jambi	38.78	22.64	27.52	65.78	58.79	50.31
South Sumatra	57.55	27.03	34.85	73.99	64.28	58.28
Bengkulu	23.98	18.34	17.85	47.47	44.98	42.46
Lampung	58.57	39.72	37.55	89.16	84.75	65.30
Bangka Belitung	-	-	-	43.48	39.34	40.73
Kepulauan Riau	-	-	-	67.53	57.87	52.69
Average	**47.78**	**35.15**	**35.30**	**66.35**	**56.79**	**48.94**

Source: Directorate-General of Regional Fiscal Balance -Ministry of Finance of the Republic Indonesia (data processed)

Based on the financial independence level in 2015, there were 2 provinces that had TKD value more than 100 percent, North Sumatra and Riau which were categorized as independent. This is because of PAD of both provinces can support their own development in the region. The less independent regions are Bengkulu, Bangka Belitung, and Aceh. These three provinces could not let go their fiscal dependency on the central government through transfer funds due to their PAD which is smaller than the transfer funds from central.

After implementing regional autonomy, financial independence of provinces in Sumatra experiences a positive growth and is categorized as independent enough. The growth in the financial independence is caused by the increase in Local Own-source Revenue of provinces in Sumatra. This finding is in line with the research conducted by Frediyanto & Purwanti (2010), which concluded that there was a significant difference of regional income before and after regional autonomy, except for PAD ratio.

After the implementation of regional autonomy, local governments tried to increase their PAD (Local Own-source Revenue) through the increase of tax and retribution. Local governments in the regional autonomy era are able to increase their Local Own-source Revenues. Nevertheless, the increase in PAD does not give higher contribution to APBD. Prior to regional autonomy, it was found that most of (88.57) regions had low financial capacity and still relied on funding from central to finance their capital expenditure. This condition is still happened even after regional autonomy implementation, the number of regions with low financial capacity even escalated (from 88.57 percent to 91.43 percent).

Financial dependence level of regions in Sumatra

Before the implementation of regional autonomy, the financial dependence on central government felt real, the centralistic financial system does not motivate provinces to explore their big potential of their region which can be used as their Local Own-source Revenue (Halim, 2001).

From Table 7, local fiscal dependence on the central government were still strong. It can be seen from the average number of TKtD that was between 51 – 75 percent. In 1997/1998, the regional fiscal dependence ratio was 64.52 percent, experienced an increase to 70.25 percent, and in 1999/2000 the ratio was 69.82. The increase in the ratio shows that the budgeting performance of local government keeps decreasing. Almost all provinces in Sumatra has a strong financial dependence on the central government with

TKtD value above 50 percent. This was caused by the absence of motivation from local governments to explore and make use of their region potential.

Table 7. Financial dependence level of province in Sumatra, before and after implementing regional autonomy (%)

Province	Before			After		
	1997/1998	1998/1999	1999/2000	2015	2016	2017
Aceh	78.50	72.77	86.81	82.55	83.54	84.28
North Sumatra	70.77	64.21	47.94	42.25	53.23	59.45
West Sumatra	55.40	69.14	67.06	52.91	58.55	66.13
Riau	49.16	60.03	66.54	49.62	53.90	57.80
Jambi	66.16	75.68	74.15	60.29	62.95	66.50
South Sumatra	58.19	69.49	67.79	57.18	60.43	63.15
Bengkulu	76.22	81.54	78.93	67.75	68.56	70.13
Lampung	61.73	70.12	69.34	52.65	53.94	60.34
Bangka Belitung				69.70	71.59	70.75
Kepulauan Riau				59.67	63.32	65.47
Average	**64.52**	**70.25**	**69.82**	**60.00**	**63.62**	**67.05**

Source: Directorate-General of Regional Fiscal Balance (Ministry of Finance of the Republic Indonesia) (data processed) (data processed)

After the implementation of regional autonomy, local financial dependence since 2015 – 2017 experienced an increase every year. Almost all provinces in Sumatra relied on the transfer funds from central government as their source of income. In 2015, TKtD value experienced an increase to 60 percent, then added to 63.62 percent in 2016, and increased up to 67.05 percent in 2018. It means that the fiscal dependence in Sumatra is great enough and the budgeting performance and is not so good.

High level of regional financial dependence on transfer funds from central government shows that regional income sourced from PAD could not give big contribution to the total regional income. Kuncoro (2007); Amril, Erfit, Safri (2015); Ekawarna (2017) gave an empiric fact about the phenomenon of Flypaper Effect, that there is a high financial dependence level of local government (regency/city) on the income from central government, in the form of Balancing Funds (DAU, DAK, and DBH).

Small amount of PAD of provinces in Sumatra is not only local government's mistake, because there is still a limited source of PAD that can be used. Sources of potential income are managed directly by the central government, meanwhile in another side, the effort to increase PAD through tax or regional retribution is not effective as it becomes a burden to community (Adi, 2012).

CONCLUSION AND RECOMMENDATION

Conclusion

Implementation of regional autonomy is expected to increase the efficiency, effectiveness, and accountability of the public sectors in Indonesia. It provides a great opportunity to the regions to improve its financial capability. Regions are required to look for alternative sources of development budgeting without lessening expectations to have aids and sharing from central government and use public funds according to its priorities and community aspirations.

Fiscal decentralization is the granting of authority to the regions to explore sources of revenue, the right to receive transfers from (upper) government and decide routine expenditure and investment. The most important factor in fiscal decentralization is to

what extent the regional government is given the authority to decide allocation based on their own expenditure. Another factor is the region capacity to improve its PAD. An increase in PAD as the budgeting source for the implementation of regional autonomy will determine the success of regional development in the future.

The research findings show that (1) percentage of direct expenditure to the total of regional income of provinces in Sumatra is less than 50 percent on average. (2) Based on the degree of fiscal decentralization, since 2015-2017 provinces in Sumatra got 37 percent in average, which means that the degree of fiscal decentralization is low and the budgeting performance is low. Local financial independence level of provinces in Sumatra was 57.36 percent, which means that the region is considered independent enough in implementing regional autonomy. The financial dependence was about 63.55 percent, which means that the fiscal dependence of provinces in Sumatra is great enough and the budgeting performance is not so good.

RECOMMENDATION

Provincial governments in Sumatra have to be more careful in managing regional finances, especially in allocating direct expenditure or indirect expenditure fund. Ideally, the portion of direct expenditure is about 70 percent of the total expenditure, particullarly for capital expenditure. While for indirect expendiure is more focusfocused on revenue sharing expenditure to province/region and city and village government and financial aids to province/region and city and village government so that regional development is successful and equal.

In the era of regional autonomy, local government dependence on central government should be decreasing. Provincial governments in Sumatra must be able to gradually reduce its dependence on higher government. Efforts must be made to increase revenues by exploring its resources of PAD, good management of natural resources and the promotion for investment (in collaboration with outsiders to invest in regional development), including human resource development. Investment activities are expected to provide a very large and good contribution to the efforts of local tax revenues in particular and PAD income in general.

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