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Analysis of the Influence of Village Characteristics on the Presence of Credit Facilities in Boyolali

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Abstract:
Credit facilities play a vital role in supporting community financing, particularly in the development of micro and small industries, which serve as essential pillars of the local economy. The increasing use of information and communication technology has provided new opportunities for these industries to enhance their operational efficiency and competitiveness. However, geographical factors remain a challenge, especially in rural areas where access to credit is often limited due to distance and infrastructure. This study aims to examine the influence of village characteristics on the presence of credit facilities in Boyolali Regency. By understanding how location-related factors affect credit access, this research contributes to the broader discussion on inclusive financial development and rural economic empowerment.

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1. Introduction

Credit facilities have a very important role in community financing, one of which is the growth of micro and small industries. Micro and small industries are an inseparable part of people's lives in meeting the needs of life with a high level of flexibility (Masduki et al., 2024). In facing increasingly fierce competition, information technology is one of the tools used to support company competitiveness (Nugroho, 2015). Micro and small industries are recognized as economic pillars in various countries. Therefore, having easy access to technology and smooth operations are increasingly vital for these types of companies (Hansen & Bøgh, 2021). The mobile revolution, especially the advent of mobile phones and the internet, creates many new opportunities for innovation in improving the way micro and small industry businesses work by leveraging technology (Trinugroho et al., 2022).

2. Data and Methodology

This study analyzes the influence of village characteristics on the presence of credit facilities in Boyolali. This study uses cross-section data of 267 villages in boyolali in 2018 sourced from PODES data of the Central Bureau of Statistics (BPS). A logit model is used where the dependent variable is a combination of binary variables. The econometric model is presented as follows:

$$KURi = \beta 0 + \beta 1 Industryi + \beta 2 Technology i + \beta 3 Featured\ Products i + \beta 4 Geography\ i + \varepsilon t \quad (1)$$

$$KKP\_E_i = \beta_0 + \beta_1 Industry_i + \beta_2 Technology_i + \beta_3\ Featured\ Products i_i + \beta_4 Geography_{\ i} + \varepsilon_t \quad (2)$$

$$KUK_i = \beta_0 + \beta_1 Industry_i + \beta_2 Technology_i + \beta_3\ Featured\ Products i_i + \beta_4 Geography_{\ i} + \varepsilon_t (3)$$

$$KUBE_i = \beta_0 + \beta_1 Industry_i + \beta_2 Technology_i + \beta_3\ Featured\ Products i n_i + \beta_4 Geography_{\ i} + \varepsilon_t \quad (4)$$

Table 1
Descriptive statistics

Variabel	Definisi	Obs	Mean	Std. Dev.	Min	Max
KUR	dummy variable 1 means there is a people's business credit facility (KUR), 0 no	267	0,8951	0,3070	0	1
KKP_E	dummy variable 1 means there is a food security and energy credit facility (KKP-E), 0 no	267	0,0674	0,2512	0	1
KUK	dummy variable 1 means there is a facility small business credit (KUK), 0 no	267	0,3296	0,4709	0	1
KUBE	dummy variable 1 means there is a joint business group (KUBE) facility , 0 does not exist.	267	0,2846	0,4521	0	1
industry A	leather goods industry	267	0,1536	0,7821	0	10
IndustryB	wood goods industry	267	11,8876	65,81955	0	850
IndustryC	precious metals or metal materials industry	267	3,6479	52,0588	0	850
IndustryD	fabric/weaving goods industry	267	1,4569	3,1266	0	29
IndustryE	pottery/ceramic/stone industry	267	2,9588	21,8849	0	351
IndustryF	woven industry made from rattan/bamboo, grass, pandanus, etc.	267	4,6929	18,0628	0	160
IndustryG	food and beverage industry	267	8,2247	24,6838	0	355
IndustryH	Other industries	267	4,2772	30,2487	0	414
Internet	dummy variable 1 means there is a 4G/LTE signal, 0 other signals	267	0,5805	0,4944	0	1
electricity	number of electricity users (PLN)	267	1370,217	700,9765	330	5571
featured	dummy variable 1 means there is a product superior goods, 0 no	267	0,6966	0,4606	0	1
export	village/kelurahan's superior/main products are exported to other countries: 1 some (most), 2 some (few), 3 (none)	267	2,9438	0,2465	1	3
Topography	Topography of the village/kelurahan area: 1 slope/peak, 2 valley, 3 plain	267	2,7003	0,7151	1	3

The dependent variable of this study is the credit facilities in boyolali village, namely people's business credit (KUR), food and energy security credit (KKP-E), small business credit (KUK), and joint business groups (KUBE); dummy variable 1 means there is a credit facility, 0 does not exist. As for the independent variables, the first is the micro and small industries in Boyolali village, namely the leather goods industry, the wood goods industry, the precious metal or metal materials industry, the fabric / woven goods industry, the pottery / ceramic / stone industry, the woven industry made of rattan / bamboo, grass, pandanus, etc., the food and beverage industry, and other industries. Second, technology variables are measured by internet and electricity data; where the internet variable dummy 1 means there is a 4G / LTE signal, 0 other signals; and, the electricity variable is the number of electricity users (PLN). Third, the superior product variable is measured by superior goods data and superior goods exports; where the superior goods product variable in Boyolali village, dummy 1 means there are superior goods products, 0 does not exist; the export variable is the superior / main goods products of the village / kelurahan that are exported to other countries, variable 1 exists (most), 2 exists (a small part), and 3 (none). Finally, the geography variable is measured by the topographic data of the village/kelurahan boyolali area, variable 1 slope/peak, 2 valley, and 3 plain. A detailed description of all variables can be seen in Table 1.

3. Result and Discussion

Table 2 shows the empirical results using the logit and probit models of this study. As presented in Table 2, the variables that are significant for KUR are the leather goods industry and the food and beverage industry. This means that an increase in the number of micro and small industries, namely the leather goods industry, will reduce the probability of obtaining a credit facility. Meanwhile, an increase in the food and beverage industry will increase the probability of a credit facility.

Table 2
Basic logit regression

	(1) KUR	(2) KKP_E	(3) KUK	(4) KUBE
Micro and Small Industries				
IndustryA	-0,0466** (-1,96)		0,0679 (1,49)	0,0362 (1,15)
IndustryB	-0,0002 (-0,55)	0,0001 (0,45)	0,0010*** (1,67)	0,0001 (0,31)
IndustryC	0,0326 (0,72)		-0,0010 (-0,36)	-0,0014 (-0,84)
IndustryD	0,0171 (1,19)	0,0053 (1,41)	-0,0155 (-1,47)	-0,0002 (-0,02)
IndustryE	0,0056 (0,64)	0,0048*** (1,93)	-0,0006 (-0,48)	-0,0006 (-0,49)
IndustryF	0,0001 (0,06)	-0,0006 (-0,34)	0,0004 (0,26)	0,0007 (0,54)
IndustryG	0,0120** (1,96)	-0,0011 (-0,61)	0,0007 (0,65)	0,0011 (0,92)

IndustryH	0,0008	-0,0020	-0,0068	-0,0149
	(0,40)	(-0,58)	(-0,90)	(-1,45)
Technology				
Internet	-0,0557	-0,0233	-0,0485	0,0479
	(-1,38)	(-0,61)	(-0,86)	(0,86)
Electricity	-3,33e-06	0,0001***	0,0001***	0,0001***
	(-0,11)	(1,91)	(1,91)	(1,86)
featured Products				
Featured	0,0487	-0,0382	0,0613	0,1375**
	(1,28)	(-1,00)	(1,00)	(2,17)
Ekports		-0,0698	-0,1329	-0,2025***
		(-1,16)	(-1,07)	(-1,83)
Geography				
Topography	-0,0371	-0,0297	0,1559*	-0,0363
	(-1,10)	(-1,18)	(2,92)	(-0,94)
N	253	229	267	267
pseudo R^2	0,1643	0,1186	0,1000	0,0761

t-statistics in parentheses.
* $p < 0,1$
** $p < 0,05$.
*** $p < 0.10$.

In the food and energy security credit (KKP-E) and small business credit (KUK) variables, the variables that are positively significant are the micro-small industry and electricity. An increase in the pottery/ceramic/stone industry and the wood goods industry will increase the probability of credit facility availability. Similar to the variables of food security and energy credit (KKP-E) and small business credit (KUK), the variable of electricity in joint business groups (KUBE) is also positively significant, so villages with access to electricity have a higher probability of credit facility existence.

A change to a higher type of topography (e.g., from plains to slopes) increases the probability of the presence of a small business credit facility (KUK). Finally, villages that have a superior product have a higher probability of having a KUBE credit facility than those that do not. Meanwhile, villages with exported superior products have a lower probability of having a KUBE credit facility than those without..

4. Conclusion

The pottery/ceramic/stone industry and wood goods industry show a clear positive impact on the likelihood of credit facilities, indicating the importance of these sectors in the village economic structure. It is important to expand credit support in the handicraft sector (ceramics, stone, wood) to improve local productivity and competitiveness. Due to the risky nature of the market, the number of leather goods industries significantly decreases the likelihood of people's business credit. On the other hand, an increase in the number of food and beverage industries increases the likelihood of people's business credit (KUR), indicating this sector as a priority in supporting food security and basic needs. However, not only focusing on industries that already have potential, other sectors

also need to be encouraged to have the same economic potential, one of which is with risk reduction programs. Financial institutions should design more open and specialized credit plans according to the characteristics of the village, such as the economic ability of certain sections or access to facilities. The central and local governments need to work together with financial institutions to create credit policies that are more in line with village characteristics, including prioritized sections and facility needs.

Villages connected to electricity tend to have easier access to loans, showing how vital energy infrastructure is. If electricity access in remote villages is improved, it can facilitate the availability of loans, particularly for joint business groups (KUBE) and small business credit (KUK). Villages with superior products usually have more KUBE facilities, but exports of superior products are less likely. This may be because financial institutions are more concerned with international markets than local needs. Therefore, villages with superior products should receive more attention, for example through training programs and supply chain management so that they can optimally utilize loan facilities. For villages that export superior products, policies that integrate local needs with international markets are needed to avoid unfair attention from financial institutions. Villages with higher elevations (slopes or peaks) are more likely to receive small business loans (KUK), due to the special needs of these areas that require greater support. Areas with more difficult conditions require special assistance, such as locally tailored credit programs that take into account the geographical and economic challenges of the village.

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