

Entrepreneurial and Firm-Level Factors influencing Bank Credit Access of SMES

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Abstract

Since SMEs lack audited financial statements, they might need to signal some of their characteristics and entrepreneurial behaviors to receive credits from banks. This is because these entrepreneurial characteristics enable them to perform financially better especially for firms having more tangible and intangible assets. In this regard, this paper examines whether Entrepreneurial Orientation (EO) of larger, older and manufacturing SMEs makes positive contributions on their bank credit access or not. The researcher has collected data by an online questionnaire from the randomly selected 479 SMEs in Turkey. To find the impacts of EO and firm characteristics on bank credit access, Binary Logistic Regression test is run. According to the results, larger and manufacturing firms that behave risk averse, are more likely to access to bank finance than younger and non-manufacturing SMEs.

Key words: Entrepreneurial Orientation, Bank Finance, SMEs, Sector, Firm Age-size.

Introduction

The role of SMEs in the producing power and economic potential of countries is very crucial. Although SMEs have such a big influence on economies, access to bank finance is still the main obstacle for them. In this regard, entrepreneurial orientation and the characteristics of SMEs might enable them easier credit access conditions. This is because the creation of an innovative product or services, having risk taking or competitive attitude against their rivals, being proactive and autonomous in decision making process enable firms to get a higher market share in their industry (Lumpkin & Dess, 1996; Zarrouk, Sherif, Galloway, & El Ghak, 2020). All these actions are belong to entrepreneurial orientation (EO) that is a unique construct for the success, performance (Lumpkin & Dess, 1996; Rauch, Wiklund, Lumpkin, & Frese, 2009) and internationalization of SMEs (Javalgi & Todd, 2011; Kozubíková, Vojtovič, Rahman, & Smrčka, 2016). EO is based on intangible assets of firms including entrepreneurial behaviors such as innovativeness, risk taking, proactiveness, competitive

aggressiveness and autonomy that are valuable, rare, imitable resource based capabilities of businesses (Junoha, BinHidhiir, & Basheer, 2019).

But depending on the characteristics of SMEs such as size (Anderson & Eshima, 2013; Iswoyo, Ermawati, & Nugroho, 2019), age (Kozubíková et al., 2016), and sector (Andrieu et al., 2018; Domeher, Musah, & Hassan, 2017), EO and credit access of SMEs might differ. In this regard, this study purposes to investigate whether positive relationships between EO of larger, older and manufacturing SMEs and access to bank finance are in existence or not. In line with the selected aim, the research question might arise as: Are there positive relationship between EO of larger, older and manufacturing SMEs and their bank credit access? By including firm characteristics with EO of SMEs into the analyzes, this research investigates those factors from a wider perspective and makes a value addition into the academic literature. On the other hand, this study does not focus on a specific industry when evaluating EO and bank credit access. By making comparisons between the credit access of manufacturing firms and non-manufacturing firms, this research also brings new scientific findings into the literature.

Literature Review and Hypotheses

Development

Comparing with their smaller counterparts, larger SMEs have more tangible assets and capital to collateralize, thus, they seem less risky from the perspective of lenders (Andrieu et al., 2018; Yildirim et al., 2013). Moreover, larger SMEs provide more information about themselves since they have more audited financial statements comparing with smaller SMEs (Wasiuzzaman & Nurdin, 2019; Yildirim et al., 2013). Some studies prove the fact that larger SMEs face with reduced credit barriers comparing with their smaller counterparts (Andrieu et al., 2018; Wang, 2016). On the other hand, some studies substantiate the positive association between firm size and access to bank credit (Andrieu et al., 2018). Larger firms also gain advantages from scale economies and face with reduced costs when making production (Okafor et al., 2020). Thus, larger SMEs have more innovative actions that increase

their performance (Ali, Hao, & Aijuan, 2020), competitiveness and profitability. Those advantages of larger SMEs also stimulate their innovative, risk taker, proactive, competitive, and autonomous behaviours, thus, larger SMEs are more innovative and autonomous in comparison with smaller SMEs (Belas & Sopkova, 2016). In line with the arguments of studies mentioned above, a research hypothesis might be set as follows:

H1: There is a positive relationship between EO of larger SMEs and their bank credit access.

Being operated for long years makes SMEs having better credit history and closer contacts with banks (Erdogan, 2018; McCarthy, Oliver, & Verreynne, 2017; Withers, Drnevich & Marino, 2011). Another important fact that provides advantages for older SMEs is having long years accounting history with track records. Therefore, younger SMEs encounter more problems regarding information asymmetries (Andrieu et al., 2018; Wasiuzzaman & Nurdin, 2019; Rahman et al., 2017). Older SMEs have already established their structures, knowledge stock and processes that enable them to perform better in innovative (Withers et al., 2011), proactive and risk taking activities comparing with their younger counterparts (Anderson & Eshima, 2013). Older enterprises also behave more autonomously than their younger counterparts when making strategic decisions (Kozubíková et al., 2016). Therefore, older firms might face with lowered credit impediments comparing with their younger counterparts (Wang, 2016; Yang et al., 2021). Many previous studies in literature prove the fact that bank loan availability increases with age of SMEs (Andrieu et al., 2018; Wang, 2016; Yang et al., 2021). The empirical evidences of those studies enable this research to assume another hypothesis as follows:

H2: There is a positive relationship between EO of older SMEs and their bank credit access.

Having tangible assets provide benefits for SMEs when accessing bank finance because they are able to provide those assets as collaterals in their credit application (Domeher et al., 2017). Moreover, having those assets make manufacturing firms to reduce information asymmetries (Psillaki & Eleftheriou, 2015). In this regard, manufacturing firms face with reduced obstacles in credit

access (Domeher et al., 2017; Psillaki & Eleftheriou, 2015) and have more probabilities to access to bank finance than non-manufacturing firms (Andrieu et al., 2018; Civelek & Dursun, 2018; Domeher et al., 2017). Manufacturing firms have also factories, experienced workers, business plans (Erdogan, 2018), higher cash flows, standard procedures, and more abilities to internationalize (Civelek & Dursun, 2018). Owning such competencies, qualifications increase their abilities to be risk taker. Moreover, entrepreneurial behaviors of manufacturing firms such as competitive aggressiveness, and autonomy also enable these businesses to be more successful in their survival (Saha, Kumar, Dutta, & Tiwari, 2021). Therefore, this fact another reason why those SMEs face with reduced obstacles such as lower costs of financing (Civelek & Dursun, 2018; Erdogan, 2018). The substantiations of the researches that are mentioned above make this paper to presume another hypothesis as follows:

H3: There is a positive relationship between EO of manufacturing SMEs and their bank credit access.

Methodology and Data

The purpose of this paper is to find out the influences of entrepreneurial orientation on bank credit access of SMEs with different sectors, size and length of doing business. Regarding firm size, the researcher classifies SMEs into

three categories depending on their number of staff headcounts in line with the definition of European Commission (2003). Concerning length of doing business, the researcher follows the measurements of previous studies (Anderson & Eshima, 2013; Kozubíková et al., 2016) by calculating firm age as the number of years that SMEs have been operating for. Thus, SMEs that have been operated for less than 10 years are called as younger SMEs while firms with minimum 10 year operating experience are defined as older SMEs. On the other hand, the industries that SMEs have been operating are classified as manufacturing firms and non-manufacturing firms in line with some studies (Domeher et al., 2017; Javalgi & Todd, 2011). While firm size and age are categorical and ordered data, industry type of firms is nominal data.

Each dimension of EO is measured by three statements and some studies have already performed reliability and validity of those statements (Belas & Sopkova, 2016; Pett & Wolf, 2016). These statement are indicated below in Table 1. On the other hand, to scale the responses of the survey participants for these statements, five-point Likert scale is employed by the researcher as “1-Completely disagree, 2-Disagree, 3- Neither agree nor disagree, 4-Agree and 5-Completely agree”. Thus, the higher volumes indicate higher EO of SMEs.

Table-1 Variables and Measurements

Variable	Items
Innovativeness	1-“The company has a reputation as an innovator” 2-“We regularly develop new products and services in my company” 3-“We invest a lot of money in the development of new methods and technologies”.
Risk Taking	1-“The firm shows a strong proclivity for his risky projects”, 2-“The firm follows a strategy that I perceive considerably risky” 3-“The firm carries out risky projects to increase the performance”.
Proactiveness	1-“The firm has a tendency to be ahead of other firms in introducing products and services”, 2-“The firm often tries to initiate actions to competitors, to which competitors respond”, 3-“The firm seeks to exploit predicted changes in the target market ahead of the competitors.
Competitive Aggressiveness	1-“Our activities in relation to competition are often aggressive”, 2-“We often do activities that are directed against competitors”, 3-“Our firm has a reputation of using price reduction for new product or service introduction”.
Autonomy	1-“The owners of company act independently”, 2-“The staff in my company is reasonably autonomous with the implementation of specific business operations”, 3-“The firm supports the initiatives of employees in terms of identifying and implementing of business opportunities”

Source: Own work.

To measure access to finance variable, the researcher directs a dichotomous (Yes, no) survey question as “Did your firm receive credit from the last bank credit application?”. Firms respond this question as “Yes”, have accessed to bank finance. Having dichotomous dependent variable makes this paper to perform Binary Logistic Regression analyzes to examine the impacts of independent variables on the dependent variable. This method has been also employed by some researchers when investigating firm characteristics, EO and access to finance (McCarthy et al., 2017; Wasiuzzaman, & Nurdin, 2019).

5% level of significance is considered by the researcher to test hypotheses. In this regard, p values that are higher than this significance level cause fails to support alternative hypotheses. The research models that are compatible with the hypotheses presented in Literature Review, are as follows:

Binary Logistic Regression model: $Y1 = (\beta_0 + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + \beta_4 X4 + \beta_5 X5 + \beta_6 X6)$

Y1: Dependent variable (access to bank finance)

X1-5: Independent variables (innovativeness, risk taking, proactiveness, competitive aggressiveness, autonomy)

X6: Independent variable (size for model 1, age for model 2, sector for model 3)

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$: Regression coefficients

β_0 : Constant term

Table 2 is depicted below to illustrate the results of this paper regarding some assumptions of the logistic regression models. As indicated in the Table 2, having

predictor variables have decreased the volume of -2 L likelihood statistics, therefore, the created research models represent more observations than the base models that include only constant term. Adding five dimensions of EO with firm size in Model-1 has decreased -2 L likelihood statistics by 25.305, as it is presented under the column of Chi-square. Moreover, p value from Chi-square is also significant at 5% significance level. Similar with Model-1, the predictor variables of Model-2 and Model-3 have also decreased -2 L likelihood statistics and those decreases are significant at 5% level of significance. On the other hand, the results from Cox-Snell R^2 and Nagelkerke R^2 show the percentages that the predictor variables cause on the changes of the dependent variable and higher volumes from these indicators indicate better model fit. For example, while 8.1% of the changes in access to bank finance stem from five dimensions of EO and firm size in Model-1, 5.7% of the changes in access to bank finance stem from five dimensions of EO and firm sector. Comparing to p values (Sig.) in -2 log likelihood statistics, the volumes of Chi-square under the column of Hosmer and Lemeshow are not significant at 5% significance level. This fact is an indicator of the nonexistence of the differences the observed and the values of access to finance and also better model fit. Corresponding to the independence of errors assumption, the volumes from Durbin-Watson statistics need to be around 2 to confirm the non-existence of the autocorrelation between the residual terms (Field, 2009). Since the results from Durbin-Watson statistics differ from 2.022 to 2.076, it can be elucidated that this research does not violate this assumption.

Table-2 Model fit and Independence of Errors Assumptions

Models	-2 Log likelihood					Cox-Snell R^2 and Nagelkerke R^2		Hosmer and Lemeshow			Independence of errors in regression models
	Base model's -2 LL statistics	-2 L likelihood with predictors	Chi-Square	df	Sig	Cox-Snell	Nagelkerke	Chi-square	df	Sig	Durbin Watson Test Statistics
Model 1	482.694	457.389	25.305	6	0.000	0.051	0.081	7.835	8	0.450	2.076
Model 2	482.694	471.139	11.555	6	0.043	0.024	0.038	5.188	8	0.737	2.022
Model 3	482.694	465.103	17.591	6	0.007	0.036	0.057	1.029	8	0.998	2.031

Source: Own work.

The results regarding the linearity assumption of the logistic regression test are presented below in Table 3. P values of interaction terms that are lower than 5% level of significance confirm the violation of the linearity assumption. As indicated under the column of Sig, all p

values of the interaction terms are higher than 5% significance level and they differ between 0.110 to 0.812, thus, this study fulfills the linearity assumption of logistic regression test.

Table-3 Linearity Assumption

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
LOGISTIC REGRESSION MODEL1						
Lininno. by inno.	-0.028	0.065	0.188	1	0.664	0.972
Linriskt. by riskt.	-0.288	0.158	3.297	1	0.069	0.750
Linpro. by pro.	0.305	0.195	2.436	1	0.119	1.356
Lincomp. by comp.	0.254	0.286	0.787	1	0.375	1.289
Linauto. by auto.	-0.200	0.176	1.295	1	0.255	0.819
Linsize by size	0.164	0.144	1.284	1	0.257	1.178
LOGISTIC REGRESSION MODEL2						
Lininno. by inno.	-0.043	0.066	0.430	1	0.512	0.958
Linriskt. by riskt.	-0.218	0.140	2.402	1	0.121	0.804
Linpro. by pro.	0.240	0.181	1.767	1	0.184	1.272
Lincomp. by comp.	0.427	0.268	2.549	1	0.110	1.533
Linauto. by auto.	-0.025	0.072	0.120	1	0.729	0.975
Linage by age	0.210	0.181	1.338	1	0.247	1.234
LOGISTIC REGRESSION MODEL3						
Lininno. by inno.	-0.019	0.067	0.084	1	0.772	0.981
Linriskt. by riskt.	-0.205	0.139	2.164	1	0.141	0.815
Linpro. by pro.	0.218	0.179	1.486	1	0.223	1.243
Lincomp. by comp.	0.400	0.265	2.285	1	0.131	1.492
Linauto. by auto.	-0.017	0.072	0.057	1	0.812	0.983
Linsector by sector	-0.199	0.277	0.517	1	0.472	0.820

Source: Own work.

Table 4 shows Tolerance and Variance inflation factors (VIF) scores of the predictor variables of the research models to evaluate the multicollinearity assumption of the logistic regression test. As presented in Table 4, having Tolerance volumes that are higher than 0.10 and having VIF

scores that are lower than 10 make this research confirm the nonexistence of multicollinearities between predictor variables, thus, this research does not violate multicollinearity assumption of logistic regression test.

Table-4 Multicollinearity Assumptions

Model-1			Model-2			Model-3		
Variable	Tolerance	VIF	Variables	Tolerance	VIF	Variables	Tolerance	VIF
Innov.	0.550	1.819	Innov.	0.545	1.835	Innov.	0.543	1.843
Riskt.	0.825	1.212	Riskt.	0.829	1.206	Riskt.	0.827	1.209
Proact.	0.475	2.105	Proact.	0.473	2.116	Proact.	0.472	2.118
Comp.	0.805	1.242	Comp.	0.802	1.247	Comp.	0.777	1.287
Auto.	0.713	1.402	Auto.	0.708	1.412	Auto.	0.708	1.413
Size	0.980	1.021	Age	0.957	1.045	Sector	0.952	1.051

Source: Own work.

This research also employs Cochran's formula (1963) to measure whether the sample size is adequate to perform logistic regression analyses or not. Cochran's formula (1963) is presented below:

$$n_0 = \frac{Z^2 pq}{e^2}$$

n = sample size

Z = confidence level at 95% (is 1.96 in statistical tables that include field below the normal curve)

e = Sampling error (e = 0.05)

p = maximum variability (p = 0.5)

q = 1 - p

$$n_0 = \frac{1.96 (0.5)(0.5)}{(0.05)^2} = 384$$

The sample size of this research is 479 that is higher than the calculated sample size by Cochran's formula (1963). For this reason, this research has enough sample size to run logistic regression test.

A self-administered internet-mediated questionnaire is employed by the researcher to collect the research data. Before collecting the data, the researcher has applied stratified random sampling and purposive sampling methods. The researchers have collected e-mail addresses of SMEs from the chamber of commerce in seven different geographical regions of Turkey. Thus, the strata are based on geographical regions. While sending the link of the online questionnaire to the randomly selected respondents, the researcher specified the characteristics of prospective survey participants. For instance, the prospective survey participants need to be aware of financial conditions, entrepreneurial abilities and last credit application of SMEs that they own or work for. Finally, 479 owners and company executives have fulfilled this questionnaire survey. The sample profile is depicted below in Table 5.

Table-5 Sample profile

		<i>n</i>	Share
Region	Marmara	185	38.62%
	Aegean	81	16.91%
	Central Anatolia	47	9.81%
	Mediterranean	51	10.65%
	Black Sea	41	8.56%
	Eastern Anatolia	35	7.31%
	South Eastern Anatolia	39	8.14%
		479	100%
Firm size	micro	143	29.85%
	small	204	42.59%
	medium	132	27.56%
		479	100%
Firm age	< 10 years	162	29.85%
	> 10 years	337	70.35%
		479	100%
Sector	Manufacturing	246	51.36%
	Non-manufacturing	233	48.64%
		479	100%

Source: Own work.

Results and Discussion

The results from Binary Logistic Regression analyses for Model-1 are depicted in Table 6. According to Table-6, p values are only significant for risk taking and firm size at 5% significance level. Since β coefficient is negative for risk taking and positive for firm size, higher values in firm size and lower values in risk taking are associated with higher possibilities to access to bank finance. Moreover,

odds ratio (OR) for firm size is more than 1 that means as the values for firm size increases, the odds of access to bank finance becomes more likely to occur. On the other hand, since p values of innovativeness, proactiveness, competitive aggressiveness and autonomy are higher than 5% level of significance, they are not significant variables to predict credit access of SMEs. For these reasons, this paper fails to support H1 hypothesis.

Table-6 The results for Model-1

Variable	β	SE	OR	95% CI	Wald statistic	p
Innovativeness	-0.109	0.140	0.897	[0.682 1.180]	0.606	0.436
Risk taking	-0.354	0.127	0.702	[0.548 0.899]	7.830	0.005
Proactiveness	0.027	0.178	1.027	[0.725 1.455]	0.022	0.881
Competitive agg.	0.202	0.134	1.224	[0.941 1.593]	2.266	0.132
Autonomy	-0.051	0.163	0.951	[0.691 1.309]	0.096	0.757
Firm size	0.601	0.162	1.825	[1.329 2.506]	13.807	0.000
Constant	1.132	0.676	3.102		2.800	0.094
Model-1: Access to finance = 1.132 - 0.109*Innov. - 0.354*Risk t. + 0.027*Proact. + 0.202*Competitive agg. - 0.051*Autonomy + 0.601*Firm size						

Source: Own work.

Table 7 presents the results from Binary Logistic Regression analyzes for Model-2. According to table, the only significant predictor variable is risk taking. When SMEs' risk taking propensity decreases by a unit, odds of occurrence for access to finance increases by 0.375. When it

comes to other predictors, they are not significant at 5% significance level, therefore, access to bank finance does not depend on age, innovativeness, proactiveness, competitive aggressiveness and autonomy of SMEs. In this regard, this research fails to support H2 hypothesis.

Table-7 The results for Model-2

Variable	β	SE	OR	95% CI	Wald statistic	p
Innovativeness	-0.059	0.139	0.943	[0.717 1.239]	0.178	0.673
Risk taking	-0.375	0.124	0.687	[0.539 0.876]	9.144	0.002
Proactiveness	0.011	0.175	0.004	[0.717 1.424]	0.004	0.951
Compet. agg.	0.204	0.133	1.227	[0.946 1.591]	2.375	0.123
Autonomy	-0.087	0.164	0.916	[0.665 1.263]	0.285	0.593
Firm age	0.233	0.253	1.262	[0.769 2.070]	0.847	0.357
Constant	1.932	0.715	6.904		7.308	0.007
Model-2: Access to finance = 1.932 - 0.059*Innov. - 0.375*Risk t. + 0.011*Proact. + 0.204*Competitive agg. - 0.087*Autonomy + 0.233*Firm age						

Source: Own work.

Regarding the results of Binary Logistic regression analyses for Model-3, Table 8 is illustrated below. While risk taking and sector of SMEs are significant predictors at 5% level of significance, innovativeness, proactiveness, competitive aggressiveness and autonomy are not significant variables to predict credit access of SMEs. Since the sector of firm is a dichotomous variable, manufacturing

and non-manufacturing industries, it can be explained that Odds of occurrence for access to finance is 6.585 higher for SMEs in manufacturing industry than SMEs in other sectors. To sum up, SMEs in manufacturing industry and take less risk are more likely to access to bank finance than risk taker SMEs in other industries. For these reasons, this paper fails to support H3 hypothesis.

Table-8 The results for Model-3

Variable	β	SE	OR	95% CI	Wald statistic	p
Innovativeness	-0.064	0.139	0.938	[0.715 1.232]	0.210	0.647
Risk taking	-0.397	0.125	0.672	[0.526 0.859]	10.114	0.001
Proactiveness	-0.001	0.175	0.999	[0.709 1.409]	0.000	0.996
Competitive Agg.	0.265	0.137	1.303	[0.996 1.703]	3.739	0.053
Autonomy	-0.067	0.164	0.936	[0.678 1.291]	0.164	0.685
Sector	-0.640	0.249	0.527	[0.324 0.860]	6.585	0.010
Constant	3.246	0.728	25.678		19.855	0.000
Model-3: Access to finance = 3.246 - 0.064*Innov. -0.397*Risk t. - 0.001*Proact. + 0.265*Competitive agg. - 0.067*Autonomy - 0.640*Sector						

The reason why risk taking attitudes of larger and manufacturing SMEs negatively influence their bank credit access might stem from the credit default problems of SMEs in Turkey. Although the volume of credits and guaranteed government loans for SMEs have increased, there have been rapid increases in non-performing and outstanding loans for SMEs especially in the years between 2014 to 2018 (OECD, 2020). For these reasons, banks in Turkey might look for less risky SMEs to not to face credit default problem when providing credits for SMEs and this fact might be reason why risk averse SMEs have accessed to finance than their risk taker counterparts. The reason why the credit access of SMEs does not depend on their age might be related with the structure of younger SMEs. Younger SMEs are more flexible and they do not have established procedures or routines as their older counterparts have (Anderson & Eshima, 2013). In this regard, younger SMEs might take more initiatives or look for more options when searching for bank credits comparing with older enterprises (Kozubíková et al., 2016). Although younger SMEs have disadvantages in bank credit access and face with more barriers to access to finance having such a flexible structure might have made younger SMEs in this research data to find more financing opportunities and to show similar credit access performance with their older counterparts.

Research and development subsidies that SMEs receive also play a key role in their entrepreneurial activities. Although, financial supports of Turkish government for SMEs have increased in last years and Turkish government also collaborate with many financing institutions, research centers

and universities to provide the opportunities mentioned above, there are still more steps to take. SMEs in Turkey still encounter financing impediments especially due to having the fluctuations and the high volume of credit interest rates. To have a stable market, transparency of government institutions, freedom of central bank and the fair completion in banking industry might be provided by policy makers.

Conclusion

This study analyzes whether those entrepreneurial characteristics that are based on entrepreneurial orientation and size, age and sector of SMEs make positive contributions on the bank credit access of these enterprises or not. In parallel with this selected purpose, the responses of 479 SMEs' executives who are experts in their area, are investigated. The researcher also runs Binary Logistic Regression tests to evaluate the impacts of the dimensions of EO, firm size, age and sector on bank credit access of SMEs. The only significant result that this paper finds regarding EO, firm characteristics and access to bank finance is the fact that larger and manufacturing SMEs taking lower risks in their operations are more likely to bank finance comparing with their smaller, non-manufacturing and risk taker counterparts. Credit default problems of SMEs, industry, market and firm structure might be some arguments to explain those findings.

Since this paper analyzes the factors effecting bank credit access of SMEs in a broader manner by including SMEs' entrepreneurial behaviors and their characteristics, it makes significant contributions to the academic literature. But, this study has also some limitations. For instance, this study

focuses on soft information such as entrepreneurial characteristics and do not include any financial indicators into the analyzes. Moreover, EO of SMEs is evaluated according to the survey respondents' own perceptions for their firms. This paper is also limited with only bank financing, SMEs from Turkey and businesses from SMEs segment. Further studies can also focus on other financing options for SMEs from various countries and can analyze impacts of both hard data such as financial statements and soft data such as entrepreneurial characteristics on gaining credit to have a unique and valuable research.

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