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ENTREPRENEURIAL BRICOLAGE TO FACING RESOURCE CONSTRAINT IN SMALL INDUSTRY OF BROWN CANE SUGAR

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Abstract: Bricolage theory, making do what is at hand, describes entrepreneurs' activities to sustain the business in a penurious environment. It is believed could not only develop the business but also trigger innovativeness, creativity, and sustainability. This research intends to discover how entrepreneurs overcome resource constraints using bricolage. It also aims to find the relationship between bricolage and entrepreneurs' demographic and innovative personality. The study was conducted from April to June 2020 in Central Aceh Regency. Using a survey and questionnaire to collect the data towards 26 entrepreneurs of brown cane sugar reveals that human resource is a significant constraint when running the business, specifically in finding an appropriate and loyal team member. Using bricolage, they refuse to enact with limitation by hiring people from surronding even their family members to work in this business. Meanwhile, many entrepreneurs have the resource at hand in the form of capital and knowledge since they have spent a lot of time working in similar businesses before building their brown sugar. Despite weak correlation, the relationship between variables is positive except for age and education. Bricolage and innovative personality have a weak positive correlation which means that this industry is less innovative. This research also become fundamental literature for similar future research.

Keywords: bricolage, resource constraint innovative personality, small industry

Abstrak: *Teori bricolage, melakukan sesuatu dengan apa yang hanya tersedia, menjelaskan kegiatan pengusaha untuk mempertahankan bisnis dalam lingkungan yang minim akan sumber daya. Bricolage tidak hanya dapat membantu bisnis berkembang tetapi juga memicu inovasi, kreativitas, dan keberlangsungan bisnis. Penelitian ini bertujuan untuk mencaritahu bagaimana pengusaha mengatasi keterbatasan sumberdaya dengan menggunakan bricolage dan untuk mengetahui hubungan antara bricolage, demografi dan kepribadian inovatif wirausaha. Penelitian dilaksanakan pada April hingga Juni 2020 di Kabupaten Aceh Tengah. Menggunakan survei dan kuisioner untuk memperoleh data terhadap 26 pengusaha gula merah tebu mengungkapkan bahwa sumber daya manusia menjadi kendala utama dalam menjalankan usaha, khususnya dalam mencari pekerja yang sesuai dan setia. Dengan menggunakan bricolage, mereka menolak akan keterbatasan dengan mempekerjakan orang di sekitarnya bahkan anggota keluarganya untuk bekerja di bisnis ini. Sementara itu, banyak pengusaha yang memiliki sumber daya berupa modal dan pengetahuan karena mereka telah menghabiskan banyak waktu untuk bekerja di usaha sejenis sebelum mereka membangun industri gula merah sendiri. Meskipun korelasinya lemah, hubungan antar variabel adalah positif kecuali usia dan pendidikan. Bricolage dan kepribadian inovatif memiliki korelasi positif yang lemah yang berarti industri ini kurang inovatif. Penelitian ini juga menjadi literature dasar untuk penelitian yang serupa berikutnya.*

Kata kunci: *bricolage, keterbatasan sumber daya, kepribadian inovatif, industri kecil*

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INTRODUCTION

Resources have an essential role in the development of new firms (Desa and Basu, 2013). However, SMEs in developing countries like Indonesia often face resource constraints that are more acute than developed countries (Domenico et al. 2010). Several studies have described entrepreneurs' behaviors when facing resource constraints like causation, effectuation, and bricolage (Fisher, 2012). One of them, bricolage theory, is gaining research concern since it explains the act of making do with recombination and the refusal to limitation (Baker and Nelson, 2005). Introduced by Levi-Strauss, he differentiated scientists/engineers and bricoleurs in terms of performing the work. However, he did not give an obvious definition of bricolage. Later on, Baker and Nelson (2005) define bricolage as "making do by applying a combination of the resources in hand to new problems and opportunities," This definition has been used in many study areas.

The brown cane sugar industry is the second-largest agroindustry in Central Aceh, and it has provided employment for local people and improved the local economy (Indonesia Statistic Bureau, 2020). This industry is categorized as small (based on the Indonesia Law no. 20, 2008) whose assets are less than Rp. 500 million with less than ten employees. Indonesia Statistics Bureau (2020) records that the number of this industry is growing while the number of entrepreneurs ceases or alters the business is also increasing. Similar to other small businesses in Indonesia, this small brown cane industry faces several constraints in terms of resources: limited capital, skilled worker/labor, technology, and even government policy (Tambunan, 2011b). However, despite resource limitations, some of these small brown cane sugar industries could still operate. Therefore, to answer why some entrepreneurs could sustain the business, bricolage theory could discover this phenomenon.

The definition of bricolage by Baker and Nelson (2005) has three dimensions that entrepreneurs must enact. Firstly, "making do" is a bias towards action and a refusal to enact with limitation (Yu et al. 2019). Secondly, bricoleurs have the "resource at hand" to solve problems or seize opportunities (Tasavori et al. 2018). Lastly, one thing that distinguishes bricolage from other theories is recombination which means that the utilization of resources is for different purposes to what they are initially intended (Linna, 2013). For instance, a combination of skill and knowledge of business owners, employees, or networking could create a new service and attract a new market. Indeed it will be more successful if this activity is supported by existing technology and materials (Gundry et al. 2011).

Several studies have been conducted and showed that bricolage could improve business performance, such as triggering innovativeness (Senyard et al. 2014), hastening new product/service development (Witell et al. 2017; Wu et al. 2017), solving raw material and knowledge issues (Garud and Karnøe, 2003), and supporting social value creation (Razgallah et al. 2017). Domenico et al. (2010) explain that when bricoleur faces resource scarcity, they tend to refuse to enact with limitation by improvising. Moreover, Vanevenhoven et al. (2011) define that bricoleur often finds achievable solutions to solve the problem, obtains and gathers accessible resources which are very cheap and even cost less. Thus, the research on bricolage is conducted chiefly on small businesses (Halme et al. 2012).

It is intriguing to discover bricolage activity among brown cane sugar entrepreneurs on surviving in a penurious environment. Since bricoleur will have a better response and sustain their business (Halme *et al* 2012), the type of entrepreneur might behave as bricoleur. Furthermore, this research aims to figure the relationship between bricolage and innovative personality variables. Several works of literature convinced that bricolage could trigger creativity with innovative outcomes. Firstly, this research intends to discover the problem related to resources and how entrepreneurial bricolage is enacted by brown cane sugar industry entrepreneurs to solve these issues. Secondly, this research attempts to see the relationship between bricolage, demographic and innovative personality. It aims to assess whether bricolage could improve business performance through innovativeness.

METHODS

The research was conducted from April 2020 until June 2020 in Central Aceh Regency, Aceh, Indonesia. This research carries quantitative methods using primary data, which are collected through filling the survey and questionnaire. The purposive sampling method chooses the respondent/entrepreneur who has run the business for at least 42 months/5 years (Ayala and Manzano, 2014)

since they have a better experience solving resource constraints for years. Initially, the respondent is asked to fill the survey to obtain data about entrepreneurs' demographics (age and education), the resource issues they faced, and the solution to overcome the issue. Then, at the same time, the respondents are requested to fill the questionnaire to get the data about bricolage and innovative personality. The questionnaire on bricolage follows the measurement developed by Davidsson et al. (2017) with 9-statement-like items, while innovative personality adopts the scale developed by Slaughter et al. (2004) with seven items. The answers are then recorded using a Likert-type scale ranging from 1 (strongly disagree), 3 (neutral), to 5 (strongly agree).

Confirmatory Factor Analysis (CFA) is employed to examine the validity and reliability of the data using IBM SPSS 26.0. After that, linear regression is conducted to see the relationship and the correlation between variables using spearman's rank correlation as the data obtained is an ordinal number. As shown in Figure 1, survey and questionnaire are used to obtain all data of variables before they are analysed using Confirmatory Factor Analysis and are then correlated using simple linier regression to see each relationship they had.

RESULTS

The survey yields 26 respondents that all of whom are male entrepreneurs. As it is shown in Table 1, most of the entrepreneurs of the brown cane sugar industry tend to be somewhat older, ranging from 45 to 64 years old, which is 69% of total respondents, followed by younger entrepreneurs, ranging from 35 to 44 years old which is 23.08% in percentage. At the education level, most entrepreneurs have a medium degree of education, where most of them have merely finished elementary and middle school. Only 8% or two entrepreneurs continued their study at the university.

Bricolage Enactments

The survey result (Figure 2) reveals that human resources are the biggest problem that threatens this business. The entrepreneurs hardly find a suitable or appropriate employee/labor. Employers without work contracts often change or replace the labor due to unsatisfied or unachieved standard production. Therefore, many entrepreneurs sometimes have to cease production when not having enough workers. Using the capabilities of making do, which is biased towards action and refusal to enact with limitation (Yu et al. 2019), they often dive right in to produce the brown sugar and control the sugar production as a supervisor. Frequently, they are also assisted by their family members, relatives, and even neighbor. Helping others is a common situation in developing countries like Indonesia (Tambunan, 2011), where many SMEs often hire uneducated and unpaid family members (Yu et al. 2019) and could reduce the expenditure and cost of production (Deakins and Bensemann, 2019). As the entrepreneurs actively produce brown sugar, their employees do not need a high knowledge and skill as long as the laborers have enough power to work throughout the day. Otherwise, many entrepreneurs nowadays are looking for labor in other provinces like North Sumatra to work and maintain the business. Therefore, bricolage's capability to make do is good to keep this business sustaining as Gundry et al. (2011) assert that the creative manipulation of human resources could solve the challenges.

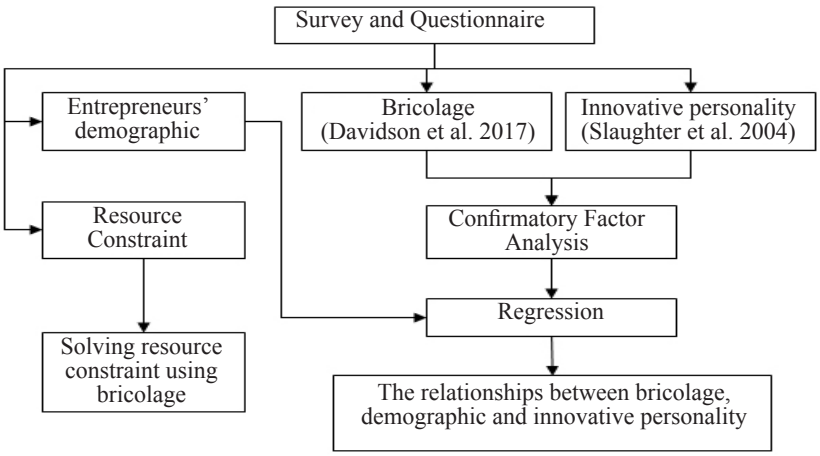

Figure 1. The research framework

Table 1. Demographical Data of Entrepreneurs (n=26)

Categories	Percentage
Age	
35-44	23 %
45-54	38 %
55-64	31 %
>65	8 %
Education	
Elementary School	27 %
Middle School	31 %
High School	34 %
Bachelor	4 %
Postgraduate	4 %

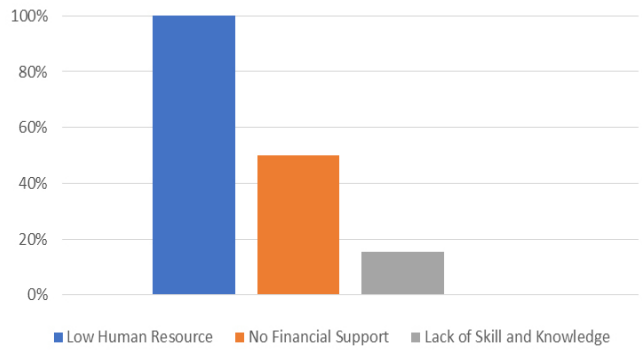

Figure 2. Resource constraint faced by entrepreneurs

Furthermore, 50% of entrepreneurs consider that finance is one of the resource constraints. Similar to many SMEs in Indonesia which do not have access to finance, skill, technology, and others (Irjayanti and Azis, 2012). The brown cane sugar industry also has difficulty establishing the business since they do not have bank loans (Wierenga, 2020). However, some entrepreneurs could still establish the business even in that dearth environment using the bricolage dimension of resources they possess before. It is mentioned earlier that less entrepreneur continues their study, so, the rest of them started to work at the farm sector and this similar industry as labor. The income they obtain was continuously saved as savings which become capital to build the business. Otherwise, some entrepreneurs also get financial aid from their relatives/colleagues, like many SMEs in Indonesia (Tambunan, 2011b). Therefore, though many entrepreneurs do not take a loan from the bank, they could still build this small industry with the resource at hand categorized as tangible/physical input (Linna, 2013).

Lastly, only a few entrepreneurs, or 15%, think they do not have the skill and knowledge to run this business. After quitting school, many entrepreneurs work to obtain wages and income. However, they also learn to produce a good brown sugar and create networking that becomes resources when they have a similar business. These self-taught skills and networking are also categorized as intangible resources (Baker and Nelson, 2005). By routinely doing the same task, they will acquire the knowledge skills without being formally educated like engineers (Rönkkö et al. 2013). Bojica et al. (2014) state that previous experience will create a resource at hand like knowledge and skill. This competency assists entrepreneurs in the making do with what they have to develop the business or expand the market of the business. Thus, they understand the industry very well.

Factor Analysis

Factor analysis (Table 2) is used to assess the validity and reliability of the questionnaire. Initially, bricolage measurement has nine item statements (Davidsson et al. 2017). However, the finding discarded three items below 0.5 since the bricolage variable cannot explain those items. Moreover, Cronbach's alpha which is 0.811, implies that it has high internal consistency. Some of the factor loadings are categorized low, ranging from 0.563-0.572 with a cumulative variance of 52.52%, as Senyard et al. (2014) mention that this situation was caused by measuring bricolage capabilities of making do resource at hand and combination which are found in behaviors of entrepreneur itself (Baker and Nelson, 2005). Meanwhile, after data analysis, innovative personality remains five items since factor loading for "unique" and "creative" are under 0.5 and then scrapped, with Cronbach's alpha is 0.696 and eigenvalue 3.151.

Correlation Between Variables

As shown in Table 3, using the interpretation of correlation coefficient for Spearman (Akoglu, 2018), the correlation for all variables is positive except the correlation between education and age, which is negative. Age and bricolage record the most significant correlation, about 0.3, while the lowest is education and innovative personality, about 0.004. The r number for bricolage and age is 0.125 while age and innovative personality are 0.209, all of which are weak correlations. Lastly, the r number for bricolage and innovative personality is positive at 0.187, but it is still weak.

Table 2. Factor Analysis Result for the study variables

Construct Grouping	Survey Item	Factor Loadings	Corrected Item-Total Correlation	Eigenvalue	Cronbach's α	% Cumulative variance explained
Bricolage	We deal with new challenges by applying a combination of our existing resources and other resources inexpensively available to us	0.770	0.623	3.151	0.811	52.52
	When dealing with new problems or opportunities, we immediately take action by assuming that we will find a workable solution	0.572	0.404			
	By combining our existing resources, we take on a wide variety of new challenges	0.725	0.630			
	When we face new challenges, we put together workable solutions from our existing resources	0.563	0.409			
	We combine resources to accomplish new challenges that the resources were not originally intended to accomplish	0.797	0.655			
	To deal with new challenges, we access resources at low or no cost and combine them with what we already have	0.867	0.736			
Innovative personality	Interesting	0.761	0.537	2.518	0.696	50.37
	Exciting	0.817	0.677			
	Boring	0.613	0.374			
	Plain	0.524	0.321			
	Original	0.789	0.559			

Table 3. Correlation between variables

Variables	Education	Age	Bricolage	Innovative Personality
Education	1.00			
Age	-.261	1.00		
Bricolage	0.300	0.125	1.00	
Innovative personality	0.004	0.209	0.187	1.00

Absolute value of r: 0 – 0.3(weak); 0.4 – 0.7 (moderate); 0.7 – 0.9 (strong)

The negative correlation between age and education reveals that the older entrepreneurs are, the lower their education. Based on the survey, most entrepreneurs are above 45 years old without a high level of education. Some think that education is not very prominent in running this business since they could learn how to run it through self-taught learning. Otherwise, they are not supported to continue their study, and they have to work as laborers or farmers to support their family's economy. It is a common thing in Indonesia (Tambunan, 2008). Nonetheless, this situation did not become a limitation for the entrepreneurs as they could learn the business without formal education (Sunduramurthy et al. 2016). Later, having self-taught skills and knowledge as the resource at hand could build a similar business.

Moreover, this study also finds that the bricolage enactment increases with the increase of education (Figure 3. Entrepreneur with higher education tends to solve problems by using bricolage. It is because bricolage could improvise their resource at hand. Some entrepreneurs explain that they put the brown sugar into a better packaging which could prolong the shelf life. Then, since sugar is better than others, it is more acceptable to a broader market such as the food and drink industry.

The relationship between bricolage and innovative personality shows positive despite a weak correlation. It means that bricolage enactment has a tiny relationship with entrepreneurs' personalities, resulting

in less innovative business. This industry is still using conventional methods without using advanced technology, SNI, or better practices. So, whenever these entrepreneurs often face limitation, they solve the issue using something without any high innovation input. Senyard et al. (2014) have warned that when innovation is brought through bricolage, the result is the highly good-enough solution, half-finished projects. This imperfect solution often wastes the entrepreneur's time and effort, but the result is ineffective for business performance.

Since the entrepreneur is highly enacting with bricolage, it overcomes the resource issue. Baker and Nelson (2005) categorize the situation as parallel bricolage, while Fisher (2012) calls it a "bricolage trap." The bricolage trap usually occurs when the entrepreneur keeps enacting bricolage without change.

Managerial Implication

This research could contribute to the correlation between bricolage and the innovative personality trait of entrepreneurs since no literature has examined this relationship. The contribution is also given to theory development, where this research topic is primarily a concern in developed countries. Thus, this research hopefully could become a milestone of research about this topic, and it could explain the enactment of bricolage in the small industry in developing countries like Indonesia.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study reveals that human resource constraint is the main issue that makes this business vulnerable to stopping brown sugar production. By using the bricolage dimension of making do and refusal toward limitation, the entrepreneur hires relatives, neighbors, and even family members. Moreover, they hire laborers from other provinces to keep the business running. The entrepreneur could build the business even though they do not have access to loans. Because they have spent much time in this business, they can save the income and become a capital to establish it. Even though many of them did not continue their study to higher education, they learn how to make a good sugar cane and run the business. The skill of self-taught helps entrepreneurs to build their businesses. The savings as capital and self-taught skill has categorized a resource at hand.

Generally, the correlation among each variable is positive. Even though between age and education resulted weakly. It is shown that the older entrepreneurship is, the less education he/she has. Despite a weak relationship, the correlation between bricolage and innovative personality is positive. Currently, the industry employs conventional sugar production without advanced technology or method adopted for years.

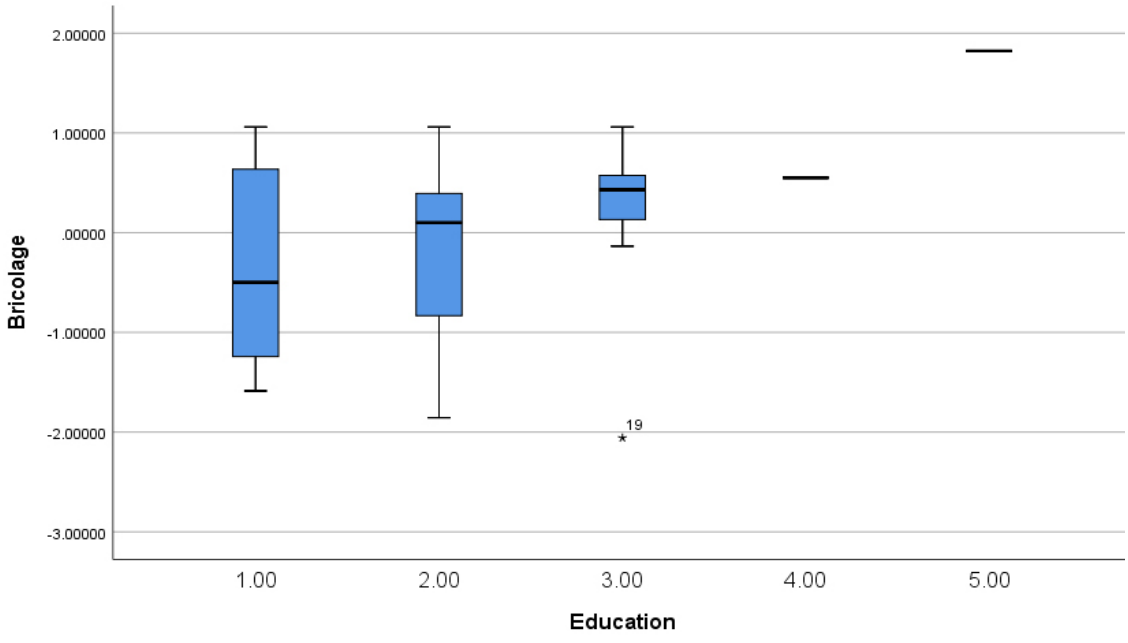

Figure 3. Box plot correlation of bricolage and control variable

Recommendations

Highly enacted with bricolage makes this industry less developed. It is called the "bricolage trap" (Fisher 2012). The entrepreneur often solves the problem using parallel bricolage, which prevents the business from developing. So, the entrepreneurs should consider employed bricolage to solve the issue when they only have resources. They should reject bricolage to access other resources. However, intensely enacted in parallel bricolage is also the result of less educated and innovative entrepreneurs. Hence, the government or other stakeholders should support training, innovative technology, or other assistance to improve the industry performance. This study also has some limitations in terms of a somewhat low respondent number. Thus, future research should consider adding more respondents to increase the accuracy of the data collected.

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