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SURVIVAL ANALYSIS OF CULINARY BUSINESS IN PALEMBANG AND BANDAR LAMPUNG

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Abstract. Agriculturally based culinary businesses have been spread across the country nowadays, included in Indonesia. The objective of this paper is to deal with the survival analysis of those kinds' businesses, in Palembang and Bandar Lampung or to find out what factors can make a business venture survive, and what are the prominent competitive risk factors that affect the business venture. The methodology of collecting samples were conducted by purposive sampling, which is at least 50 culinary sellers taken each as samples from both cities. The samples involving Demography data and variables around culinary selling activities. The observation was conducted at least twice, at the beginning of the survey and the end of the survey. The Survival Analysis of Cox regression for competing risk was assigned to data analysis. Therefore, the results from both cities were compared. The determination of the first type of failure and second type of failure namely the lacked capital and the rise of the materials price are or high inflation correctly fitted to the real situation for culinary sellers either in Bandar Lampung or Palembang. The covariates which is significant to the contribution of the survival times of their period of business is sharing the small money to the poor.

Keywords. Survival, Analysis, Competing risks, culinary.

1. Introduction

The ongoing Covid-19 pandemic is causing increased global havoc by potentially changing geopolitical and socio-economic norms (Rowan and Galanakis, 2020; Jackson et al., 2021). One of the biggest challenges ahead is with the sustainability of urban development (Felappi et al., 2020). Suddenly, economic downturns and business closures due to the COVID-19 outbreak will have long-lasting consequences for the economies of the affected countries (Bartik, 2020). After entrepreneurs and households try to absorb the way of working during the pandemic, then the continuation will reshape new businesses for the future. The aim of this study is to find out what factors can make a business venture survive, and what are the prominent competitive risk factors that affect the business venture. The first stage of the research method is to collect data on culinary businesses scattered in various cities such as Bandarlampung and Palembang at least 50 micro enterprise per city. The second stage of editing or selecting Micro Enterprises activities in at least 50 sample units or 50 cases from each selected city. The attributes or

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variables recorded were the name of the business, type of business, business owner, when it was established, when it stopped, place capital, production capital, number of employees, monthly income, monthly expenses, amount of business debt, monthly profit. Data recording at this stage is through direct interviews or by filling out questionnaires. The third stage is analysing the data. Data analysis is carried out by Survival Analysis by applying the Kaplan-Meier Survival Curve and the Rank-Log Test. The fourth stage analyses with the Cox Proportional Hazard Model. The Fifth Stage analyses data with Competing Risks for Survival Analysis with the competing risk method from Lunn-McNeil (1995)

In his dissertation, Lusak (2020) focused on the ratio of the continuity of running small businesses in Indonesia, which survive with an average of only 10%. Lusak (2020) also said that more than 20% of small businesses contribute to GDP with the beverage and food industry being designated as two of the five priority industry sectors. Lusak (2020) conducted his studies in Greater Jakarta, Bali, Yogyakarta, Bandung Raya, Surakarta, and Semarang, regarding these sectors, and he stated that the viability of businesses in Indonesia is based on financial performance, service and product innovation, and operational improvement. According to Lusak (2020), for a business to run well, entrepreneurial motivation and sustainable improvement are needed. The results by Lusak (2020) showed that the entrepreneurial orientation variable positively and significantly affects business performance.

Entrepreneurial orientation has a positive and significant effect on business innovation strategies, and business innovation strategies also have a positive and significant effect on business performance (Kerti Yasa et al., 2020).

Tseng and Tseng (2019) stated that there are five indicators of corporate entrepreneurship that affect company performance, namely: autonomy; innovativeness, risk-taking; proactiveness; competitive aggressiveness. There are 5 functions (Ocbcnisp.com, 2022) of Micro, Small and Medium Enterprises, among others:

1. Meet the various needs of the community appropriately
2. Creating more prosperous and equitable economic conditions
3. Opening new opportunities and job opportunities
4. Increase Indonesia's foreign exchange
5. Supporting Indonesia's economy during critical situations

There are several ways to further improve the quality of food produced, namely by paying attention to good sanitation, hygiene, and safety standards for food processing (Sutaguna, et al., 2020).

In general, the criteria for Micro, Small and Medium Enterprises are divided based on the number of human resources employed, assets, and annual turnover. The explanation is as follows:

Table 1 Illustrates the classification of businesses by size based on the criteria of human resources, assets, and annual turnover.

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Table 1. Illustrates the classification of businesses by size based on the criteria of human resources, assets, and annual turnover

Scale of Business	Human Resources	Assets	Turn Over per year
Micro	Less than 4 people	≤ Rp50 Million	≤ Rp300 Million
Small	5 - 19 people	Rp50 million - Rp500 million	Rp300 million - Rp2.5 billion
Medium	20 – 99 people	Rp500 million - Rp10 billion	Rp2.5 billion - Rp50 billion

2. Material And Methods

2.1.1. Data Source/Materials

The data used in this study are primary data. The data is obtained from the track record of business owners (traders) by questionnaire who are included in the Micro category, who sell culinary in the cities of Bandar Lampung and Palembang which are the target sampling years from October to September 2023. The aim of this study is to find out what factors can make a business venture survive, and what are the prominent competitive risk factors that affect the business venture.

The characteristics of participants were the micro enterprise business, or the culinary sellers of micro scale as described on Table 1, namely the Business that have only 4 workers at most, with the assets of less than Rp 50 million, and the turnover per year of less than Rp 300 million. The culinary sellers in Palembang mostly *pempek*-based culinary food, but also available the variety of food such as *nasi goreng* (fried rice) or *pecel lele* (fried catfish served with *sambal terasi* or chili shrimp paste). In Bandar Lampung are also various food available such *ayam geprek* (smashed chicken), *nasi goreng* (fried rice), *cilok* (fried tapioca flour), kebab etc. The samples we took 50 sellers from Bandar Lampung and 50 sellers from Palembang.

After questioning so many culinary sellers among the sellers in six cities of 256 sellers from Bandar Lampung, Palembang, Kota Metro, Lubuk Linggau, Muara Enim, and Kotabumi, we have a list some obstacles for the sellers to remain survive such as 1. Lacked capital; 2. Have no talent; 3. Have no experience; 4. No prestigious; 5. Tired; 6. High inflation; 7. Covid 19; 8. Lacked raw materials. Then, we look at the higher percentage are on lacked capital and the high inflation. Afterwards, we set that the failure types are at least two, namely the first one is lacked capital, and the second one is the high inflation.

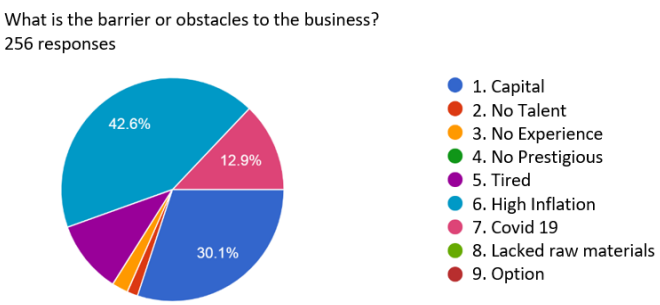

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Figure 1. The high inflation is the highest role (42.6%) as the obstacles to the culinary sellers compared to lacked capital (30.1%) and to have no talent (12.9%)

2.1.2. **Methodology**

Table 2. Operational Definition of Variables

Variables	Variables Name	Types	Description
Y	Failure Times (*t*)	Continue	The time during which business owners (culinary traders) run their businesses in the cities that are the place of observation (years).
S	Status	Category	s = 0, if the business owner quit, or moved location, went bankrupt during the study period s = 1, if the business owner continues to run the business
ft	Failure type	Continue	ft=0 if the obstacle to their business is due to Covid-19 or lacked capital ft=1 if the obstacle to their business is due to rise of the price in the staple materials
x_1	Capital place	Continue	0 = Own 1 = Renting
x_2	Success	Continue	0 = if the business they recognized is successful 1 = if the business they recognized is not successful
x_3	Share to the poor	Continue	0 = if the seller share the profit to the poor is larger than Rp 5000 daily 1 = if the seller share the profit to the poor is equal to Rp 5000 daily
x_4	Daily Income	Continue	0 = if daily income of Rp 3 to 6 milion 1 = if daily income of Rp 1 to 3 milion
x_5	Daily Capital	Continue	0 = if daily capital of lesser than Rp 1 milion 1 = if daily capital of larger than Rp 1 milion

Data was analyzed by Kaplan-Meier and Cox regression for competing risks of Lunn-McNeil method. Lunn-McNeil analyzes competitive risk in a survival model using Cox regression with censored data. The modified Lunn-McNeil technique is merely a simplification of the Lunn-McNeil technique (Lukman, 2002). The Kalbfleisch-Prentice technique (Kalbfleisch and Prentice, 1980) involves fitting the model separately for each failure type, if it is a failure type, then the other failure types are censored.

2.1.3. **The Lunn-McNeil Method**

This effort is made to ensure that the application of the Cox model to competitive risk is as simple as possible. The Lunn-McNeil (1995) log-likelihood conditional probability function is

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quite complicated, especially with respect to the parameters β and its interpretation (Lukman et al., 2002). It gives the impression that there are three types β, namely β0, β1, β2, while the covariate z can be more than one which can then complicate the calculation β. Calculations are made difficult, by employing the iterative Newton-Raphson method, which involves a matrix of variances of the sample information matrix. Also, the simultaneous calculation of β become more complicated. Using the Lunn-McNeil method, with one double entry, the simplification is carried out by Lukman et al. (2002). However, in this paper, we use the technique of the model proposed by Lunn-McNeil (1995) which is their unstratified part technique only.

2.1.4. Data Handling

The assumptions are the same as those in Lunn-McNeil (1995). Data entry is also the same. The difference is that the type of failure in (Lunn and McNeil, 1995) is written in one column, in this modification both types of failure are written in all or 2 columns as in Table 3. Assume that the types of failure I and II are written as v and 1 – v where v = 0 or 1. if subject i fails at time ti and the first type of failure is vi (or 1 – vi) then the second type of failure is 1 – vi (atau vi). Providing a column for the second failure type, the two entries are created as follows:

Table 3. Data handling of Lunn-McNeil Method (1995)

Subj	Failure Times	Status	Failure type	Covariate
i	t_i	*1*	v_i	z_i , v_i z_i
i (rep)	t_i	*0*	$1 - v_i$	z_i , $(1 - v_i)$ z_i

If subject *i* is re-censored as above but now the status for both types of failure is 0. Coupling the second type of failure in Table 1 is useful for finding combined parameter estimates. Then we regress the duplicate data on the type of failure (either one or both types of failure) and the covariates.

The modifications by Lukman et al., (2002) were intended to simplify the Lunn-McNeil method, a complicated formula at competitive risk. Cox models were run on duplicated, failure-type data sets, type of failure v (or 1- *v*) entered with covariates z and *vz* (or *z* and (1- *v*) *z*). Within the framework of competing risks Kay (1986) said, for a patient with Covariate values $z_2, \ldots, z_p$, hazard estimation for special cause *j* is

$$\lambda j\,(t;z) = \lambda 0\, j\,(t)\,(\exp(\beta j1\, z_2 + \ldots + \beta jp\, z_p)), j = 1,2,\ldots,m.$$

where z_1 is an indicator of binary treatment, and $z_2, \ldots, z_p$ background covariates. As pointed out by Kalbfleisch and Prentice (1980) that the estimation is based on the partial likelihood method. Parameter β estimated separately for each type of failure *j* by considering all failure types other than *j* as censored. Therefore, the results from analyzing Bandar Lampung and Palembang data are obtained.

3. Result And Discussion

The Kaplan-Meier calculation (Kleinbaum and Klein, 2012) also known as the Kaplan-Meier estimator or Kaplan-Meier survival curve, is a statistical method used in survival analysis to estimate the survival probability or survival function for a group of subjects or entities over time when there may be incomplete or censored data.

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To perform Kaplan-Meier analysis, it was started with a dataset that typically includes information on the time to an event of interest (e.g., survival time to death, time to failure) for a group of culinary business in Bandar Lampung and Palembang along with an indicator variable that specifies whether the event occurred or if the data is censored (i.e., the event has not occurred by the end of the study period or is otherwise incomplete). Then data is sorted in ascending order based on the survival time variable. Subjects with the event of interest are grouped together, and the censored data is also grouped.

Calculating Survival Probabilities: The Kaplan-Meier estimator calculates the survival probability at each observed event time point. It starts at time zero and calculates the probability that a subject survives beyond each event time point. The formula for calculating the survival probability at a particular time is as follows:

$$S(t) = S(t-1) * [(n_i - d_i) / n_i]$$

Where:
- S(t) is the estimated survival probability at time t.
- S(t-1) is the estimated survival probability at the previous time point.
- n_i is the number of subjects at risk just before time t.
- d_i is the number of subjects who experienced the event at time t.

Plotting the Kaplan-Meier Curve: The calculated survival probabilities at each event time point are used to create a stepwise survival curve, known as the Kaplan-Meier survival curve. This curve illustrates how the survival probability changes over time and provides an estimate of the survival function for the group.

The Kaplan-Meier estimator is particularly useful when dealing with time-to-event data, where events may occur at different time points and not all subjects experience the event by the end of the study. It allows researchers to estimate and visualize the survival probability over time and compare survival between different groups or categories within the dataset.

The Kaplan-Meier estimator is widely used in medical research, epidemiology, engineering, and various other fields to analyse and report survival data. It provides valuable insights into the probability of survival over time and can help in making informed decisions or drawing conclusions about the risk of an event occurring.

As seen on Table 4, the real samples are 100 sellers, 50 from Palembang and 50 from Bandar Lampung, the total N become 200 or double the real one due to applying the Lunn-McNeil method (1995). Either in Palembang or in Bandar Lampung the failure type is the same, namely lacked capital and the rise of the materials price, which the number of respondents said the rise prise of materials in Palembang (48) doubled to the said statement from the culinary sellers in Banda Lampung. The lacked capital is attributed as the first type of failure. The rise of the materials is attributed as the second type of failure. The failure time is the years they have started their business in months, until 2023. For example, if they have started business since 2020, then their survival time is considered 2023-2020=3 years but is recorded as 3x12=36 months. It meant for 3 years they have survived. If they have started business since 2020 but quit in 2021 due to either lacked capital or the rise of materials price, then they considered as censored, although their failure time or survival time is recorded as 2023-2021=2 years or 12 months.

As seen on the Table 5, the mean estimate of the culinary sellers in Bandar Lampung as much as 140.386 months passed the turmoil of first type of failure that is lacked capital, while in Palembang at the same failure of type the numbers is 311.234 months. Therefore, for the lacked

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capital the culinary sellers in Palembang are stronger than the culinary sellers in Bandar Lampung with Confidence interval of 95%.

City	Failure Type	Total N	N of Events	Censored N	Censored Percent
.00	.00 Lacked Capital	50	24	26	52.0%
Bandar Lampung	1.00 High Inflation	50	24	26	52.0%
	Overall	100	48	52	52.0%
1.00	.00 Lacked Capital	50	2	48	96.0%
Palembang	1.00 High Inflation	50	48	2	4.0%
	Overall	100	50	50	50.0%
Overall	Overall	200	98	102	51.0%

Table 4. Failure Type, Total N, and Total percentage failure type.

Table 5. Mean of the Survival time estimate according to their failure type.

City	Failure Type	Mean		95% Confidence Interval	
		Estimate	Std. Error	Lower Bound	Upper Bound
.00	.00	140.386	22.327	96.625	184.146
	1.00	167.602	24.114	120.338	214.866
	Overall	152.755	17.449	118.554	186.956
1.00	.00	311.234	8.833	293.922	328.546
	1.00	93.216	10.631	72.379	114.053
	Overall	156.191	14.075	128.603	183.779
Overall	Overall	153.768	11.063	132.084	175.451

However, the mean estimate of the culinary sellers in Bandar Lampung as much as 167.602 months passed the turmoil of second type of failure that is the rise of the material price or high

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inflation, while in Palembang at the same failure of type the numbers is 93.216 months. Therefore, regarding the high inflation the culinary sellers in Bandar Lampung are stronger than their compatriot in Palembang with the confidence interval of 95%.

Table 6. Adjusted Overall Comparisons for City

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	24.356	1	.000

The vector of trend weights is -1, 1. This is the default.

a. Adjusted for City.

The log-rank test, also known as the Mantel-Cox test (Moore, 2009), is a statistical test used in survival analysis to compare the survival distributions of two groups. Here we apply it to compare the culinary sellers. It is commonly used to assess whether there is a significant difference in survival times between two cities or groups, and Table 5 tell that survival distribution between the sellers of the two cities is significantly different. If the p-value is less than significance level (e.g., 0.05).

Here is the case, we want to use the log-rank test to differentiate between two cities, it means we want to compare the survival experiences (e.g., time to an event) of individuals or entities in these two cities. The term "survival" does not necessarily mean literal survival; it can be used in various contexts, such as medical research (e.g., time until a disease relapse), social sciences (e.g., time until job turnover), or any situation where you want to compare the time it takes for an event to occur in different groups.

In summary, the log-rank test (Mantel-Cox test) helps us determine if there is a significant difference in the survival experiences of two groups, such as two cities in your case. It is a valuable tool for comparing event times and assessing whether differences are statistically meaningful.

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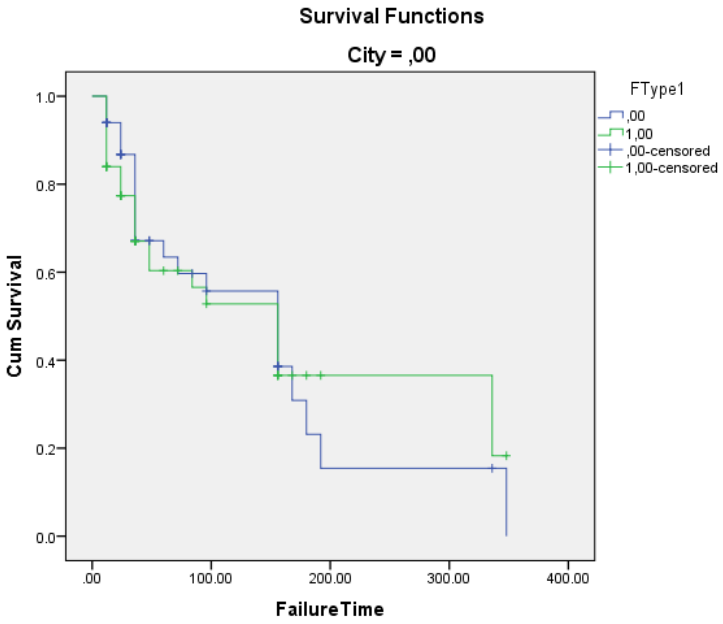

Figure 2. The first failure type and second failure type in Bandar Lampung

In Figure 2, as can be seen that the first type of failure does not parallel to the second type of failure. Handling an unparallel graph for two types of failure typically involves dealing with a situation where we have survival data for two different groups or types of failure, and the Kaplan-Meier survival curves for these groups do not cross or intersect. When the survival curves do not intersect, it suggests that there is a significant difference in survival between the two groups. Here are some steps to handle such a scenario:

Start by interpreting the meaning of the non-intersecting survival curves. This suggests that there is a statistically significant difference in survival between the two groups. One group is experiencing the event of interest at a much higher rate or earlier than the other group.

Conduct statistical tests to confirm whether the difference in survival between the two groups is statistically significant. Common statistical tests used for comparing survival curves include the log-rank test and the Wilcoxon test. These tests can help determine if the difference is unlikely to have occurred by chance.

Examine Risk Factors: Investigate the factors or characteristics that may be contributing to the difference in survival between the two groups. Are there specific variables or conditions that are associated with one type of failure but not the other? This can help you understand the underlying causes of the differences in survival.

Clinical or Practical Implications: Consider the clinical or practical implications of the non-intersecting survival curves. Are there implications for patient care, product design, or any other relevant area? Understanding these implications can help guide decision-making and further research.

Reporting and Communication: Clearly communicate the findings of your survival analysis, emphasizing the non-intersecting nature of the survival curves and the statistical significance of the differences. Use visual aids such as Kaplan-Meier curves to illustrate the results effectively (Moore, et al., 2009).

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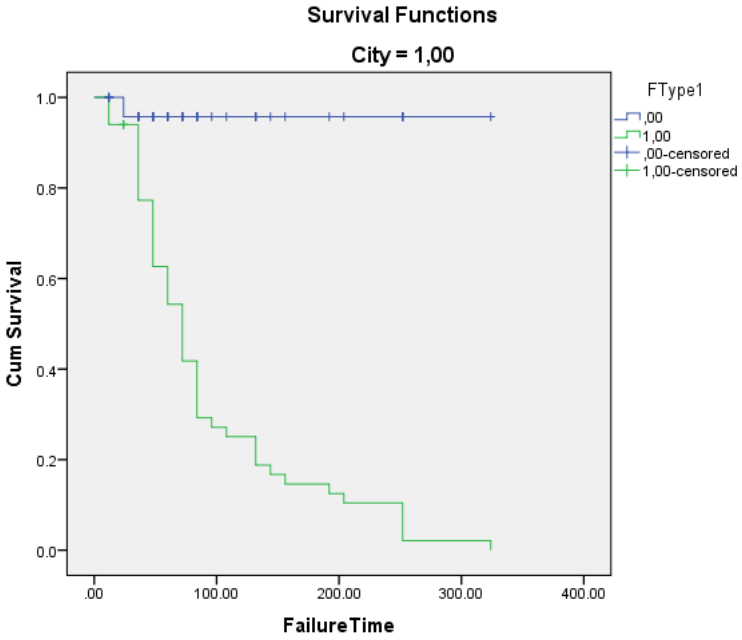

Figure 3. The Survival function in Palembang

Figure 3. Tell that the first failure type and the second failure type does not parallel but also does not cross to each other.

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Table 7. Stratum Status where City as the strata variable

Stratum	Event	Censored	Censored Percent
,00	48	52	52.0%
1,00	50	50	50.0%
Total	98	102	51.0%

a. The strata variable is City

Table 7 mention that the sellers in Bandar Lampung fallen into event is 48 with 52 censored, while the sellers in Palembang fallen into event is 50 with 50 censored.

Table 8. Variables not in the Equation

	Score	df	Sig.
Failure Type1	21.836	1	.000
BusiPlace	2.398	1	.121
Succesful	.061	1	.804
Sharepoor	6.223	1	.013
Dayincome	.074	1	.786
DayCapital	.004	1	.947
Failure type2	21.836	1	.000

a. Residual Chi Square = 36.112 with 6 df Sig. = .000

As can be seen on Table 8 that variables which are not automatically involved in the equation, are both significantly different for the two failures of types, and for Sharepoor (it meant if the sellers gave some money to the poor due to his habit). However, the variable of BusiPlace (whether the seller own their place or renting from others) is not significant. Also, for recognising that their business has been successful (in the Table 8 its attribute is Successful) is not significant. Also, for Daily income (on the table is Dayincome) is not significant. Also, for attribute DayCapital (Daily Capital) is not significant too.

Table 9. Variables in the Equation[a]

		B	SE	Wald	df	Sig.	Exp(B)
Step 1	FType1	1.024	.229	20.024	1	.000	2.784
Step 2	FType1	1.055	.230	21.080	1	.000	2.871
	Sharepoor	.555	.205	7.340	1	.007	1.742

a. Constant or Linearly Dependent Covariates S = Stratum effect. Ftype2 = 1 - FType1 + S ;

As can be seen on Table 9, that the Step1 is Failure type2= 1- Failure Type1 are significantly different with parameter B=1.024, and the hazard ratio= Exp(B)= 2.784, it meant that the hazard ratio of second failure type is 2.784 against the first type of failure.

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Table 10. Covariate Means

	Mean
FType1	.500
BusiPlace	.405
Succesful	.440
Sharepoor	.395
Dayincome	.435
DayCapital	.415
Ftype2	.500

As seen on Table 10 that covariates we collected from the culinary sellers are Ftype1 which is the first type of failure, namely the lacked capital. The Ftype2 is the second type of failure namely the rise of materials price. BusiPlace is the covariate of whether the sellers own their business place or renting from others. The covariate successful meant if they recognized that their business is a successful business. The covariate Sharepoor meant that the sellers are routinely giving some money to the poor. The covariate Dayincome meant their income daily due to his business. The covariate DayCapital meant that they must have spent some expenditure money daily.

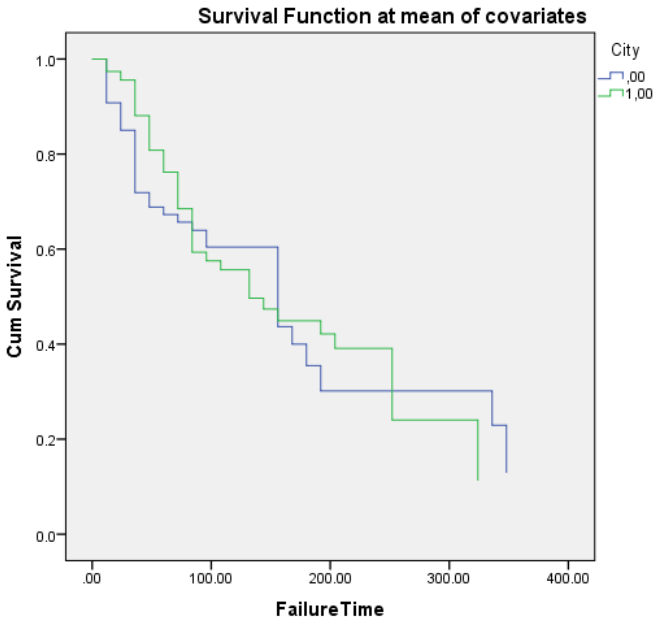

Figure 4. Survival Function at Mean Covariate

As seen on Figure 4, that at mean covariate the survival function between Group n Bandar Lampung and Palembang does not parallel. Until 90 months of the running the business the survival of Palembang sellers looks great, but after about 250 months, the culinary sellers in Bandar Lampung surpassed their compatriot in Palembang.

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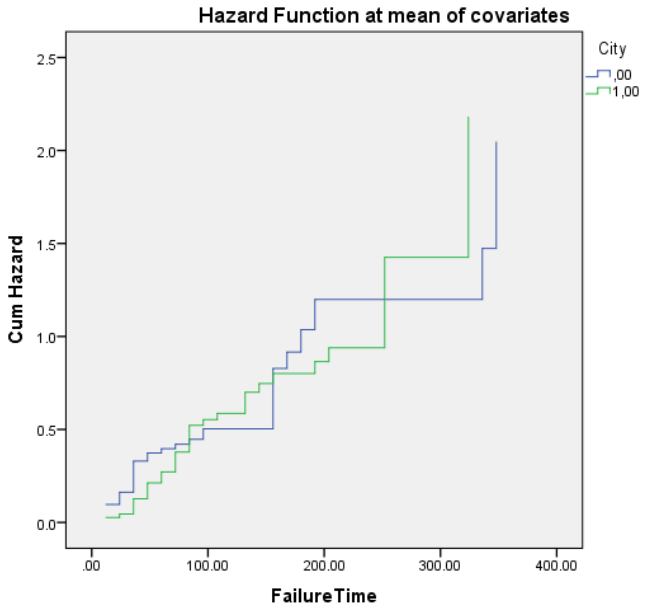

Figure 5. The Hazard Function at Mean Covariate in Bandar Lampung and Palembang

On Figure 5, the hazard function in Bandar Lampung higher than that of the hazard function in Palembang. However, after about 250 months, the hazard function in Palembang surpassed than that of in Bandar Lampung.

The survival function (S(t)) represents the probability that a subject or system will survive beyond a certain time t. In other words, it tells that the probability that an event of interest (such as failure or death) has not occurred by time t.

The hazard function: In survival analysis, there is a relationship between the survival function (S(t)) and the hazard function (h(t)). By taking the natural logarithm of S(t), it can be often obtain insights into the hazard function. Specifically, the negative of the derivative of ln(S(t)) with respect to time (t) gives the hazard function: $h(t) = -d[\ln(S(t))]/dt$.

When you graph "one minus survival function" (1 - S(t)) as a function of time (t), you are essentially plotting the cumulative probability of the event occurring over time. This graph is often used to analyze the reliability or failure rates of systems or to estimate the probability of survival or failure at different time points (Lee and Wang, 2003).

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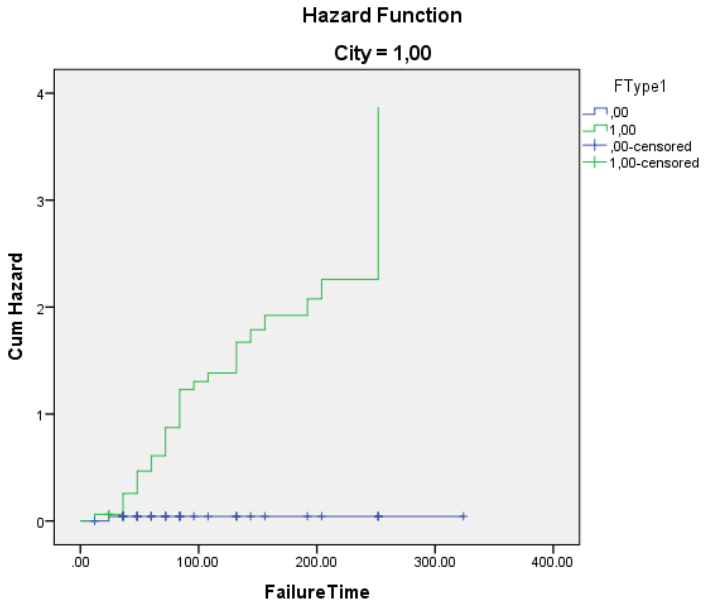

Figure 6. The Hazard function of both type of failure in Palembang

Figure 6. Show that in City=1.00 namely Palembang with the hazard function of the two Failure types. In Figure 6, as can be seen that in Palembang the second failure type namely the rise of the material price it seems to be dominated to the first type of failure which is the lacked capital since the beginning of business.

The hazard function graph, often referred to simply as the "hazard function" or "hazard rate," is a graphical representation used in survival analysis and reliability theory. It provides valuable insights into the instantaneous rate at which an event of interest (such as failure, death, or some other event) occurs at a specific time, given that it has not occurred up to that time. In Figure 20, is seen that the hazard function for the culinary business will have effect since the first years of their business (as seen the plus + sign with the blue colour) are the sellers who were censored, which meant they met the obstacle of the price of materials on the rise then the stopped the business or moved to another activity. On the contrary, the uncensored subject or culinary sellers who survive until the observation stopped were considered as tough enough to resist the failure type.

Hazard Function (h(t)): The hazard function, denoted as h(t), represents the instantaneous rate of failure or the risk of the event happening at a particular time t, conditioned on the fact that it has not occurred before t. Mathematically, it is defined as the ratio of the probability of the event occurring in a very small-time interval around t to the width of that interval. In other words, $h(t) = \lim(\Delta t \rightarrow 0) [P(t \leq T < t + \Delta t \mid T \geq t) / \Delta t]$, where T represents the time to the event.

Graphical Representation: The hazard function is typically graphed as a function of time (t) on the x-axis and the hazard rate (h(t)) on the y-axis. The graph may take various shapes depending on the nature of the event being studied. Common shapes include increasing hazard, decreasing hazard, and constant hazard over time.

Increasing Hazard: In some cases, the hazard function starts low and increases over time, indicating that the risk of the event happening grows as time progresses. This might be seen in situations where mechanical components age and become more prone to failure over time.

Decreasing Hazard: In other cases, the hazard function starts high and decreases over time, suggesting that the event is more likely to happen early and becomes less likely as time goes

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by. This could be observed in studies of infant mortality, where the risk of death is higher shortly after birth but decreases as the child ages.

In rare cases, the hazard function remains constant over time, indicating that the risk of the event occurring is the same at all points in time. This implies that the event has a constant failure rate.

The hazard function graph is a fundamental tool in survival analysis because it helps researchers and analysts understand how the risk of an event changes over time. It can provide insights into the behaviour of systems, populations, or processes and is particularly useful for modelling and predicting survival and failure rates in various fields, including healthcare, engineering, and finance.

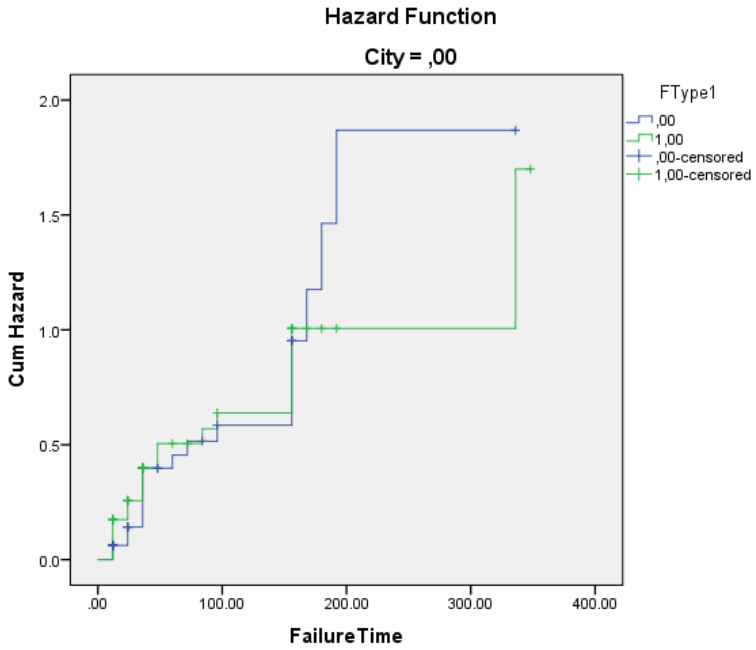

Figure 7. Show that in City=0.00 namely Bandar Lampung, the hazard function of the hazard ratio between failure type 2 to failure type 1

In Figure 7, as can be seen that in the first 100 months of the business the rise of the material price it seems to be dominated to the second type of failure which is the rise of the materials price. However, as business go for more than 200 months then the lacked capital dominated the rise of the material price.

4. Conclusion

The determination of the first type of failure and second type of failure namely the lacked capital and the rise of the materials price are correctly fitted to the real situation for culinary sellers either in Bandar Lampung or Palembang. The covariates which is significant to the contribution of the survival times of their period of business is sharing the small money to the poor.

Suggestion then is recommended to the government to help the culinary sellers by controlling the rise of the materials price. The culinary sellers are really need the supported fund to do their business, but the most problematic one is the inflation of the raw material prices which can be fatal for the culinary business, either in Bandar Lampung or in Palembang.

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