

Marketing Strategy on Personal Loans Top Up Using Survival Analysis: Case Indonesian Bank

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Abstract: *Currently one of the banks in Indonesia is still applying the old way in making a top-up offer of personal loans to customers. This makes the number of customers who ultimately are interested in submitting a top up of only 22% of total customers each month. In order not to lag behind a competitor it is necessary to devise a reliable marketing strategy, where the marketing campaign are not only based on the appropriate customer profile but also when the loan should be offered. This research tries to know the prediction time of debtor in proposing personal loans top up based on socioeconomic variable. In addition, it is also necessary to know the category of personal loans debtors that become the priority offered by the marketer so that the implications become more effective and efficient than the previous offering pattern by the telemarketer. The research method is using survival analysis. The result of the research showed that the socioeconomic factors that influence the debtor to top up personal loans at the confidence level of 5% are Age, Marital Status, Number of Dependent, Living Status, Education, Region, Job Type, Length of Work, Salary, DBR, Credit Tenure, and Credit Limit. Only Gender which has no effect on personal loans top up. Opportunity of the debtor to propose personal loans top up at the event time of 0 to 6 months after credit disbursement is 0%. Then from the seventh month of credit disbursement, the odds are higher with the highest top up opportunity on average debtor occurring in the 48th month since credit disbursement is 15%. The managerial implication in this research is the priority of personal loans top up offered from 3 categories of debtor combination, the main priority is category 3 (122.897 debtors) because it has an top up opportunity in the 48th month is 28%, the highest probability compared to the other categories of debtors as well as the average of all debtors. The findings in this study are expected to be useful for marketers in developing personal loans products and also in preparing a more targeted marketing strategy so that more effective and efficient for the banks. In addition, the expected implication is that the customer experience will be better because the product will developed more customer centric.*

Keywords: Indonesian Retail Bank, Marketing Strategy, Personal Loans, Survival Analysis, Top Up.

1. Introduction

The development of the retail banking industry is currently facing a big challenging competition. Based on the Boston Consulting Group (BCG) report in 2016, successful retail banking is one that can implement convenience technologies for its customers. To implement customer convenience, the Bank must develop technologies and customer databases to simplify business processes as well as to improve customer experience through process speed, service quality and cost efficiency. Through high technology and good database management, the bank can understand the pattern of transactions and customer behavior in each bank's service contact point.

Based from the Indonesian Financial Services Authority (OJK) data, total credit portfolio of personal loans in December 2016 is IDR 468.2 trillion with the first and second largest personal loans market share from state-owned banks is 20.4%. With both market share of the state-owned banks that did not reach 50%, it proves lot of competitors who participated in personal loans due to expectation of high yield margin from this loan.

To win the competition, bank has to know the characteristics of each customer by implementing the Customer Relationship Management (CRM). Using CRM, the bank can know the transaction and the behavior of the

customer in each bank's contact point. Kotler (2005) said that, CRM is concerned with managing detailed information about individual customers and all customer touch points to maximize customer loyalty. Based on what they know about each valued customer, the company can developed its marketing campaign, services, and programs. CRM is important because it is the main driver of corporate profitability and the collective value of the company's customer base. Therefore it is very important for the banks to identify their customers that contribute a high income to the company.

Aviliani et al. (2011) states that the use of CRM is usually to meet various purposes. One is to get closer to the customer by using hidden data in the spreadsheet database. Learning and analyzing the data can turn raw data into valuable information about customer needs. By predicting customer needs, companies can target the right product to the right segment at the right time through the appropriate distribution channels. Customer satisfaction also can be enhanced through more effective marketing strategy. Another goal of CRM initiatives is to transform the company into a customer-centric organization with a greater focus on customer profitability.

Zeithaml et al. (2013) says the cost incurred to retain existing customers is still lower than finding new customers and successful marketers are the ones who can develop

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effective strategies for customer retention. This is in line with that stated by Gouws (2012), a successful retail banking is that refers to the strategy:

Increase and retain customers; combined with
Growing number of sustainable customers.

Based on some previous research, quite a lot of researchers are discussing CRM to improve and retention of customers, but the use of survival analysis to predict the right time of credit offer in accordance with the needs of prospective borrowers, especially for upselling banking products has not been done. This reasoning causes the authors interested to research the use of CRM for the prediction of time top up debtors using survival analysis.

2. Literature Review

2.1 Marketing Strategy and Marketing Mix

The marketing concept is embodied into several marketing strategies. Strategy is a unified, holistic, integrated plan that links corporate advantages with environmental challenges to sustainable competitive advantage. The marketing strategy provides direction and develops competitive advantage as well as prioritizing the resources that the company uses to serve the target consumers. Marketing strategy is an integral part of the business strategy run by the company. Kotler (2005) stated that the core of marketing strategy are segmenting, targeting, and positioning (STP).

Sumarwan(2016) defined marketing strategy has two point of view, first the point of view of seller and second is the point of view of buyer. The marketing strategy from the point of view of seller is the marketing mix consisting of product (product or service quality), price (competitive price), place (strategic location) and promotion (promotion of incessant and targeted). Marketing strategy from the buyer's point of view is the needs and wants of the customer, consumer cost, convenience, and communication. In terms of implementation of a good marketing strategy, the company will be able to better understand the needs of its customers if it has a database of its customers. Through this database the company can know the pattern of transactions and also the buying behavior of its customers. Therefore companies need to implement Customer Relationship Management (CRM) in the management of its customers.

2.2 Customer Relationship Management (CRM)

According to Kotler (2005), CRM is the process of managing detailed information about individual customers and all customer "point of contact" in the same way to maximize customer loyalty. CRM makes it possible to maximize personalized customer service according to customer characteristics. This means that on each transaction, relevant account information, customer preference information and past transaction sets can be key to service development and improve customer value

(Lovelock and Wirtz 2005).

Another definition according to Chen and Popovich (2003), CRM is a combination of people, process, and technology that aims to understand a company's customers. The combination of people, process, and technology aspects in the enterprise-wide, customer-centric, technology-driven, cross-functional organization. Marketing activities manage all aspects of customer life cycle, from acquisition, fulfillment, to retention. CRM is a comprehensive strategy of the company so that every process from the customer's life cycle can be optimally utilized said Sanjaya et al. (2015).

Research on CRM has been done by Koudehi et al. (2014), Irmariani (2013), and also Kristiani et al. (2013). Researchers used the Recency, Frequency, and Monetary (RFM) method and demographic variables based on data mining from the company. In the study of Koudehi et al. (2014), the data used in the research is the 12 months customer interaction data during 2012. The research results are able to understand the value of customers in each cluster so that will benefit to better maintain CRM strategy, improve customer loyalty and acceptance and find opportunities to increase sales. Research conducted by Kristiani et al. (2013) on Garuda Indonesia airlines where based on demographic variables obtained high financial value for the company is influenced by gender, age, and member level of frequent flyer. Similarity of research Koudehi et al. (2014), Irmariani (2013), and Kristiani et al. (2013) with the author is the use of demographic variables to know the characteristics of customers and also using data mining from the company.

2.3 Survival Analysis

Survival analysis is a set of methods for analyzing data whose output variables are the occurrence of events. These events can include death, disease resistance, marriage, divorce, etc. Measurements of time to events can be days, weeks, months, and years (Cornell Statistical Consulting Unit 2016). This analysis records the timing of an initial event until a failure occurs.

According to Baesens et al. (2005) survival analysis is not only to differentiating good and bad customers but also to predict when the customer will be default. According to Tsujitani et al. (2012), Kleinbaum and Klein (2005), the main thing in survival analysis is the presence of censored data that makes the standard method commonly used unsuitable for analytical tools, such as logistic regression analysis. Data is censored if information about the time of survival is not available.

Its application in marketing is by combining CRM with survival analysis, we can know the behavior and transaction patterns of customers from the database available in the company and can predict the right time to offer products and services that match the characteristics of the company's customers.

Previous studies of survival analysis were conducted by Drye et al. (2001), Salazar et al. (2004), and Ulfah et al. (2015), research related to customer retention as a key concept in Relationship Marketing and as an important point in marketing campaign. The similarity of the research with the authors is the use of survival analysis method to know the behavior of the customer in relation to personal loans top up offer to the customer according to the sociodemographic characteristic and at the time according to the need.

Salazar et al. (2004) uses Survival Analysis to improve customer retention ratio as well as cross-selling of products and services as it is known as an effective strategy to increase corporate profits. Drye et al. (2001) analyzed two case studies of extension and re-purchase. The result of the research is as much as 48% of insurance customers do not purchase products outside the company where the products used are the majority of the type of insurance protection and investment insurance. In addition, 95% of customers renew their insurance policies in the 15th and 20th years. Ulfah et al. (2015), get factors that influencing students not drop out from Bogor Agricultural University (IPB) each semester is faculty of choice, city of origin, high schoolscore, accreditation of high school, and average school score.

3. Research Method

The data used in this research is obtained through the study of financial statements of one retail bank in Indonesia, internal bank data, literature study, and other published sources. The time period of data is personal loans that has been disbursed since January 2013 until December 2016. Based on that, the data of personal loans debtors in this study amounted to 330,655 debtors.

3.1 Variable Description

The data gathered from the bank is used for the survival analysis. Variables obtained from the database of debtors personal loans is X which becomes independent variable while the response variable or dependent used in this research are top up status (Y) and top up event time (T).

3.2 Research Framework

To know the socioeconomic factors that influence the top up on personal loan then used survival analysis, also this can be used to predict the top up time for the debtor.

The results of survival analysis is to create effective marketing strategy. The expected managerial implication is the top up composition can be increased and also bank can achieve the business target as well as to catching up the market share gap with major competitors. The framework of thought in this study is presented in Figure 1, as follows:

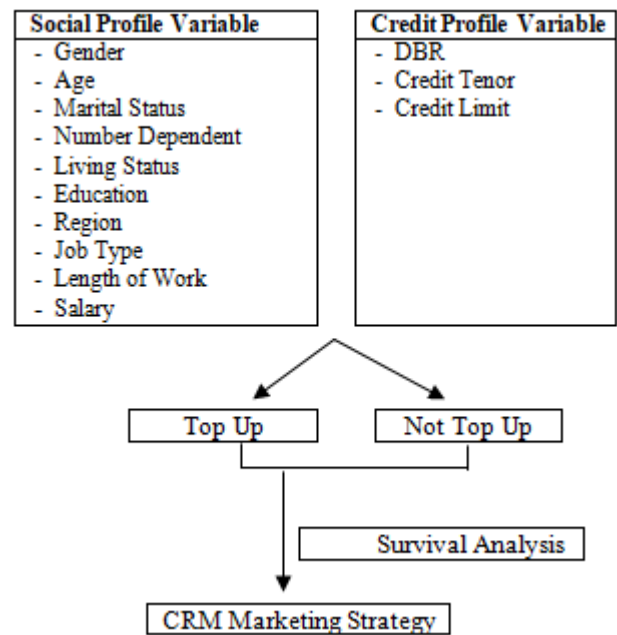


Figure 1: Research framework

4. Result and Discussion

4.1 Survival Analysis

To know the socioeconomic influences factors and the top up time prediction it is used survival analysis. The result of goodness-of-fit test, can be seen in Table 2.

Table 2: Goodness-of-fit result

-2 Log Likelihood	Overall (score)		
	Chi-square	df	Sig.
1424913,857	26196,817	23	,000

With the overall value score (score) of 0.000 it can be concluded that at least one independent variable has an effect on the confidence level of 5%. Based on that all the variables have significant value except gender (X₁) which is not significant to personal loans top up. The overall output cox regression up-selling KTA as described in Table 3 below.

Table 3: Regression result

Variables		Sig.	Exp(B)	Sig.
Gender (X₁)				
X _{1A}	Male			Reference Variable
X _{1B}	Female	0,727	1,004	N
Age (X₂)				
X _{2A}	21 ≤ Age < 30			Reference Variable
X _{2B}	30 ≤ Age < 40	0,000	1,130	Y
X _{2C}	Age ≥ 40	0,549	1,010	N
Marital Status (X₃)				
X _{3A}	Married			Reference Variable
X _{3B}	Not Married	0,000	1,083	Y
No. Dependant (X₄)				
X _{4A}	No Dependant			Reference Variable
X _{4B}	1 Person	0,081	1,031	N
X _{4C}	2 Persons	0,084	1,031	N
X _{4D}	Dependant ≥ 3	0,031	1,042	Y

Variables		Sig.	Exp(B)	Sig.
Living Status (X₅)				
X _{5A}	Owned			Reference Variable
X _{5B}	Parents	0,006	1,017	Y
X _{5C}	Company	0,000	0,842	Y
X _{5D}	Credit	0,080	0,856	N
Education (X₆)				
X _{6A}	Under			Reference Variable
X _{6B}	High School	0,000	0,790	Y
X _{6C}	Diploma	0,000	0,699	Y
X _{6D}	Bachelor	0,000	0,602	Y
Region (X₇)				
X _{7A}	Jakarta			Reference Variable
X _{7B}	Sumatera	0,995	1,000	N
X _{7D}	Java	0,000	1,098	Y
X _{7E}	Others	0,000	1,103	Y
Job Type (X₈)				
X _{8A}	Sivil Servant			Reference Variable
X _{8B}	SOE	0,001	0,934	Y
X _{8C}	Private	0,000	1,452	Y
Length of Work (X₉)				
X _{9A}	≤ 5 Years			Reference Variable
X _{9B}	> 5 Years	0,000	0,896	Y
Salary (X₁₀)				
X _{10A}	Salary < 5 Million			Reference Variable
X _{10B}	Salary ≥ 5 Million	0,000	0,762	Y
DBR (X₁₁)				
X _{11A}	DBR < 30%			Reference Variable
X _{11B}	DBR ≥ 30%	0,000	1,075	Y
Credit Limit (X₁₂)				
X _{12A}	Tenure < 48 month			Reference Variable
X _{12B}	Tenure ≥ 48 month	0,000	1,497	Y
Credit Tenure (X₁₃)				
X _{13A}	Limit < 50 Million			Reference Variable
X _{13B}	Limit ≥ 50 Million	0,000	3,691	Y

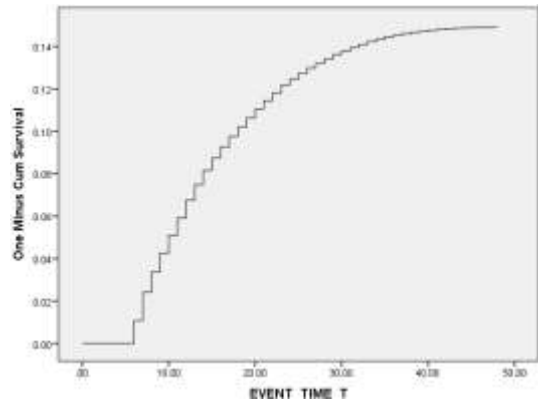


Figure 2: Curve of top up survival function

Opportunity of the debtor proposes a top up at time (event time) 0 to 6 months at 0%. This is in accordance to the bank criteria which the debtors can apply for top up on personal loans after the 6th month since loan disbursement. Probability of the debtor proposes top up after the 6th month since credit disbursement starting from the opportunity of 1% and the biggest probability in the 48th month since credit disbursement of 15%.

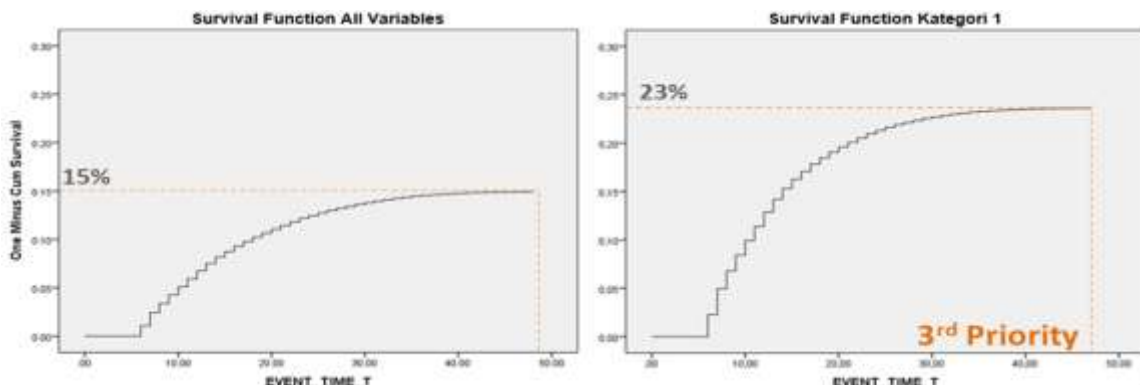
Each variable has different survival curves and different top-up probability. To have an efficient marketing strategy, variables that have probability greater than 15% is combined. There are 3 category below (Table 4).

Table 4: Debtors Criteria

Category	Criteria	Debtors
1	Salary < IDR 5 Mio Credit Tenor ≥ 4 Years	78.006
2	Salary < IDR 5 Million Credit Limit ≥ IDR 50 Mio	53.182
3	Credit Tenor ≥ 4 Years Credit Limit ≥ IDR 50 Mio	122.897

The result of the research showed that based, the socioeconomic factors that influence the debtor to top up personal loans at the confidence level of 5% are Age, Marital Status, Number of Dependent, Living Status, Education, Region, Job Type, Length of Work, Salary, DBR, Credit Tenor, and Credit Limit. Only Gender which has no effect on top up. Furthermore, the result of survival analysis to 330,655 debtors obtained the survival curve. This curve illustrates the probability of customers proposing top up (Cum Survival) and time (month) of loan disbursement (event time) in accordance with Figure 2.

Against the three categories of debtors is then conducted a survival analysis to determine which category of debtors who have the highest personal loans top up probability. The survival curve for the 3 categories is compared with the survival curve of all variables (330,655 debtors) to determine the difference in the personal loans top-up probability as described in Figure 3.



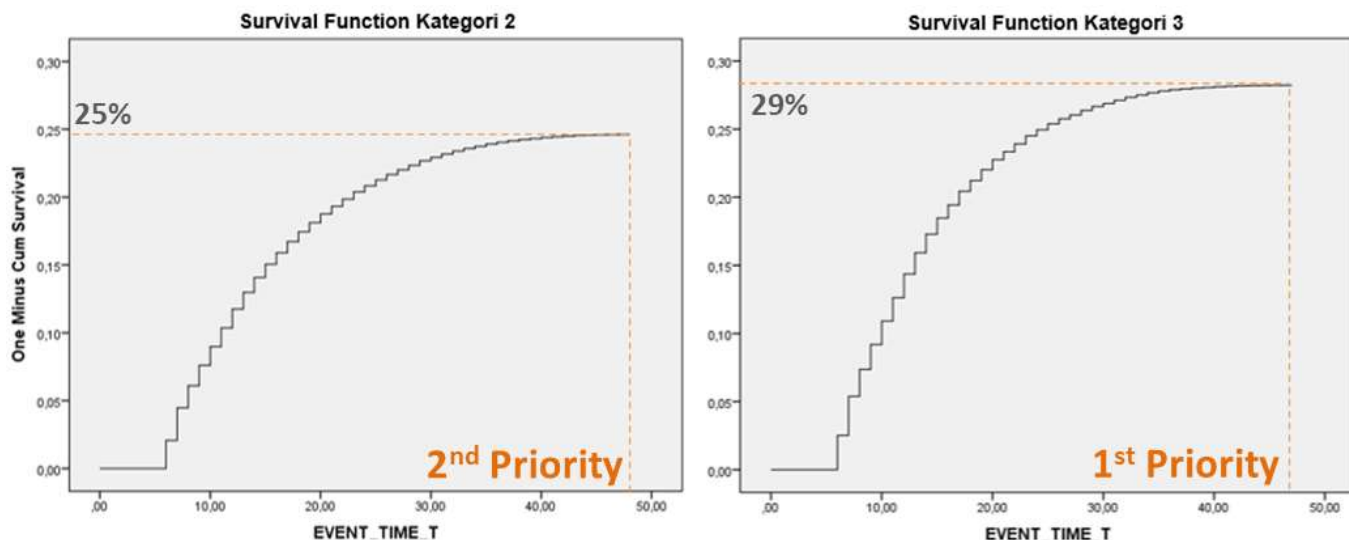


Figure 3: Top Up Survival Curve Comparison

Based on those 3 categories, the highest personal loans top up probability occurred in the 48th month was for Category 3 (29%), then Category 2 (25%), and Category 1 (23%). After that, in order to make more efficient top up offer by bank's marketers based on that probability according to Table 5.

Table 5: Debtors Priority Selection

Priority	Criteria	Debtors
1	Credit Tenor \geq 4 Years Credit Limit \geq IDR 50 Mio	122.897
2	Salary < IDR 5 Million Credit Limit \geq IDR 50 Mio	53.182
3	Salary < IDR 5 Mio Credit Tenor \geq 4 Years	78.006

5. Managerial Implications

The research that has been done in order to provide managerial implications for the bank and also specific in its implementation. Managerial implication based on three element of marketing strategy that is segmenting, targeting, positioning (STP). As stated by Sumarwan (2015), basically STP is used for companies to prepare marketing strategy by selecting appropriate consumer segment so that product or service have competitive and sustainable advantage.

Segmenting in accordance with the profile of debtors personal loans used for financing the education. Bank has to targeting customer who have highest top up probability (122.897 debtors) which is customer with credit tenor from 4 years and credit limit starting from IDR 50 Million. Based on the profile of the largest personal loans debtor group, the positioning of personal loans products prioritizes the image that personal loans is the main solution in financing children's education. This certainly provides benefits that personal loans is not consumptive image but can aim to help finance education.

6. Conclusion

Based on the research results, the conclusions can be

obtained is to improve customer experience is very important to do by having a good database management so that banks can understand the pattern of transactions and customer behavior in each contact point of the bank service.

Efforts to increase personal loans top up transactions need to focusing on socioeconomic factors that influence the top up transaction. In addition, the personal loan's telemarketing team in offerings promotion need to focus on customer that have the highest top up probability. Also in preparing the marketing strategy can be more targeted so that more effective and efficient for the bank. In addition, the expected implication is that customer experience will be better because the product developed will be more customer centric.

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