CORRESPONDENCE ANALYSIS OF INDONESIAN RETAIL BANKING PERSONAL LOANS TOP UP

Andrie Agustino[*][1], Ujang Sumarwan[**], and Bagus Sartono[***]

[*] Bank Mandiri
Jl. Jend. Sudirman Kav. 54-55, South Jakarta, 12190
[**] Department of Family and Consumer Sciences, Faculty of Human Ecology, Bogor Agricultural University
IPB Darmaga Campus, Bogor 16680
[***] Department of Statistics, Faculty of Mathematics and Natural Science, Bogor Agricultural University
Jl. Meranti Wing 22 level 4-5, Kampus IPB Darmaga, Bogor 16680

Abstract: Customer experience can be developed through good database management, and this is an important thing to do in the era of tough retail banking competition especially in the personal loan market competition. Through good database management, banks can understand the transaction pattern and customer behavior in each bank service's contact point. This research aimed at identifying the personal loans correspondence between socioeconomic variables and top up transaction by using the secondary data from one of Indonesian retail banking. The research method used the correspondence analysis and regression. The result of the research showed that the socioeconomic factors that influenced the debtors to top up personal loans at the confidence level of 5% (0.05) included Age, Marital Status, Dependent Number, Living Status, Education, Region, Job Type, Work Length, Salary, Debt Burdened Ratio (DBR), Credit Tenure, and Credit Limit, and only Gender had no effect on personal loan top up. The socioeconomic factors that were close correspondence with the personal loan top up transactions included bachelor degree, State-Owned Enterprises and goverment civil servant employee, income starting from Rp 5 million, credit period starting from 4 years, dan credit limit starting from Rp 50 million. The findings in this study are expected to be useful for marketers of the banks in developing personal loan products and also in preparing a more targeted marketing strategy so that it becomes more effective and efficient for the banks. In addition, the expected implication is that the customer experience will be better because the product developed will be more customer centric.

Keywords: bank, correspondence analysis, personal loans, regression, top up

***Abstrak:** Peningkatan customer experience melalui pengelolaan database yang baik menjadi sangat penting di era persaingan perbankan retail yang cukup menantang saat ini khususnya dalam pemasaran Kredit Tanpa Agunan (KTA). Melalui pengelolaan database, bank dapat memahami pola transaksi dan perilaku nasabah di setiap contact point pelayanan Bank. Penelitian ini mencoba mengetahui korespondensi antara variabel sosioekonomi debitur KTA dan transaksi top up KTA dengan menggunakan data sekunder dari salah satu bank retail di Indonesia. Metode penelitian menggunakan correspondence analysis (analisis korespondensi) dan regresi. Hasil penelitian menunjukkan faktor sosioekonomi yang mempengaruhi debitur KTA melakukan top up pada taraf nyata 5% (0,05) adalah Usia, Status Pernikahan, Jumlah Tanggungan, Status Tempat Tinggal, Pendidikan, Wilayah, Jenis Pekerjaan, Lama Bekerja, Penghasilan, Debt Burdened Ratio (DBR), Jangka Waktu Kredit, dan Limit Kredit. Hanya Jenis Kelamin yang tidak berpengaruh terhadap top up KTA. Faktor sosioekonomi yang berkorespondensi dekat dengan transaksi top up KTA adalah pendidikan Sarjana, pegawai PNS dan BUMN, penghasilan mulai dari Rp 5 Juta, jangka waktu kredit mulai dari 4 tahun, dan limit kredit mulai dari Rp 50 Juta. Hasil penelitian ini diharapkan dapat berguna bagi pihak pemasar bank dalam mengembangkan produk KTA dan juga dalam menyusun strategi pemasaran yang lebih tepat sasaran sehingga lebih efektif dan efisien bagi bank. Selain itu, implikasi yang diharapkan adalah customer experience akan lebih baik karena produk yang dikembangkan akan lebih mengarah kepada customer centric.*

***Kata kunci:** bank, analisis korespondensi, KTA, regresi, top up*

[1] Corresponding author:
  Email: andrie.agustino24@gmail.com

INTRODUCTION

Consumer banking in Indonesia has grown rapidly in the last 20 years, especially in the last 5 years, and this is because the consumer sector provides stability and good resistance to crisis or economic pressures compared to other business areas. As a result, the banks in Indonesia both local and foreign banks focus on this sector, and this also gives an impact on the rapid growth of consumption sector (Surodjo, 2016).

Based from the Indonesian central bank (BI), data consumer credit growth in the end of 2016 occurred in all types of consumer credit, where the highest growth was mortgage loan (79.6%), followed by vehicle loan (39.1%), and personal loans (23.8%). High expectation on the margin of consumer credit, especially personal loans, makes banks in Indonesia (local and foreign) compete to offer personal loans with various features, such as large credit limit up to IDR500 million, credit tenor up to 10 years, credit interest starting from 0.70% flat/month, simple document requirements and fast credit process of maximum 3 working days (BBRI, 2016).

The total portfolio of personal loans in December 2016 based on the Financial Services Authority (OJK) data and from the financial statements of several Indonesian retail banks as shown in Table 1 above was IDR 468.2 trillion with the largest market share of personal loans was Bank Rakyat Indonesia of IDR78.20 trillion (16.70%), and the second largest was Bank Mandiri of IDR17.44 Trillion (3.72%). That the top 2 banks' market share that did not reach 50% had proved that many competitors participated in the personal loans field due to the expectation of high yield and margin from this loan product (BI, 2007).

To win the competition, banks have to know the characteristics of each customer by implementing the Customer Relationship Management (CRM). Using CRM, they are able to 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 companies can develop their 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 companies.

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 on customer needs. By predicting customer needs, the 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. Aviliani's research was based on Recency, Frequency, and Monetary (RFM) model with the case study of micro saving customer of Bank BRI. Recency measurement variable is the last transaction time, frequency measurement variable is the transaction frequency per customer, and the monetary measurement variable is the income received by the company. Customer profile variables used were gender, age, occupation type, income, and education. Cheng and Chen (2009), Sanjaya et al. (2015), and Irmariani (2015) also conducted researches on CRM, and the common method used included the internal company database, customer profile variables, and banks as the objects of the research.

Another research on CRM was conducted by Zineldin (2005), and the research topic was on bank positioning, consumer preferences, attitudes and their perceptions of banks, and the quality of bank services. Qualitative and quantitative analyses were performed on the data collection. The data used from three sources: annual reports of commercial bank operating in Sweden before 1999, personal interviews with five major banks and data collection through questionnaires. The results show competitiveness can be obtained through product or service quality, CRM and differentiation. The product or service package should be specially designed in the hope of enhancing customer satisfaction, productivity and effectiveness.

Backiel et al. (2016) also conducted a research on CRM in the field of telecommunications (the incorporation of social network information into churn prediction models to improve accuracy, timeliness, and profitability). The analysis used the Survival Analysis based on

postpaid customer attributes and call record graph for all customers. Zeithaml et al. (2013) said that the cost incurred to retain existing customers is still lower than finding new customers. Successful marketers are the ones who can develop effective strategies for customer retention. This is in line with what stated by Gouws (2012), a successful retail banking should refer to the following strategy: Increasing and retaining customers; combined with Growing number of sustainable customers.

Based on some previous researches, a lot of researchers were discussing CRM to increase and to retain the customers in the area of mobile network and saving account, but in the area of personal loan top up, no research has been conducted. This is the reason for the authors to be interested in researching the use of CRM to 1) Identify the socioeconomic factors of the debtors which have close correspondence with personal loans top up trasaction, 2) Determine the socioeconomic factors of debtors that affect the top up on personal loans.

METHODS

The data used in this research were obtained through the study of financial statements of one retail bank in Indonesia and from the internal bank data, literature study, and other published sources. The time period of data was personal loans that were disbursed from January 2013 to December 2016. Based on that, the data of personal loans debtors in this study amounted to 330,655 debtors. The data gathered from the bank were used for the analysis of the social profile and the correspondence analysis. The variable obtained from

the database of debtors of the personal loans was X which became the independent variable while the response variable or dependent variable used in this research was top up status (Y).

To identify the debtor demography characteristic in this research, the descriptive statistics was used. Information on the demographic characteristics of the debtor was based on the variables in the Table 4. The statistical method used was the descriptive statistical analysis to determine the number of the debtors in the category or group that had been determined. In this study, an analysis on the top up transactions from the debtors whose credit had been disbursed from January to December 2013 was conducted to determine the condition of personal loans top up. Furthermore, to identify the socioeconomic factors that influenced the top up on personal loans, the regression was used (Kleinbaum and Klein, 2005).

After obtaining the regression results, correspondence analysis was carried out to see the socioeconomic factors of the debtors who had a close correspondence with personal loans top up transactions. This analysis is a graphical representation of data that has some advantages in which the data can be shortened and easily interpreted because it can simplify data by presenting them visually.

The results of correspondence analysis and regression were used to create effective marketing strategy. The expected managerial implication is that the top up composition can be increased and the bank can achieve its business target and catch up the market share gap with major competitors. The framework of thought in this study is presented in Figure 1.

Table 1. Indonesia and Top 2 bank personal loan market share

Year	Indonesia (IDR Trillion)	Bank BRI		Bank Mandiri		Total %
		IDR Trillion	%	IDR Trillion	%	
2016	468.2	78.2	16.7%	17.4	3.7%	20.4%
2015	429.8	69.5	16.2%	14.1	3.3%	19.5%
2014	367.5	62.4	17.0%	11.9	3.2%	20.2%
2013	277.8	57.5	20.7%	9.8	3.5%	24.2%
2012	278.9	49.0	17.6%	8.2	2.9%	20.5%

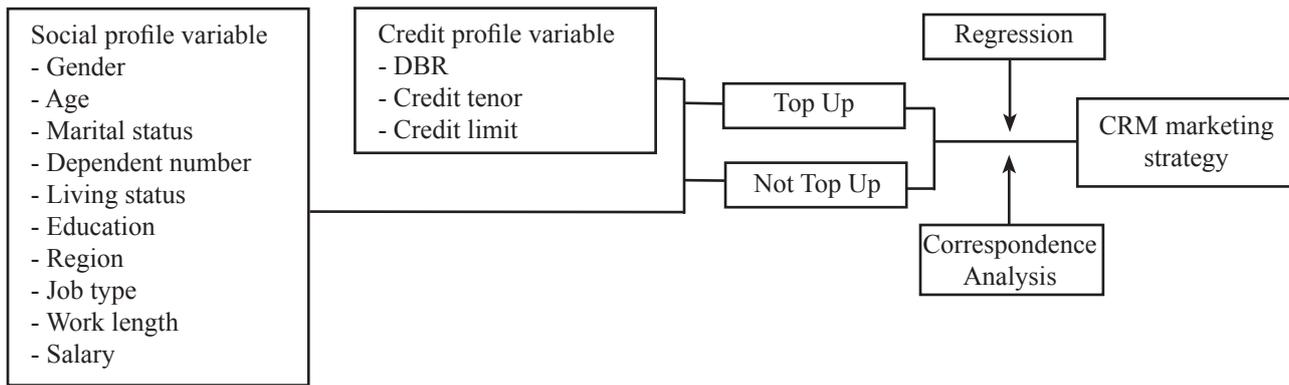Sources: OJK, BI, BMRI, and BBRI (2012 to 2016)

Figure 1. Research framework

RESULTS

Demographic Characteristics

Based on the variables used in the study, the recapitulation of dummy variables that dominated the top up and not top up on personal loan transactions in Table 2. Based on the Table 2, the top up and not top up transactions have the same dominant dummy variables for Gender, Age, Marital Status, Dependent Number, Living Status, Education, Region, Job Type, Work Length, and Salary. The Credit Tenor and Credit Limits have different dominant dummy variables between top up and not top up transactions. For example for Credit Tenor dummy variable, not top up transactions were dominated by Tenor < 48 Month, while top up transactions were dominated by Tenor ≥ 48 Month. Likewise, for the Credit Limit variable, not top up transactions were dominated by the Limit < IDR50 Million while top up transactions were dominated by the limit ≥ IDR50 Million.

Correspondence Analysis

To simplify the interpretation relationship of all variables with top up and not top up transactions, the correspondence analysis was carried out. This analysis is a graphical representation of data that have some advantages in which the data can be shortened and easily interpreted because it can simplify aspects of data by presenting them visually. Based on the results of multiple correspondence analysis, there were several dummy variables that had correspondence with top up and not top up on personal loans transactions. For

not top up transactions, the dummy variables that had close correspondence included Male (X1A), Age 30 to 39 years (X2B), having 1 dependent (X4B), high school education (X6B), Java (X7C), and private employees (X8C). The dummy variables that had close correspondence with top up transactions included undergraduate (X6D), salary from IDR 5 million (X10B), credit tenor starting from 4 years (X12B), and credit limit starting from IDR50 million (X13B) . The customer profile close to top up transaction had higher income segment than the not top up debtor so that this customer had an ability to pay bigger installment to obtain bigger access to obtain top up on personal loans.

The results of this correspondence analysis can be used by the bank marketers in effort to increase the top up transactions, and it can direct the tele-marketing to target the customers who have close correspondence with personal loans top up in accordance with Figure 2. In addition, in developing personal loan products and marketing programs, the bank can design a specific program for top up and not top up of personal loans in accordance with the dummy variables that have a close correspondence.

Regression

After analyzing the descriptive and correspondence analyses of the top up on personal loan transactions based on the debtor profile, the regression analysis was used to identify the socioeconomic influencing factors. The result of goodness-of-fit test can be seen in Table 3.

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 values except for gender (X1) which is not significant to personal loan top up. The overall output regression personal loan top up are described in Table 4.

The results of the research showed that the socioeconomic factors that influenced the debtors to top up personal loans at the confidence level of 5% (0.05) included Age, Marital Status, Number of Dependents, Living Status, Education, Region, Job Type, Work Length, Salary, DBR, Credit Tenor, and Credit Limit, and only Gender had no effect on personal loans top up. This is also inline with Setiawan et al. (2016) stating that gender has no effect on re-purchase decision of muslim dresses.

Table 2. Dominance of dummy variables

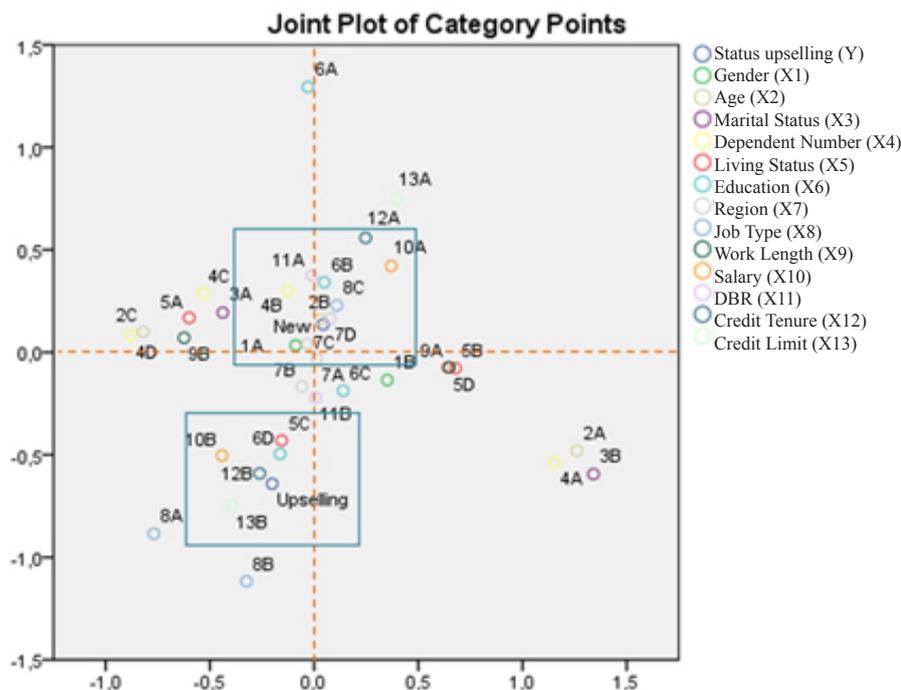| Variable	Not Top Up		Top Up	
	Dummy Variable	%	Dummy Variable	%
Gender (X1)	Male	79	Male	82
Age (X2)	30 ≤ Age < 40	43	30 ≤ Age < 40	45
Marital Status (X3)	Married	75	Married	77
Dependent Number (X4)	No Dependent	31	No Dependent	29
Living Status (X5)	House owner	46	House owner	48
Education (X6)	Senior High School	49	Senior High School	53
Region (X7)	Jakarta	37	Jakarta	38
Job Type (X8)	Private	81	Private	84
Work Length (X9)	> 5 Years	51	> 5 Years	53
Salary (X10)	Salary < 5 Million	55	Salary < 5 Million	52
DBR (X11)	DBR ≥ 30%	60	DBR ≥ 30%	74
Credit Tenure (X12)	Tenure < 48 Month	56	Tenure ≥ 48 month	71
Credit Limit (X13)	Limit < IDR 50 million	56	Limit ≥ IDR 50 million	77

Figure 2. Multiple correspondence analysis

Table 3. Goodness-of-fit result

-2 Log Likelihood	Overall (score)		
	Chi-square	df	Sig.
1,424,913,857	26,196,817	23	,000

Table 4. Regression result

Variables		Sig.	Exp(B)	Sig.	Variables		Sig.	Exp(B)	Sig.
Gender (X1)					**Region (X7)**				
X1A	Male	Reference variable			X7A	Jakarta	Reference variable		
X1B	Female	0.727	1.004	N	X7B	Sumatera	0.995	1.000	N
Age (X2)					X7D	Java	0.000	1.098	Y
X2A	21 ≤ Age < 30	Reference variable			X7E	Others	0.000	1.103	Y
X2B	30 ≤ Age < 40	0.000	1.130	Y	**Job Type (X8)**				
X2C	Age ≥ 40	0.549	1.010	N	X8A	Civil Servant	Reference variable		
Marital Status (X3)					X8B	SOE	0.001	0.934	Y
X3A	Married	Reference variable			X8C	Private	0.000	1.452	Y
X3B	Not Married	0.000	1.083	Y	**Work Length (X9)**				
No. Dependant (X4)					X9A	≤ 5 Years	Reference variable		
X4A	No Dependant	Reference variable			X9B	> 5 Years	0.000	0.896	Y
X4B	1 Person	0.081	1.031	N	**Salary (X10)**				
X4C	2 Persons	0.084	1.031	N	X10A	Salary < 5 Million	Reference variable		
X4D	Dependant ≥ 3	0.031	1.042	Y	X10B	Salary ≥ 5 Million	0.000	0.762	Y
Living Status (X5)					**DBR (X11)**				
X5A	House owner	Reference variable			X11A	DBR < 30%	Reference variable		
X5B	Parents	0.006	1.017	Y	X11B	DBR ≥ 30%	0.000	1.075	Y
X5C	Company	0.000	0.842	Y	**Credit Limit (X12)**				
X5D	Credit	0.080	0.856	N	X12A	Tenure< 48month	Reference variable		
Education (X6)					X12B	Tenure≥ 48month	0.000	1.497	Y
X6A	Under	Reference variable			**Credit Tenure (X13)**				
X6B	High school	0.000	0.790	Y	X13A	Limit< 50Million	Reference variable		
X6C	Diploma	0.000	0.699	Y	X13B	Limit≥ 50Million	0.000	3.691	Y
X6D	Bachelor	0.000	0.602	Y					

Managerial Implication

The research was conducted to provide managerial implications for the bank and for its implementation. The managerial implications were based on the three elements of marketing strategy that is segmenting, targeting, and positioning (STP). As stated by Sumarwan (2016), basically STP is used for companies to prepare their marketing strategy by selecting appropriate consumer segments so that their products or services have competitive and sustainable advantages.

Segmenting is in accordance with the profile of debtors of the personal loans used for financing the education.

The targeting profiles of debtors who have close correspondence with personal loans top up transactions include individuals with their undergraduate qualification, civil servants and state-owned employees, with salary starting from IDR5 million, credit tenor starting from 4 years, and credit limit starting from IDR50 million. Based on the profile of the largest personal loan debtor group, the positioning of personal loan products prioritizes the image that personal loan is the main solution in financing children education. This certainly provides benefits that personal loan does not have the consumptive image but aims to help finance the education

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The conclusion that can be obtained from this study is that it is very important to have a good database management to improve customer experience so that the bank can understand the pattern of transactions and customer behavior in each contact point service. To increase personal loan top up transactions, the banks need to pay attention to socioeconomic factors that affect the up-sellling such as Age, Marital Status, Dependent Number, Residence Status, Education, Region, Job Type, Work Length, Salary, DBR, Credit Tenor, and Credit Limit, and only gender has no significant effect on the top up transactions.

In addition, the bank telemarketers in offerings personal loans need to focus on socioeconomic factors that have closed correspondence with personal loan top up transactions such as individuals with undergraduate qualification, civil servants and state-owned employees, salary from IDR5 million (X10B), credit tenor from 4 years, and credit limit from IDR50 Million. Also the marketing strategy can be more targeted so that it becomes 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.

Recommendations

The strategy of customer relationship management for personal loan development should pay attention to variables that directcustomers to apply for top up so that it can give direct implication in increasing KTA sales volume. In addition to knowing factors that are significant to personal loan top up, it is recommended that the bank should also know the right time in offering personal loan top up so that in it can be more effective and efficient for the bank, and the customers feel comfortable because top up offering is in accordance with the time required by them.

REFERENCES

Aviliani, Sumarwan U, Sugema I, Saefuddin A. 2011. Segmentasi nasabah tabungan mikro berdasarkan recency, frequency, dan monetary: Kasus Bank BRI. *Finance and Banking Journal* 13(1):95–109.

Backiel A, Baesens B, Claeskens G. 2016. Predicting time-to-churn of prepaid mobile telephone customers using social network analysis. *Journal of the Operational Research Society* 67(0):1–19. https://doi.org/10.1057/jors.2016.8.

[BBRI] Bank BRI. 2016. *Financial Update 1H 2016*. Jakarta: Investor Relations PT Bank BRI (Persero) Tbk.

[BI] Bank Indonesia. 2007. *Risk Based Capital: Dari Basel I Menuju Basel II*. Jakarta: Direktorat Penelitian dan Pengaturan Perbankan BI.

[BI] Bank Indonesia. 2016. *Survei Perbankan Triwulan IV-2016*. Jakarta: Divisi Statistik Sektor Riil BI.

[BMRI] Bank Mandiri. 2016. *Analyst Meeting 1H 2016*. Jakarta: Investor Relations PT Bank Mandiri (Persero) Tbk.

Cheng CH, Chen YS. 2009. Classifying the segmentation of customer value via RFM model and RS theory. *Expert Systems with Applications* 36 (3 part 1): 4176–4184.https://doi.org/10.1016/j.eswa.2008.04.003.

Gouws N. 2012. Identifying factors that influence customer retention in a South African Retail Bank [disertasi]. South Africa: SA Vertalersinstituut.

Irmariani R. 2013. Analisis customer relationship management (CRM) pada BPR Supra Bogor [tesis]. Bogor: Institut Pertanian Bogor.

Kleinbaum DG, Klein M. 2005. *Statistics for Biology and Health*. New York: Springer Science + Business Media, Inc.

Kotler P. 2005. *Manajemen Pemasaran. Edisi Bahasa Indonesia*. Jakarta: PT Indeks Kelompok Gramedia.

[OJK] Otoritas Jasa Keuangan. 2016. *Statistik perbankan Indonesia tahun 2016 Volume 14*. Jakarta: Departemen Perizinan dan Informasi Perbankan.

Sanjaya R, Sumarwan U, Kirbrandoko. 2015. Hubungan customer relationship management dengan loyalitas nasabah (studi kasus: PT Bank XYZ cabang Bogor). *Jurnal Manajemen Pengembangan Industri Kecil Menengah* 10(2):151–162.

Setiawan I, Suharjo B, Najib M. 2016. Effect of mix marketing on re-purchase decision of muslim dress in Bogor (muslim clothing product of keke). *Indonesian Journal of Business and Enterpreneurship* 2(3):197–207. http://dx.doi.org/10.17358/ijbe.2.3.197.

Sumarwan U. 2016. *Pemasaran Strategik: Perspektif*

Perilaku Konsumen dan Marketing Plan. Bogor: PT Penerbit IPB Press.

Surodjo B. 2016. *Banking Journalist Academy Consumer Banking [presentasi]*. Jakarta: PT Bank Permata.

Zeithaml V, Bitner MJ, Gremler D. 2013. *Services Marketing: Integrating Customer Focus Across The Firm*. New York: The McGraw-Hill Companies, Inc.

Zineldin M. 2005. Quality and customer relationship management (crm) as competitive strategy in the swedish banking industry. *The TQM Journal* 17(4):329–344. https://doi.org/10.1108/09544780310487749.