EBHPME

Website: http: jebhpme.ssu.ac.ir
EBHPME 2021; 5(4): 267-75 EISSN: 2538-4716

ORIGINAL ARTICLE

Evidence Based Health Policy, Management & Economics

Customer Lifetime Value of Supplementary Health Insurance: An Analytical Model

Roohollah Dehghani Ghale [1], Farzad Karimi [1*], Hassan Ghorbani Dinani [1]

[1] Department of Management, Mobarakeh Branch, Islamic Azad University, Mobarakeh, Isfahan, Iran

ARTICLEINFO

Article History:
Received: 15 May 2021
Revised: 10 Aug 2021
Accepted: 27 Des 2021

***Corresponding Author:**
Farzad Karimi
Department of Management, Mobarakeh Branch, Islamic Azad University, Mobarakeh, Isfahan, Iran.

Email:
F_karimi110@yahoo.com

Tel:
+98-9131160871

ABSTRACT

Background: With the number of insurance customers growing, insurance companies are trying new ways to retain customers and streamline communication channels to avoid loss of revenue. The present study set out to develop a model for a reliable analysis of customer lifetime value.

Methods: The present study was exploratory mixed method in design. The study took place in Jundishapur University of Medical Sciences, located in Ahvaz, Iran. A total of 402 insurance experts and university staffers participated in the study. A cross-sectional data collection was done using semi-structured interviews (n = 22) and a questionnaire (n = 380). The latter was validated via a panel of content area experts, criterion-dependent validity (second-order confirmatory factor analysis), and divergent validity (cross-sectional load test and Fornell-Laker). Cronbach's alpha and combined reliability were - 0.8 and 0.8, respectively. A structural equation approach was employed to analyze data using Smart PLS software.

Results: Customer loyalty with an impact factor of 0.60 and T-statistic of 5.79, profitability with an impact factor of 0.55 and T-statistic of 3.75, customer co-creation with an impact factor of 0.28, and T-statistic of 2.7 have been identified as dimensions of customer lifetime value.

Conclusion: Measuring customer lifetime value to implement various strategies requires a deep understanding of such value dimensions as loyalty, profitability, and value creation.

Key words: Customer lifetime value, Supplementary health insurance, Customer loyalty, Customer profitability, Customer value co-creativity

Citation

This paper should be cited as: Dehghani Ghale R, Karimi F, Ghorbani Dinani H. **Customer Lifetime Value of Supplementary Health Insurance: An Analytical Model.** Evidence Based Health Policy, Management & Economics. 2021; 5(4): 267-75.

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

Copyright: ©2021 The Author(s); Published by ShahidSadoughi University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction

Providing supplementary health insurance coverage is a top priority for healthcare systems across the world to protect patients from Catastrophic Health Expenditure (CHE) (1). The right to receive healthcare services was identified by the World Health Organization (WHO) as a fundamental human right in 1948. The organization reaffirmed the opportunity for all the people to access health services of sufficient quality without financial barriers (2). Health care systems are under considerable pressure to maintain the quality of medical care and reduce expenditures. In particular, chronic diseases, population growth, patient expectation, and shortage of skilled medical personal account for the unprecedented financial and logistical pressure on health systems. Healthcare systems have faced numerous challenges in fulfilling their mission (3). In developing countries, Out-of-Pocket (OOP) payment is the main source of health financing, pushing patients and their families toward a CHE situation (4). Hence, insurance is a mechanism that, via protecting patients and their families from CHE, provides access to a wide range of covered medical services, especially for hospitalization (5).

There are few ways to cover medical expenses. First, individuals must choose between using private health insurance (supplementary treatment) or public health insurance (basic treatment). This is the case in countries such as Australia, Ireland, and Spain. A second option is to complement public insurance plans with private ones. Finally, private health insurance is purchased to cover expenditures not covered by premiums, such as dental services and physiotherapy procedures. Countries such as the Netherlands, France, and Luxembourg can be subsumed under this category (6).

With the number of insurance customers growing, insurance companies are trying new ways to retain customers and streamline communication channels to avoid the loss of revenue. It is more profitable for insurance firms to keep their existing customers rather than enrolling the new ones on average, insurers lose as much as 15 percent of their customer base per year. Reducing the rate to 10 percent increases the average growth to as high as 50 percent (7). Therefore, companies achieve competitive advantage and profitability by establishing more communication and interaction with their current customers (8). To evaluate and assess customer value, organizations concentrate on customer behavioral characteristics and treat each customer uniquely to achieve competitiveness, maximize organizational profitability, and keep their communication channels with customers. Insurance companies are considered active and profitable institutions in many countries, playing a compensatory and protective role in the, so much so that their flourishing will spill over to other businesses (9). According to cutler, marketing is about managing a beneficial relationship with the customer. On the one hand, the goal is to attract new customers and promise them more value, and at the same time, satisfy the existing customers, and on the other hand, to profit off of them (10). On the one hand, allocating resources based on financial criteria and calculating the level of sales (portfolio), by creating unhealthy competition between insurance companies and even the branches of their company (11), and, on the other hand, problems such as the lack of clarity between the obligations of the first (basic treatment) and second (supplementary treatment) insurer, lack of scope, lack of comprehensive insurance coverage in the face of a wide variety of diagnostic and treatment practices, the unavailability of insurance services in contract centers, unfamiliarity with the rules and regulations of supplementary health insurance, and lack of customer's awareness to purchase this type of insurance, increases the premium by insurance companies (12). Traditional marketing metrics, such as brand awareness and even sales, are no longer sufficient to demonstrate return on investment because it is likely for marketing measures to improve sales or stocks to seriously damage the brand's profitability in the long run. Financial metrics such as stock price and total profit of the firm, or a business unit also do not

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

resolve this problem in terms of limited recognition ability (6). One way is to identify profitable customers and allocate resources which commensurate with profitability (13). Customer value is discussed under various entries such as lifetime value (LTV), Customer Lifetime Value (CLV), customer capital (CE), and Customer Value (CV) by Singh (14), Gupta et al. (15), Ferrentino (16), Siddharth (17) and Wang Chang (18) have been studies. Gupta and et al. (15) introduced customer lifetime value as an indicator that allows the evaluation and measurement of customer value over time in terms of the expected profit between the company and the customer . According to the above mentioned, the customer's life time value with a superficial and shallow look and misunderstanding, in the form of concepts such as, customer's past share (SOW model), customer's past performance and profitability (PCV model), Return on investment time (ROI model), repetition rate, frequency and financial volume of the purchase (RFM model) have been examined (19). Therefore, the purpose of this study was to develop and present a comprehensive and specialized model for measuring this concept in the supplementary health insurance, provide a correct understanding of the dimensions and indicators of customer life time value, use the existing capacities in this field, and establish a win-win relationship between the insurance company and the insured people.

Materials and Methods

This was a qualitative-quantitative exploratory study. The statistical population of the study (n = 7,000) was staffers having the supplementary health insurance at Ahvaz Jundishapur University. The statistical sampling method was a simultaneous combined approach. According to the type of research plan used (data theory of the foundation), statistical samples included two sections: Managers and experts of insurance companies located in Khuzestan (Ahvaz), which were selected using purposive sampling (n = 22) and 380 staffers of supplementary health insurance based on probability random sampling method, who were counted using Morgan table. To collect information, first, the conceptual review method was used which included: 1- Identifying the research question (what are the factors related to the customer lifetime value of supplementary health insurance customers?) 2- Search strategy: Based on the research question, the researcher first searches for keywords in the period between August 26, in 2019 to August 25, in 2020, in databases of Irandoc, Civilica, Google Web, SID, Scholar Scopus, Emerald, Elsevier, and related articles were extracted from 2015 to 2020. 250 articles were excluded, and 30 were grey literature (e.g., books and dissertations). 3- Selection: First, the abstracts and articles that met the inclusion criteria were included in the study. Customer profitability and customer co- creativity have been the value of the customer, at which point duplicates were removed by EndNote software for 48 articles. 4- Organization: Finally, the data of the articles were used to design the protocol and interview questions as well as the final writing of this research.

Due to the exploratory nature of the research and the non-response of databases and search engines for all variables, the search for information and gray texts in Irandac, Civilica, Google Web, SID, Scholar Scopus, Emerald, Elsevier, etc. has been done in pairs (a variable dependent on each of the independent variables).

First, by asking general questions about the customer lifetime value, the opinions of experts were received in several stages, and then, the above coded views were opened by the data foundation (inductive) method. These codes are then categorized in the axes obtained from the literature on the subject through semi-structured interviews with experts. Finally, in order to determine the general framework of the study, create a flow from external auditors, have theoretical foundations, etc., use techniques such as two people conducting interviews separately, use structured processes from convergent interviews, the reliability and questions related to measuring the opinion of sample people were observed after specifying the indicators and

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

dimensions of the subject (customer lifetime value) from a semi-structured interview, a questionnaire appropriate to the two sections of the demographic characteristics of people (age, gender, etc.) was designed, in which 21 questions were for customer loyalty, 10, for customer profitability, 13 questions were for customer value creation. 13 questions were designed to determine the validity of the questionnaire regarding content validity (expert opinion), dependent validity (through second-order confirmatory factor analysis) and two types of divergent validity, that is cross-sectional load test and Fornell-Larker, Cronbach's alpha (0.8) and combined reliability (0.8) were used to measure the resilience. These concepts have been analyzed using structural equation modeling in Smart PLS software. During the distribution of the questionnaire, the individuals were assured that their information was confidential and if the interviewees did not want to continue their cooperation, they could announce their withdrawal from the process at any stage of the research. This research was approved by research ethics committee of Mobarake Isfahan University under the code 19021254971004. The required permissions for distributing the questionnaire were obtained from the Department of Welfare and Physical Education of Ahwaz Jundishapur University, and the necessary coordination was conducted with the provincial health system.

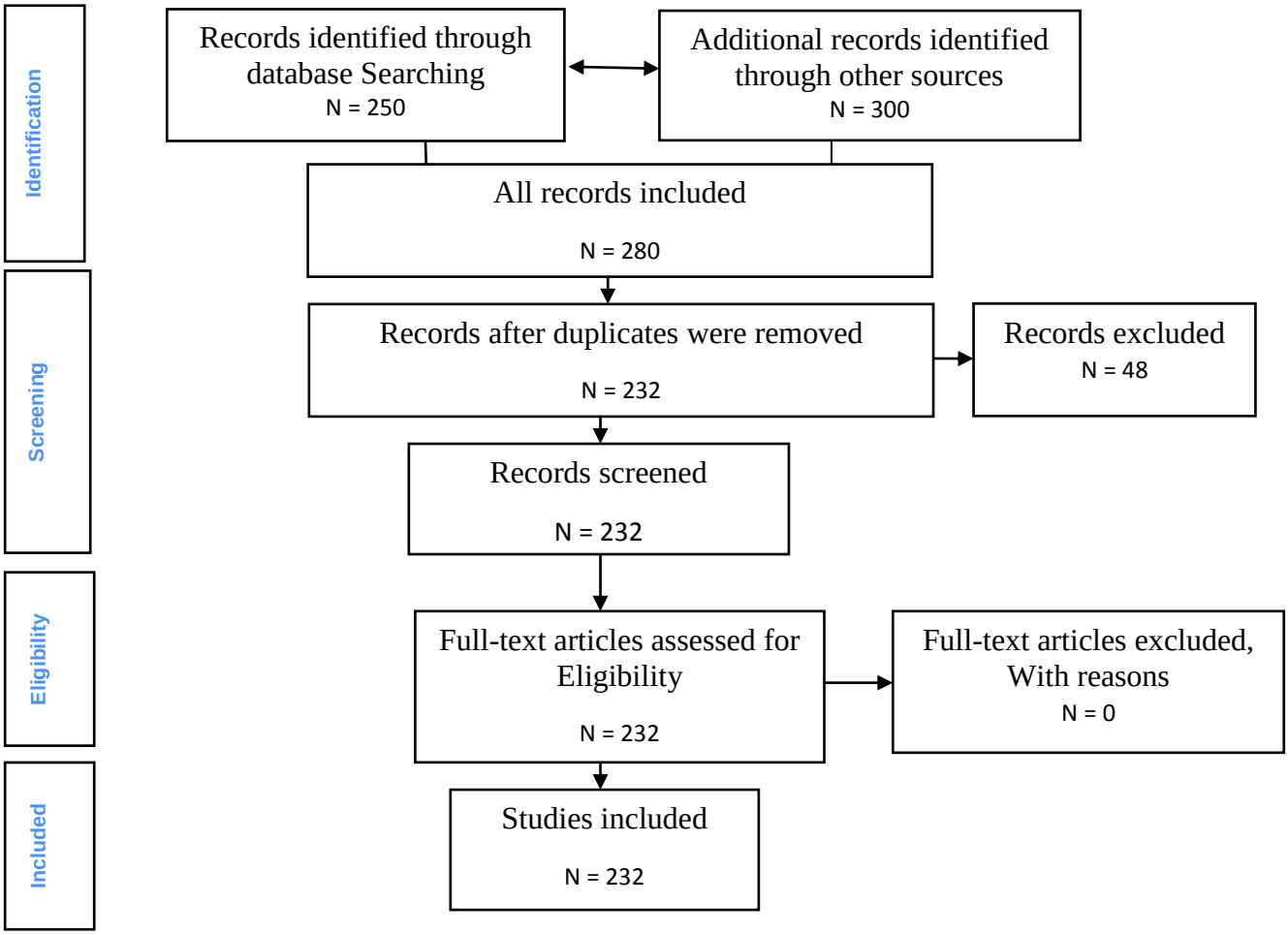


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flow Diagram For The Scoping Review Process

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

Results

Most of the respondents were married women with 52 bachelor's degrees, and their average age was about 45. Table 1 shows their demographic characteristics.

Table 2, presents the output results of the convergent validity of all variables of the AVE model ≥ 0.4), which suggests the appropriateness of the convergent validity of the model variables.

According to the criteria in Table 3, coefficient of significance is (T-values = 1.96), coefficient of determination, (R2 = 0.10), predictive power coefficient, (Q2 = 0.99), and good fitting of the model is (GOF = 0.46).

As can be seen in Table 4, customer satisfaction with an impact factor of 0.44 and T-4.50 statistics, brand preference with an impact factor of 0.44 and T-statistics 8.78, customer trust with an impact factor of 0.29 and T-statistics 3.57, repurchase intention with the impact factor of 0.38 and the T-statistic of 8.50, recommending others with an impact factor of 0.35 and the T-statistic of 2.58, among which the statistics of all aspects of customer loyalty are higher than 1.96 and are verifiable. Financial practice have an impact factor of 0.39 and a T-statistic of 11.40, buying pattern, an impact factor of 0.65 and T-statistic of 19.78, and service delivery pattern have an impact factor of 0.21 and a T-statistic of 4.01, which are verifiable. Search for information with an impact factor of 0.25 and a T-statistic of 2.58, share with an impact factor of 0.28 and a T-statistic of 4.59, co-production with an impact factor of 0.38 and a T-statistic of 7.05, feedback with an impact factor of 0.18 and a T-statistic of 2.92, help with an impact factor of 0.44 and a T-statistic of 6.20, and tolerance with an impact factor of 0.31 and a T-statistic of 5.29, among which statistics of all dimensions of customer value co-creativity are higher than 1.96 and are verifiable. Customer loyalty with an impact factor of 0.6 and T-statistics of 5.79, profitability with an impact factor of 0.55 and T-statistic of 3.75, customer value co-creativity with an impact factor of 0.28 and T-statistic of 2.70, among which the statistics of all aspects of customer life are higher than 1.96which can be verified.

Table 1. Demographic characteristics of staff members from Jundishapur University of Medical Sciences in Ahvaz

	Frequency	Grouping in the study
Age (in years)	25	Under 35
	50	35-45
	20	45-55
	5	Above 55
Gender	48	Man
	52	Female
Marital Status	8	Single
	92	Married
Education Level	5	Diploma
	27	Associate Degree
	50	Master's
	13	Master's
	5	P.H.D

(n = 380 = 100 %)

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

Table 2. Convergent validity of research variables

latent variables	Mean extraction variance (AVE ≥ ۰/4)
Customer Lifetime Value	0.57
Information Sharing	0.54
Customer Trust	0.69
Service Delivery Pattern	0.60
Purchase Pattern	0.59
Feedback	1.00
Tolerate	0.58
Brand Preference	0.69
Advise Others	1.00
Co-Production	0.61
Search For Information	0.63
Customer Satisfaction	0.60
Behavioral Mood	0.64
Financial Procedure	0.64
Profitability	0.56
Repurchase Intention	0.67
Customer Loyalty	0.61
Help	0.62

Table 3. R-values and Q2, (T-values)

	Customer loyalty	Customer profitability	Customer value co-creativity	Customer lifetime value
R^2	0.99	0.99	0.99	0.99
Q^2	0.10	0.23	0.13	0.25
T-values	----	-----	-----	1.96
GOF	----	-----	-----	0.46

Table 4. Test of research model hypotheses

Exogenous variable	Endogenous variable	Impact factor	T-values
Customer Satisfaction		0.44	4.50
Brand Preference		0.44	8.78
Advising Others	Customer loyalty →	0.35	2.58
Customer Trust		0.29	3.57
Repurchase Intention		0.38	8.50
Financial Procedure		0.39	11.40
Buying Pattern	Profitability customer →	0.65	19.78
Service Delivery Pattern		0.21	4.01
Search for Information		0.25	2.58
Sharing Information		0.28	4.59
Co-Production	Customer value co-creativity →	0.38	7.05
Feedback		0.18	2.92
Helping		0.44	6.20
Tolerate		0.31	5.29
Customer Loyalty		0.60	5.79
Profitability Customer	Customer lifetime value →	0.55	3.75
Customer Value Co-Creativity		0. 28	2.70

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

Discussion

In today's highly competitive world, massive customer loss can have a significant impact on a company's cash flow, and can lead to problems such as reducing short-term cash flow or even bankruptcy (6). Not all customers are equally profitable. Therefore, it may be desirable to exclude some customers, or to allocate different resources to different customer groups (13).

In this research, a specific and practical model in measuring the value of customers in the supplementary health insurance sector was presented. With a simple and, at the same time, multidimensional approach, to accurately predict the needs and wants of the current customers, provide insurance services tailored to customer needs at the time and place they need, create appropriate value for policyholders, increase insurance penetration, and finally, create satisfaction in them. Therefore, by creating the above conditions, the CLV for the insurance company can be increased.

In this study, (CLV) has been investigated by data base method and identifying 14 indicators in the form of three dimensions of customer profitability, customer loyalty, co-creativity value ,and the validity of the concepts were confirmed by Structural Equation Modeling (SEM).

These findings were in line with customer profitability which were consistent with the studies by Echkakoi (19), Bonach et al. (20), Siddhart et al. (17) Profitability was addressed in the CLV.

The general difference between the studies mentioned and the present study in the discussion of customer profitability is that these researches are too focused on indicators and aspects such as income, types of expenses, profit, etc.

Therefore, in this study, it is suggested that researchers and decision makers of insurance companies use the factors such as customer financial procedure in the purchase, buying pattern and service delivery pattern for calculating customer profitability to fill the gap in this area.

Findings of this study considering the relationship and the impact of customer loyalty in measuring the concept of CLV, are in line with the following studies: Weng Chang (18), Shu-Qing Chen (21), Wu Li (22), Flint et al. (23). In these studies, some indicators of customer loyalty such as (brand, satisfaction, trust, purchase intention) on the CLV have been studied. The difference between the researches mentioned and the research findings can be not using the concept of customer loyalty with comprehensive indicators, as an independent dimension in models and topics related to measuring the customer lifetime value.

In this study, it is suggested that researchers and decision makers of insurance companies, in order to better measure the customer lifetime value of the supplementary health insurance, consider the dimensions and identification criteria in this study.

According to the experimental findings of the research on the relationship and the extent of the effect of value co-creativity with customer lifetime value, it can be claimed that the two concepts are closely related and important to each other.

Due to the lack of application of this dimension in research and pre-measurement models of customer lifetime value, researchers are suggested to consider this dimension along with other dimensions and indicators identified (in the development model) to localize and personalize supplementary health insurance coverage.

The limitations and problems of this research include the impossibility of examining the role of moderators (in terms of complexity, frequency of variables and also the lack of research in this field), the specificity of the research model (only supplementary health insurance) and the impossibility of some interviews. Due to the prevalence of Coronavirus disease (COVID-19).

Conclusion

The most important finding of this study was to identify the dimensions of measuring customer lifetime value which includes: Customer loyalty,

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

customer profitability, and co-creativity of customer value along with sub-indicators of each of these dimensions, which prevent superficiality in determining customer lifetime value by accurate measurement of all effective dimensions and indicators, and ultimately increasing the accuracy of the company's predictions, and adopting strategies to eliminate, attract or retain current customers to make it more productive. Implementing the present research model in other industries with the aim of identifying the dimensions of measuring customer lifetime value, comparing factors of measuring customer lifetime value in different industries of the country, identifying the required competencies of managers in insurance companies, reviewing policies, processes and work procedures required in insurance companies and identifying moderating variables in the relationships between the concepts introduced in the present research model can enhance the richness of the model presented and increase generalizability.

Conclusion

Measuring customer lifetime value to implement various strategies requires a deep understanding of such value dimensions as loyalty, profitability, and value creation. Therefore, the dimensions of customer loyalty and customer value co-creation should be taken into consideration as effective dimensions in predicting and measuring the concept.

Acknowledgments

The authors would like to express their gratitude to the faculty members and managers of the insurance industry who have assisted us in this research.

Conflict of interests

Authors declared no conflict of interests.

Authors' contributions

Karimi F, Dehghani Ghale R, and Ghorbani Dinani H designed research; Dehghani Ghale R conducted research; Dehghani Ghale R analyzed data; and Dehghani Ghale R wrote the manuscript. All authors read and approved of the final manuscript.

Funding

Non applicable.

References

1. Li X, Tian L. The effect of non-employment-based health insurance program on firm's offering of health insurance: Evidence from the social health insurance system in China. Elsevier. 2020; 48(4): 997-1010. doi: 10.1016/j.jce.2020.05.005.
2. Le QN, Blizzard L, Si L, Giang LT, Neil AL. The evolution of social health insurance in Vietnam and its role towards achieving universal health coverage. Health Policy OPEN. 2020; 1. doi: 10.1016/j.hpopen.2020.100011.
3. World Health Organization. WHO. Cancer: Key Facts. Available from URL: http://www.who.int/news-room/fact. Last access: August 2, 2018.
4. Piroozi B, Rashidian A, Moradi Gh, Takian AH, Ghasri H, Ghadimi T. Out-of-pocket and informal payment before and after the health transformation plan in Iran: Evidence from hospitals located in Kurdistan, Iran. International Journal of Health Policy and Management. 2017; 6(10): 573-86. doi: 10.15171/IJHPM.2017.16.
5. Schokkaert E, Van Ourti T, De Graeve D, Lecluyse A, Van De Voorde C. Hospital supplements in Belgium: Price variation and regulation. Health Policy. 2019; 19(4): 377-95. doi: 10.1002/hec.1478.
6. Kwak K, Kim N. Concentrate or disperse? the relationship between major customer concentration and supplier profitability and the moderating role of insider ownership. Journal of Business Research. 2019; 109: 648-58. doi: 10.1016/j.jbusres.2019.09.033.
7. Desirena G, Diaz A, Desirena J, Moreno I, Garcia D. Maximizing Customer Lifetime Value using Stacked Neural Networks: An Insurance Industry Application. In2019 18th IEEE International Conference On Machine Learning And Applications (ICMLA) 2019: 16(1):541-544. doi: 10.1109/ICMLA.2019.00101.

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]

8. Jamrozy U, Lawonk K.. The multiple dimensions of consumption values in ecotourism. International Journal of Culture. Tourism and Hospitality Research. 2017; 11(1): 18-34. doi: 10.1108/IJCTHR-09-2015-0114.
9. Kalaimani G. 7 P'S of services marketing in insurance and banking services. Journal of Management and Science – JMS. 2015; 5(10): 1-4.
10. Kumar V, Choi JWB, Greene M. Synergistic effects of social media and traditional marketing on brand sales: Capturing the time-varying effects. Journal of the Academy of Marketing Science. 2017; 45(2): 268-88. doi: 10.1007/s11747-016-0484-7.
11. Miri M, Ahrari M. Grading of branches and representatives in the insurance industry with mathematical models (case Study: Dana Insurance Company). Quarterly Journal of New Applied Studies in Management, Economics and Accounting. 2019; 4(1): 92-103. [In Persian]
12. Havaye S. In a Study Entitled "Insurance Services Marketing" Fifth International Conference on Innovation. Development and Business of the Comprehensive University of Applied Sciences. 2019; 3(1):1-8. [In Persian]
13. Ho MH, Chung HF. Customer engagement, customer equity and repurchase intention in mobile apps. Journal of Business Research. 2020; 121: 13-21. doi: 10.1016/j.jbusres.2020.07.046.
14. Singh S, Singh S. Accounting for risk in the traditional RFM approach. Management Research Review. 2016; 39(2): 215–34. doi: 10.1108/MRR-11-2015-0272.
15. Gupta S, Hanssens D, Hardie B, Kahn W. Modeling customer lifetime value. Journal of Service Research. 2006; 9(2):139-55. doi: 10.1177/1094670506293810.
16. Ferrentino R, Cuomo MT, Boniello C. On the customer lifetime value: A mathematical perspective. Computational Management Science. 2016; 13(4): 521-39. doi: 10.1007/s10287-016-0266-1.
17. Siddharth S. Singh, Dipak C. Jain. Measuring customer lifetime value. Review of Marketing Research. 2015; 6: 37-62. doi: 10.1108/S1548-6435(2009)0000006006.
18. Weng CH, Huang TC. Knowledge acquisition of association rules from the customer-lifetime-value perspective. Kybernetes. 2018; 47(3): 441-57. doi: 10.1108/K-03-2016-0042.
19. Echchakoui S. Salesperson profitability in relationship marketing. Journal of Modelling in Management. 2014; 9(3): 1-22. doi: 10.1108/JM2-02-2014-0014.
20. Bonacchi M, Ferrari M, Pellegrini M. The lifetime value scorecard: From E-Metrics to internet customer value. Measuring and Rewarding Performance. 2015; 18: 193-226.
21. Chen SC. Customer value and customer loyalty: Is competition a missing link?. Journal of Retailing and Consumer Services. 2015; 22: 107-16. doi: 10.1016/j.jretconser.2014.10.007.
22. Wu Y, Li EY. Marketing mix, customer value and customer loyalty in social commerce: Astimulus- organism- response perspective. Internet Research. 2018; 28(1): 74-104. doi: 10.1108/IntR-08-2016-0250.
23. Flint DJ, Blocker CP, Boutin Jr PJ. Customer value anticipation, customer satisfaction and loyalty: An empirical examination. Industrial Marketing Management. 2011; 40(2): 219-30.

[Downloaded from jebhpme.ssu.ac.ir on 2026-11-22]

[DOI: 10.18502/jebhpme.v5i4.8162]