

Implementation of Artificial Intelligence-Based Customer Relationship Management for Telecommunication Companies

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Abstract. As the industrial players began starting to face the reality of the fourth industrial revolution, telecommunication industry is one of those significant business sectors required to adapt and remain to survive in such challenging situations, especially by the threats of their competitors. Artificial Intelligence (AI) plays an essential role in today's telecommunication industry. It can make predictions about decisions, examine big data points to offer solutions, and interact with customers in real-time. Many telco firms and organizations use Customer Relationship Management (CRM) to achieve effectiveness in a company's productivity and efficiency in the operational activities. This assessment revealed that an AI-driven CRM system could give a better solution for the telecommunication industry to manage relationships with externals, boost marketing and sales programs, prospect consumer data information, and record operational cases, all in one centralized location.

1 Introduction

In addition to survive in the era of the forth industrial revolution, telecommunication industry is one of those significant business sectors required to adapt and remain to survive in such challenging situations, especially by the threats of their competitors. Technology is one thing that company could not pass on and take it away from today's business as they can support them to innovate their business process and handling such demanding consumer behaviour [1]. The increasing variability of consumer expectations has certainly pushed the digitalization effects, make firm transform their standards by having the most appropriate customer management tools to deliver their best practice to the market. The telecommunication industry is one of those significant business sectors required to increase their market share by using a wide range of tactics to boost consumer engagement and by getting more and more subscribers [2]. Ironically, it becomes highly critical to perceive consumer behavior to keep up with the increased competition. Artificial Intelligence (AI) plays a vital role in today's telecommunication industry. It can make predictions about organizational decisions, examine big data points to offer solutions, and interact with customers in real-time. One of the technological areas in which it is essential to be state-of-the-art is that of business management systems [3]. Having the ability to achieve long-term relationships and critical stockholders, telecommunication company has taken their privilege in the higher level to get their best AI-driven CRM to achieve effectiveness in the company's

productivity and efficiency in the operational activities [4].

2 Literature Review

The fourth industrial revolution era has proven to become a higher level of the entire value chain in the life cycle of products or services, having the objective to fulfilling every consumer needs [5]. Firms require to adapt in the era of industry 4.0 as it can challenge them to replace their previous traditional operation level with self-service machine learning system to improve their operational based performance. It has force every industrial sectors to have real time full control and monitoring through modern approach [6]. The main drivers of this revolution like IoT and cloud-based support system could let them transform their business process into fully digitized and up to date. The transformation has certainly pushed their limits to become greater and combine relationship between human and machine [7]. Telecommunications has played such an important role in social relations which is generally known as a technique of sending or delivering information that can be in the form of text, sound, images, or other objects over long distances, from one place to another. The telco sector consists of firms that enable communication on a global scale, whether by telephone, internet, airwaves, and wireless [8]. To guarantee of customer engagement aspect is in a stable and higher level, telecommunication firms had to prepare their best strategy to increase the market share

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since competition among service companies will never ends. Therefore, every industry player needs to have their best strategy in the era of this global transformation as it is become their preference to provide high quality service. Furthermore, it will be more beneficial if they could raise their standards to maximized churn prevention and being competent in the competitive situation [9].

CRM plays an important role to become company's support system that could integrates both external and internal relationship, which is having the objective to deliver high position enabled by the role of information technology]. In the unpredictably dynamic business situation, using CRM tools approach to market is the key to get successful in business. CRM let the firm to gain optimum customer engagement and attaining their trust, and it also aims to provide consistency in conveying information which is not only from the company to the customer, but also from the customer to the company. An optimized CRM will gain satisfaction or providing feedback if they feel there is something you can improve on [10]. Many industrial players have proved the role of Artificial Intelligence (AI) to digitalize their existing Customer Relationship Management support system. As human will find the complication to process that big customer data on time, an AI-driven CRM can transform their operation process by being detailed-oriented to consumer behaviour aspects [11]. However, having the ability to achieve long-term relationships and critical stockholders, telecommunication company has taken their privilege in the higher level to get their best AI-driven CRM to achieve effectiveness in the company's productivity and efficiency in the operational activities [12].

3 Methodology

This research was conducted by searching the literature along with sources of information or required material related to the case discussed for later analysis. The main purpose of this literature search is to obtain the relevant knowledge to what topics that will be discussed and to identify the connectivity between one information to another, whether it is mutually supportive or not. This study consists below several conducted steps:

- a. Gather and observe sources of information from journal, books, internet access, pre-existing papers, own experience, and other material related to this topic.
- b. Identify the information that have been obtained whether it is relevant to the topics that will be discussed in this study.
- c. Summarize key points of each relevant literature to this research topic
- d. Write down and rearrange the highlighted points in this study that have been obtained in a structured manner into a paper.

4 Results and Discussion

As the era of the fourth industrial revolution has forcing company's potentiality to remain survive, many telecommunications companies had to relook their corporate strategies to innovate their services and expand their business to reach more subscribers. Telco players let the CRM as their operational system connected with AI function combining to provide company solution from many cases [13]. Telco companies need to take a look on how their system can ensure that businesses are ready for facing the fourth industrial revolution, which expecting them to maximize their effort in customer journey to be optimum. Customer Relationship Management (CRM) plays a vital role in telecommunications. CRM is about customers and how companies build networks and relationships with customers by being user-friendly company. Currently, many firms had differently approach to convert and transform their CRM, making it more beneficial to the telco company. Therefore, the vision of using CRM is to help the firm manage their multi-channel operational performance such as market research, sales, complaint, and all of these matters that were explained in below A-driven CRM process structure.

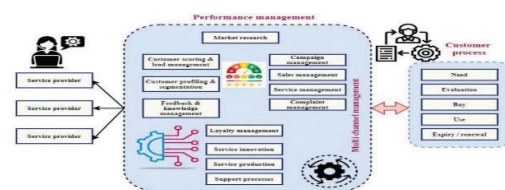


Fig. 1. AI-driven CRM Process Structure for the Industry [14]

Therefore, below is listed type of generally enterprise solution with CRM approach in the telecommunication industry:

Virtual Persona Chat or Voice Robot

A famously known artificial intelligence persona solution that allows companies to provide 24/7 interactive communication tools or touch point between internal and external that can be accessed by their customers through WhatsApp, Facebook's Messenger, Twitter's direct message, Telegram, LINE, mobile apps, website and other live chat apps. This virtual agent persona could enhance customer engagement, by providing self-service complaint handling along with tactical product promo campaign offers especially related in telco company service. Many firms has been optimizing virtual agent through their ability by sending push notification reminder for many variative use cases such as bill payment, contract plan renewal, and more personal communication channels, also to increase company productivity while minimizing costs that are always on 24/7.

Customer Voice Management

Customer voice management has been used by many telecommunication firms as one of the major CRM solutions that helps organization to get voice of customers based on the interaction between corporate

brand communication social media and external users so that companies could find various insights or root cause pain points, being one step closer to their customers, and plus to make the right decision to build strategic action plan. This feature could maximize customer experience through analyze user sentiments whether it is positive or negative, so any required feedback can be done automatically with the force power of Artificial Intelligence technology.

Sales Analytics

One of the most common AI-driven CRM tools that many telecommunication firms has took the beneficial to analyse, control and monitor company sales performance and learn their consumer behaviour so that they can recommend and make decision to increase company's total transactions. Along with other feature such as Customer Analytics and Campaign Management. Sales analytics could help the firm to make decision by knowing how and when is required to take such strategic action plans.

Order Management System

OMS solutions allow telco industry players to manage customer order by using AI technologies as their approach. Recently, many telco firms have already maximized OMS function for SIM Card OLA (Online Acquisition) order. This AI-CRM system can recognize the available packaging and box sizes, so that it will suggest which box to use for a particular order. In addition, the ability of this software can print shipping labels and packing slips at the same time, because it has a very accurate estimate of the final weight and dimensions of the shipment. If we sell products only through one channel such as an online store, usually e-commerce platforms have provided a feature to check inventory. OMS usually also provide an inventory feature that allows merchants to connect to post-sale data. Many online sellers want to list products not only on their own websites, but also on marketplaces like Tokopedia, Shopee, or Bukalapak, Blibli.com or else. There are several solutions for integrating the merchant system with these marketplaces, which is probably the best enterprise-level solution even though it may require more than a small telco business can afford to manage.

Market Research Automation

The information obtained from this marketing research is essential and can make a strategy for the telecommunication business sector. The power of information gained is tremendous when it comes to market research. The information you gather from many typical surveys, like Customer Satisfaction survey feedback, can lead to the most important strategic business decisions. Usually, company's findings and conclusions can have a value that exceeds the cost of the research itself. The following are the benefits of marketing research that firms can get. By doing market research, there will be communication with customers to find out what our customers want in the future. The risk that will be accepted can be reduced and even disappear because the results of Market Research can improve decisions. Market Research can help the firm find a

suitable position in the market, which adequate resources must support. It can also help industry player to identify impending problems so that we can prepare countermeasures and get maximum profit before.

Store Virtual Reality

Store Virtual Reality is one typical AI-platform that allows subscribers to interact with customer service and having their moment through virtual experience in special store environment that is simulated by system so they can feel that they are in the closest situation to get service handling in reality having the same experience and treated by coming to gerai store.. Same like other Ai-driven CRM tools as explain above, Store VR could also help firm dealing with customer complaints and reach a large number of customers with a wide demographical coverage, through short time and high response rate.

There are several types of AI-driven CRM that need to be known and common in telco sector industry including CRM Marketing and CRM Sales. These two CRMs have different goals and how they work. CRM Marketing strategy focuses on relationship management, from customers who are just starting to get to know the products or services offered, with the aim that they become more interested so that it will lead to sales. To implement CRM Marketing, company need software tools that helps marketing automatically with the ability to reach customers. Some of the features that are usually owned by CRM Marketing tools includes a landing page that contains information about the products and services offered to attract customers. Also, Another feature called email segmentation commonly owned by CRM Marketing that necessary to build or manage customer database which could encourage customers to provide their personal information such as email, full name and date of birth.

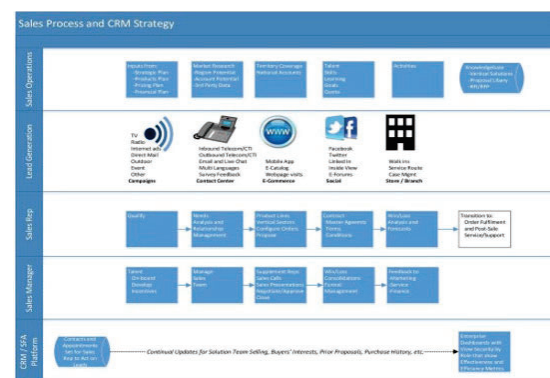


Fig. 2. Sales process and CRM strategy [13]

A CRM sales process is one typical strategy that focuses more on customer relationship management, from audiences who have entered the company's pipeline interested in the products and services offered until they become customers by buying these products and services. Just like the marketing function, implementing CRM sales also requires a tool or software to manage the database you already have. In contrast to CRM Marketing, which focuses on making

the audience interested in the products and services offered, CRM Sales encourages customers to make purchases and become loyal customers. Some of the features in CRM Sales could gather information such as potential customers by looking at customer percentages that have been automatically contacted by the application, and other things such as meeting offer to sales reports. Monitoring leads through leads management without any tools is undoubtedly difficult for the sales team. One of the reasons telco companies must use CRM software is the AI ability that could increase the close rate. An AI-driven CRM has a vast spectrum, such as being integrated with live chat, social media, and digital marketing automation. Those are some of the main reasons for the importance for companies. Salesforce automation allows the sales team to monitor the progress of follow-up leads and sales pipelines, send emails through the CRM platform, and determine sales forecasts to monitor how likely it is to close sales in the future [15].

4.1 Salesforce

Salesforce is one of the biggest CRM platform apps designed to help companies run their business using cloud-based software. Salesforce can help companies review, manage their accounts and track opportunities, build and monitor their Sales flow, and manage companies in managing their customers. In addition, this CRM supports managers in activities directly related to customers and internal company activities that always strive to meet customer demands. Sales process management could manage a series of sales activity sequences to guide sales representatives in each sales stage. Not only that, but sales process management also helps and ensures that sales representatives follow up on every action they take. Meanwhile, activity management provides a calendar to guide planning for sales representatives to approach customers with product demos, proposal presentations, etc. So the conclusion is that sales process/activity management can help sales representatives and companies carry out the sales process, reducing human errors to be more effective and efficient.

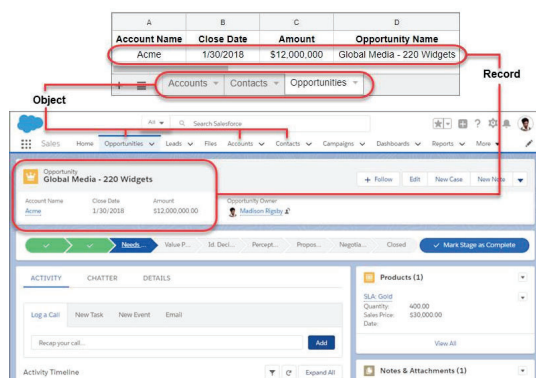


Fig. 3. Salesforce UI Lightning Experience (Source: Salesforce.com, 2022)

From an industry player's point of view, Salesforce could make it easy for managers to form sales groups.

In addition, sales managers can track territories and monitor the sales flow of each individual. Sales and territory management is used to make it easier for managers to understand ongoing sales activities and optimize each individual in the workgroup with the right expertise in handling potential customers (prospects). Contact Management is the part of SFA that deals with organizing and managing data within an organization. A contact management application can have various modules to maintain the database, display graphs, and make it easier for salespeople to keep records of clients. Lead management aims to provide the perfect sales strategy. Configuration support is one of the salesforce categories that helps companies build specific products for their customers. And last but not least, Knowledge Management can collect as much information as possible about anything related to the company's products and customers. An easily accessible internal document will provide the sales force with the information needed to understand it as a component of the sales chain. Such information may include company policies, sales presentation slides, company telephone number lists, proposal templates, sales, and revenue history reports. The effectiveness of using this category of applications by salespeople is very dependent on how easily they can access the information. As one of the AI-driven CRM, Salesforce could organize company data into objects and records. This high-tech feature can be seen in the latest Salesforce User Interface called "Lightning Experience," designed with a seamless user journey experience [16].

Currently, Salesforce has developed their dashboard's user interface called Lightning Experience, which provide the more seamless and better salesforce interface. This new user interface support more than twenty features that has been made to resolve internal agent problems. It provides various new techno-features such as efficient navigation through the applications, fast access to productivity tools like internal notes, a new record layout, seamless data filtering and visualization, and a user-friendly dashboard interface. The main task of sales force management is to increase sales of a firm's product or service. Therefore, it must have insight related to products, businesses to customers that can make sales of products or services that the business offers where more and more products are sold a positive impact on your business. In addition to selling, the firm must ensure that the product reaches the customer since every business has a sales KPI target. The KPI matrix usually contains the targets that the business wants to achieve. Therefore, just like a salesperson, an AI-driven CRM salesforce must work to meet KPI targets to make it easier for businesses to measure their performance. Customers are vital for the sustainability of a business. Without customers, the firm cannot maintain its business perfectly.

Customers can be retained by knowing their needs and expectations and meeting all their needs and expectations in the best possible way. When customers are satisfied because their expectations are met, customer loyalty will be created, namely by shopping again and recommending new customers to shop at that place. One of the efforts that companies can make to

identify customers and their behavior is a Customer Relationship Management (CRM) system which is designed to support all customer relationships. In general, this system is supported by three parts, namely marketing, sales and customer service activities. CRM is useful for implementing marketing strategies better. Besides the above understanding, CRM can also be categorized into three broad categories, namely Operational CRM, Analytical CRM and Collaborative CRM. In addition, CRM is also defined as having value for internal customers namely treating company employees as internal customers, processes and technology, corporate culture as well as products for customers, communication with customer experience, customer experience and cooperation with customers. The implementation of CRM does not only include services to external customers, but also internal customers or based on employee and company culture. However, there is an easy way to simplify the task of a sales force, namely with a CRM application. Where CRM applications help automate the sales flow. In addition, the integration of CRM applications with Omnichannel can make it easier for you to build communication with customers. An AI-driven CRM can future-proof telecommunication business such as Boost marketing, sales, and customer service through a seamless customer experience. Provide engaging and unbeatable user experience through hyper-personalization, automate problem solver in agile way. Also to leverage the IoT to Power Customer Engagement through customer-oriented processes [17].

5 Conclusion

Artificial Intelligence (AI) plays an essential role in today's telecommunication industry. It can make predictions about decisions, examine big data points to offer solutions, and interact with customers in real-time. Many telco firms and organization has already using Customer Relationship Management (CRM) to achieve effectiveness in a company's productivity and efficiency in the operational activities. This assessment also revealed that an AI-driven CRM system could give a better solution for the telecommunication industry to manage relationships with externals, boost marketing and sales programs, prospect consumer data information, and record operational cases, all in one centralized location.

The suggestion for the first implementation is that it is necessary to build a common understanding of the organization's or company's community on CRM terminology, it is hoped that it is not only known as an abbreviation but must be understood as a concept about managing the relationship between an organization or company and its customers related to the marketing sales and services business process. in general. Furthermore, it is also necessary to socialize that information systems are implemented by companies to make their business processes more effective and efficient so that in the end it will increase competitive advantage for the company.

References

1. S. Nambisan, K. M. Lyytinen, and M. Song, "Digital Innovation Management: Reinventing Innovation Management Research in a Digital World," *MIS Quarterly*, vol. 41, no.1, pp. 223-238, 2017.
2. M. Al-Mashraie, S. H. Chung, and H. Jeon, "Customer switching behavior analysis in the telecommunication industry via push-pull-mooring framework: A machine learning approach," *Computers & Industrial Engineering*, vol. 144, Art. no. 106476, 2020.
3. N. Ribeiro, Samuel, D. Botella-Carrubi, D. Palacios-Marques, and M. Orero-Blat, "The Effect of Digitalization on Business Performance: An Applied Study of KIBS," *Journal of Business Research*, vol. 126, no.1, pp. 319-326, 2021.
4. J. R. Saura, P. R. Palos-Sanchez, and A. B. Gonzalez, "The Importance of Information Service Offerings of Collaborative CRMs on Decision-Making in B2B Marketing," *Journal of Business & Industrial Marketing*, Emerald Publishing, Limited, 2019.
5. A. K. Sharma, "A study to trends and industrial prospects of Industry 4.0," in *Materials Today: Proceedings*, vol. 47, no. 10, pp. 2364-2369, 2021.
6. A. Ustundag and E. Cevikcan, "Industry 4.0: Managing The Digital Transformation," Springer International Publishing Switzerland, 2018.
7. S. Vaidya, "Industry 4.0 - A Glimpse," in *2nd International Conference on Materials Manufacturing and Design Engineering*, *Procedia Manufacturing*, vol. 20, pp. 233-238, 2018.
8. A. Z. Dodd, "The Essential Guide to Telecommunications: Fifth Edition." Pearson Education, Inc. United States of America, 2012.
9. S. Arifin and F. Samopa, "Analysis of churn rate significantly factors in telecommunication industry using support vector machines method," in *Journal of Physics: Conference Series*, vol. 1108. IOP Publishing, 2018.
10. H. Gil-Gomez, V. Guerola-Navarro, R. Oltra-Badenes, and J.A. Lozano-Quilis, "Customer relationship management: digital transformation and sustainable business model innovation," *Economic Research-Ekonomska Istra`zivanja*, vol. 33, no.1, pp. 2733-2750, 2020.
11. S. Chatterjee, "Adoption of Artificial Intelligence-integrated CRM systems in agile organizations in India," *Technological Forecasting and Social Change*, vol. 168, Art. no. 120783, 2021.
12. F. Fangyuan and X. Guanghua, "Ai-driven customer relationship management for sustainable enterprise performance," *Sustainable Energy Technologies and Assessments*, vol. 52, Art. no. 102103, 2022.
13. C. Fisher, "New Technologies for Mobile Salesforce Management and CRM," *American*

- Journal of Industrial and Business Management, vol. 7, pp. 548-558, 2017.
14. V. Vicente, N. Guerola, B. Oltra, H. Gil-Gomez, and A. I. Fernandez, "Customer relationship management (CRM) and Innovation: A qualitative comparative analysis (QCA) in the search for improvements on the firm performance in winery sector," in *Technological Forecasting & Social Change*, vol. 169, Article 120838, 2021.
 15. M. Thakkar and R. Rajaan, "Salesforce CRM: A new way of managing Customer Relationship in cloud environment," in *International Journal of Electrical, Electronics and Computers*, vol. 5, no. 3, 2020.
 16. N.J. Harahap and M. Rafika, "Industrial Revolution 4.0: and The Impact on Human Resources," *Jurnal Ecobisma*, vol. 7, no.1, 2020.
 17. W. Sardjono, B. S. Laksmono, and E. Yuniastuti, "The Social Welfare factors of Public Transportation Drivers With Online Application As a Result of The 4.0 Industrial Revolution In Transportation," *ICIC Express Letters*, vol. 14, no. 14, pp. 361-368, 2020.