A Proposed Cloud Based Solution for Customer Satisfaction in Telecommunication Industry

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Abstract— **Research demonstrates that the success of a service provider does not rely solely on sales volume but also in retaining existing customers. This research aims to propose a conceptual framework for improving customer satisfaction and thus facilitate service providers in retaining existing customers, specifically in the telecommunication industry in Malaysia. The Malaysian telecommunication and broadband industry is continuing growing each year and the demand for a better service and customer experience is increasing. All providers fight against each other to provide competitive packages with a good pricing plan. There are about 87% Internet users and 118% broadband penetration rate in Malaysia. It is not only good pricing plan that should be offered, it is crucial to know how to maintain the existing subscriber and to gain more trust among customers for increasing new subscribers. The main goal is to create better understanding of customer buying habits, good interaction (reactions or responses to something/helpful returned information) given during customer service and good experience during subscribing the product or services. A cloud-based customer support solution will be designed based on the proposed framework in order to offer a high quality service which satisfies customers in the said industry. Hence, this research focuses customer loyalty and retention marketing. Focus group study will be conducted to identify key determinants which influence customer satisfaction, followed by a survey and statistical analysis in order to determine the relationship between customer satisfaction (effect), existing services and customer experience (cause). The participants for this research will be obtained from one of the leading and largest broadband service provider in Malaysia – Telekom Malaysia (TM (M)) Berhad. As an empirical study, data of customer feedback about faulty restoration will be obtained from Voice of Customer (VOC) using questionnaire from a conducted survey. By providing a cloud-based customer support solution, it is believed that the customer satisfaction level will be lifted and negative feedback will be reduced.**

Keywords— customer satisfaction, customer experience, service, cloud-based customer support solution, data analytics

I. INTRODUCTION

No matter how well a service provider or a company runs their businesses, it will eventually be challenged with unsatisfied customers. These customers normally will lodge complaints. All received complaints from customers should be looked into and managed well in order to ensure great customer experience. Hence, it is important to provide a helpful and convenient customer support solution system especially during faulty restoration request. This complaint handling process will help the service provider to maintain current subscribers, gain trust and attract new potential customers on in the competitive broadband market [1]. Therefore, the main goal for this research is to acquire a better understanding towards customer buying habits, finding ways for the service provider to improve good interaction, reactions, respond, by giving helpful returned information and providing better customer experience during subscription period [2].

II. CUSTOMER SATISFACTION

Customer service applications should focus on factors that can lead to a better customer experience and lower down the turnover rate. Customers who are satisfied with the services have less interest or minimal intention to switch to another competitor and tend to provide good review and recommendation for potential customers [3]. Ensuring customer satisfaction may lead to benefits such as improving the turnover rate from existing customers and increased revenue. Additionally, the implementation of marketing strategies to acquire new customers and form stronger relationship between the company and customers may also be supported. The following are six factors which influence customer satisfaction: -

1) *Accessibility*

The application should always be accessible and efficient in providing good customer service via helpful solutions when needed by customer.

2) *Navigation*

The navigation of the application should be straight-forward, simple and require less personal details from the customers. Difficult navigation process will eventually lead to stressful customer experience especially when customer intends to seek help for faulty restoration issues.

3) *Convenience*

The application must be convenient enough where unnecessary steps during the process of reporting a faulty restoration issue should be eliminated. Customers should be able to easily comprehend the related processes.

4) *Real-Time*

The application should also include immediate access application like chat box and instant messages for responsive and real time interaction which will provide faster resolutions.

5) *Simplicity*

The application must avoid complexity related to decision-making and focus on providing possible outcomes and results.

6) *Deliverability*

Customer can monitor and track the whole process from creating the request, work progress, current status and update via the proposed solution.

Hence, these customer satisfaction factors (A-F) can be included in the proposed cloud based solution system to improve current customer satisfaction in the Malaysia's telecommunication industry [4].

III. CLOUD BASED SYSTEM

Cloud Based System is a system with the ability to host a software platform and service from a remote location that can be freely accessed using the Internet. The server can manage traffic and customer demand to ensure the whole process run smoothly without interruption [5].

The cloud based system is highly recommended to be implemented in the telecommunication industry due to its major advantages and benefits. The impact of using a cloud based system includes reducing operating cost, improving time to market, increasing flexibility and supporting better collaboration between company, employees and customers remotely as compared to the previous traditional way of acquiring and managing data and/or information. Cloud based system benefits are summarised as follows: -

1) *Efficiency*

The system does not require hardware, facility, utility or a physical building which leads to cost reduction on the whole process.

2) *Data Security*

The system provides advanced security features that guarantees secure data storage via authentication, access control, and encryption.

3) *Scalability*

The system minimises the risks associated with in-house operational issues and maintenance.

4) *Mobility*

The system can be access via smartphones and other electronic devices which can be easily stored, retrieved, recovered, or processed via 24/7 Internet connection.

5) *Disaster Recovery*

Cloud based system guarantees that data is always available, can provide quick data recovery for all kinds of emergency scenarios and provide data loss prevention especially customers personal information details.

6) *Control*

The system has complete visibility and control over data which can easily decide the level of access to different type of data for different type of users.

Researchers have found that by using cloud based solution system, more complaint/problem may be minimised especially by analysing customer database and feedbacks. Cloud based system's security benefit can help to protect personal data and integrate collaboration between employees and customers in order to solve problems and tracking

required information and feedbacks. The remotely access advantage of a cloud based system may also lead to telecommunication provider to be more focus on finding ways to improve customer experience and increase customer satisfaction [6].

IV. DATA ANALYTICS

Data analytics is the science of drawing insights from raw information sources; it is also a techniques and processes of data that have been automated into mechanical processes and algorithms that work over raw data for human consumption [7]. The process enables the organisation to have more informed business decision which can verify or disapprove scientific models, theories and hypothesis.

Data analytics is also one of the vital aspects that can convert data into meaningful insights which recommend customer the product based on the previous purchased history, build customer profiles for better served and provide a much customized experience to the customer [8].

The raw data collected from Voice of Customers (VOC) which includes current customer demographic profile and satisfaction feedbacks from the develop questionnaire will help to promote a better business decision making and help to analyse customer trends of satisfaction, which can lead to new better services.

V. QUESTIONAIRRE

This research will use questionnaires instrument to collect data from respondent (existing customer of Telekom Malaysia (M) Bhd). The questionnaire will consist the question related to service quality and customer satisfaction.

The present study is a combination of qualitative and quantitative study. The main purpose of conducting the focus group study is to identify major issues and problems faced by current telecommunication industry.

Focus group study is chosen due to its advantage of emphasizing the participants' rather than the researchers' point of views, which enables the researchers to conduct simultaneous small-scale interviews in a short period of time. The outputs of the focus group study will be used to develop and improve the research framework and questionnaire.

VI. RESEARCH DESIGN AND PROCEDURE

The population of this research is the customers of TM (M) Bhd which is largest broadband provider in Malaysia. Customers' feedback will be collected from Voice of Customer (VOC) and analysed for developing the questionnaire (needs, requirement and expectation). Upon completing the questionnaire, it will be tested in a pilot study, and finally distributed to a sample of 500 customers. Each respondent will be given 30 minutes to answer the questionnaire. A pilot study will be carried out prior to the main survey and preliminary questionnaire will be distributed to the respondents to test the validity of the survey questions.

VII. EXISTING CLOUD BASED SOLUTION FRAMEWORK

A summary of existing cloud based solution frameworks is tabled in TABLE I. The strengths, weakness and value

added to the proposed cloud-based customer support solution framework are included in the table.

TABLE I. EXISTING CLOUD BASED SOLUTION FRAMEWORK

Framework / Model (Year)	Cloud Based Solution Framework		
	Purpose (s)	*Strength (s) & Weakness (s)*	*Value Added to present study*
On-Demand Food Delivery App Development (Mobisoftinfotech.com, 2019)	Connect foodies with restaurants nearby with food ordering app.	*Strength:* Online Food Ordering For Customers - for entrepreneurs and restaurant businesses to build their own online food ordering services for new and existing markets. *Weakness:* weakness of this application is when in come to handling unreachable customer involved in sending back the delivery, and increases the costs of the operation	The proposed system should have mutual agreement confirmation between customer and service provider during making restoration appointment update by notification on the tracking status via online or mobile devices [9]
Rapid Offer Design and Order Delivery (RODOD) Solution (TM Forum, 2013)	Order management system was built to improve the customer experience while managing the operational costs.	*Strength*: The strength of this application is the availability time to market, have a shorter the ordering cycles which reduced operational cost. *Weakness*: User found it difficult to communicate with customer service representative during faulty experience.	Propose to have easy to understand and friendly user interface, real time update for customer. [10]
Contact Center Services Transcosmos (Trans-cosmos.co.jp, n.d.2019)	Manage delivering products and services to consumers in 46 countries.	*Strength*: this application is the system that have Customer Relationship Management, Contact-Link, Salesforce, and Oracle Service Cloud, multi-language service centre and e-commerce flagship stores on Lelong.my *Weakness*: loyalty among suppliers is low and the researcher found that the business model of Transcosmos Inc can be easily imitated other competitors	Propose to have an innovation to drive down better understanding with the supply chain (vendor and installer) and to build a platform model that can integrate suppliers, vendors and end users. [11]
Unifi @care Live chat (Telekom M Bhd 2018)	Manage Unifi account, check bills, live chat for any related broadband, inquiries, service request and a complaint channel application	*Strength*: have real time conversation via live chat, it was easily accessible at customer convenience due to the instant respond and researcher found that the application improves customer confident during complaint. *Weakness*: The main weakness of this application is when the order close before faulty restoration was done without any feedback given to the customer and the delay getting staff onsite when needed.	To do a research on how to improve respond time with current application limitation and propose a one stop centre to communicate with end user which can communicate directly with customer support representative and assigned faulty or restoration team. [12]
MyMaxis App (Maxis Broadband Sdn Bhd, 2015)	Application for the Maxis customer to view account details, view bill information, view mobile internet usage, purchase mobile internet passes, pay bills and to view latest promotions	*Strength*: Researcher found that the strength for this application is it have good deals and special offer for different age group and also target group, the provider also provides reasonable prices and packages to all user plus with a good network coverage in Malaysia. *Weakness*: limitation by not providing customer service section to log inquiry and complaint and researcher also found that the turn over for maxis user quit high when customer tend to change to other competitor easily due to no subscribing and signing contract for customer.	Propose to have a convenience and friendly user application from purchasing, tracking the usage update, reward and complaint channel that can help customers in real time, improve customer support and enhance customer experience [13]

Framework / Model (Year)	Cloud Based Solution Framework		
	Purpose (s)	*Strength (s) & Weakness (s)*	*Value Added to present study*
Flobot Field App (Fresh Milk Software, 2016)	Designed to get field team members, agents, engineers and trades people out in the field to the right job and on time.	*Strength*: Application can navigate to address, which mean it can send information on the map with an estimate of the time of arrival for customer. The application also has the technology to get a customer signature as prove for both parties to confirm job done. *Weakness*: Researcher found that the impact to the worker on tracking application due to worker feel inconvenient when being under surveillance and it affects the productivity as well. The value add for the current study is to find a solution on how to develop a win-win arrangement to make the application can be convenient for both on field worker and customer	To find a solution on how to develop a win-win arrangement to make the application can be convenient for both on field worker and customer. The value add for the current student is to build the application that can provide information to estimate time for restoration team to customer premises and to enhance the existing application by getting a signature from customer using apps to confirm job done [14]
Grab - Transport, Food Delivery, Payments (Grab Holdings Apr 2013)	A transport, food delivery, and payments application was develop as a booking service for cars and taxis, delivery service from restaurants, and cashless payments in-app and at merchants across the city.	*Strength*: Researcher found that the strength for this application is the offering to rides for any occasion and budget. The application also provide food, parcel, grocery delivery which very convenient and reliable. Plus it provide cashless payments and customer can earn rewards points and redeem awesome deals. *Weakness*: Researcher found that the application only applicable mainly at the urban areas and the driver can easily reject for any unwanted client or customer.	Propose to have a live on track status, feedback and synchronization between job done and tracking status that currently can be offered by this application to be implemented to the propose framework and also to add more variety vouchers that can be redeem by customer from the collected points to enhance better customer experience. [15]

VIII. DATA COLLECTION

Primary data will be collected through online surveys questionnaires. The link to online survey questionnaires will email to potential respondent within Telekom (M) Bhd subscriber's in Malaysia. The identify respondent will answer the online survey questionnaire. The collected finding from the literature review can be used to compare with the survey results.

IX. ANALYSIS AND TESTING

The developed system from previous stage will be used for customer aiming to improve customers' satisfaction. Two groups of customers will be selected (i) with the developed system and (ii) with the proposed system.

A set of test questions will be designed and answered by these two groups of customers. A set of comparative customers' results from the test will be obtained to confirm the effectiveness of the developed framework and application.

X. ASSUMPTION

The assumption made was the information regarding customer satisfaction, the method of data collection and the methods used to report the research finding included in the review of relevant literature review will be valid for the proposed cloud based solution. In addition, the other assumption made was from the data collected from the distribute questionnaires by the answer given by respondent are really accurate, ethical, transparent and at their best ability.

XI. PROPOSED CLOUD-BASED CUSTOMER SUPPORT SOLUTION FRAMEWORK

The proposed cloud based customer supports solution application is referred to enhance the current weakness from the research finding for telecommunication customer service application, negative feedback from Voice of Customer (VOC) and feedback from data collection. The strengths found from other applications will be added to the proposed application to increase customer satisfaction.

A proposed cloud-based customer supports solution for telecommunication industry in Malaysia is presented in Figure 1.The proposed enhancements are as follows: -

1) *Mutual agreement between customer and company during making restoration appointment.*

Majority of customer really appreciate if the provider can communicate and have mutual agreement for the availability of both parties during making the appointment.

2) *Real time and status tracking enabled.*

An application is considered convenient to customers when it can be accessed anywhere and customers are constantly updated on the current progress of an action.

3) *Enhance customer trust by getting a signature using apps to confirm job done..*

Telecommunication provider can securely track the progress of every raised service ticket by monitoring
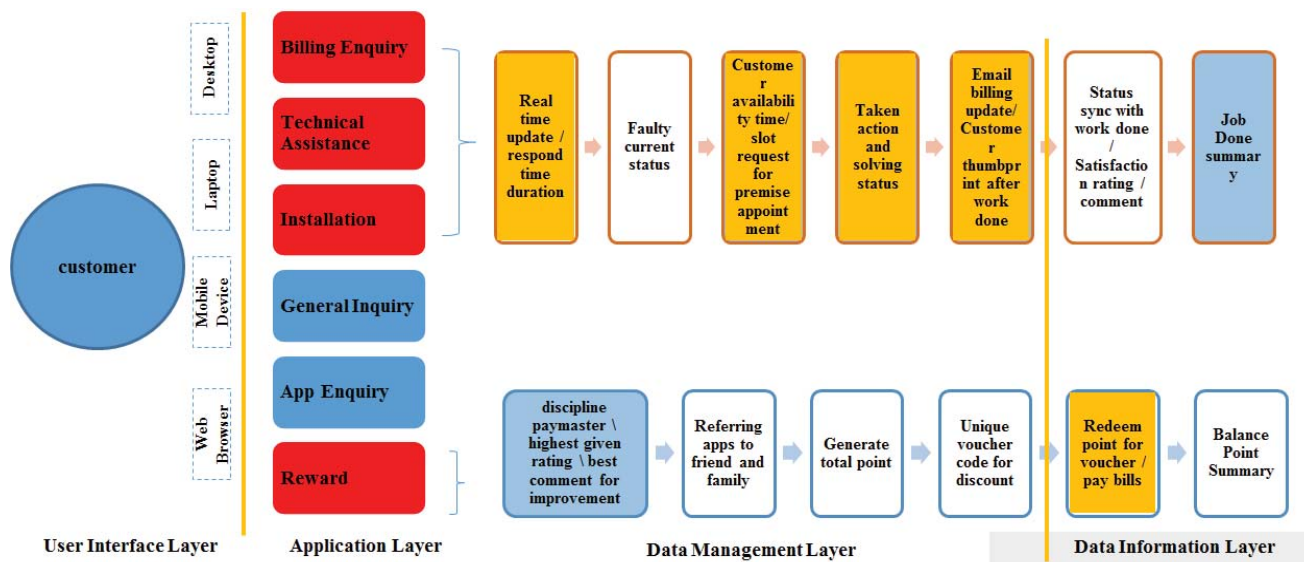
FIGURE I   A PROPOSED CLOUD-BASED CUSTOMER SUPPORT SOLUTION FOR TELECOM INDUSTRY IN MALAYSIA - MOBILE APPS

customer thumbprint after work done to avoid fraudulent activities during work in progress.

4) *Job done summary.*

Provider, customer, sales team, customer service representative, and restoration team can easily monitor the summary of any service request from raising the ticket, working progress and solution for each job done.

5) *Introduce loyalty program such as variety of vouchers are given for redemption using accumulated points by customers.*

Based on current existing application system, the proposed system intends to provide an enhancement to give points for discipline paymaster, highest given rating for the system application and for best comment for improvement.

XII. CONCLUSION

Unhappy customer will lead to churn impact to the company after subscription contract period. If the turnover is faster than gaining a new customer, the business will fail [16]. The best customer experience is how the provider giving the respond for customer request especially during faulty moment and give assistance in timely friendly manners [17].

Existing customers will be less interested to other competitors' offers when they are well-treated. The y will continue using the services with additional offerings to upgrade their current packages. They will also be willing to give recommendations to others and use the services for a longer time. With the proposed enhancements of cloud-based customer support solution in this study, customer experience and customer satisfaction will be lifted in telecommunication industry.

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