Information and Knowledge Management
ISSN 2224-5758 (Paper) ISSN 2224-896X (Online)
Vol.7, No.1, 2017

A Customer-Complaint Analyzer for E-Banking Services: The Context of the Ghanaian Banking Industry

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Abstract
Banking and financial institutions continue to intensify their efforts to engage in technological innovations in the provision of quality e-banking products and services. With this strategic approach, many banks in Ghana have migrated from the traditional and rudimentary branch banking to web-based banking transactions. This paper develops a model for a web-based customer-complaint analyzer that addresses customer complaints or suggestions in real time as well as supporting decision making processes of banks and other financial institutions. The exploratory prototype model, context diagram and UML use-case diagram were used to simplify and explain the design and development phases of the system. Both alpha and beta tests were done at the Ghana Commercial Bank and the United Bank for Africa (UBA) Ghana Limited of the KNUST Branch in Kumasi, Ghana. It is very expedient on the part of banks in Ghana to use complaint analyzer system to enable them do analyses on customers' complaints or suggestions as well as on performance for improved and better service delivery.
Keywords: e-banking, analytical performance, customer complaints analyzer, banking industry, customer service delivery

1. Introduction

In Ghana, the banking industry attempts to become as sophisticated as possible in the use of computers and their related technologies in every facet of e-product development and e-service delivery to customers. Firms in the industry exist as credit institutions, loans and savings, investments, 'susu' institutions, traditional and rural banks and multinational banks. As the industry grows, Boateng & Molla (2006) explained that competition becomes greater and these financial institutions tend to develop strategies which include technology to meet market obligations. This supports the claim by Amanfo (2010) that financial institutions need to invest in computerized decision support systems to enhance banking operations and procedures. Kushwaha (2011) also suggested that increasing customer base and becoming high-quality deliverer of service depend more on the kinds and quality of computerized decision support systems for various banking operations and processes. It is an inevitable fact that investment in appropriate ICTs for banking operations is one surest way to achieve strategic business objectives (Bhushan & Rai, 2007), and this leads to operational excellence, new e-products, e-services and business models, customer intimacy, improved decision making, competitive advantage and business survival. In this same context, Lientz & Larssen (2004), Polatoglu & Ekin (2001) and Mathew *et al.* (1999) commented that online banking brings banks at the convenience and homes of customers. It must be emphasized at this point that computer and knowledge-based systems for banking operations are not limited to routine record-keeping activities but also a number of diverse applications which include complaints analyzer to support decisions that affect customers of the bank.

Customer complaints define the various displeasures expressed by customers as a result of an unfavourable service delivery that has negative inclination. In Ghana, complaints or suggestion box is the main uninterruptible medium in many banking halls to receive various suggestions and complaints from customers. According to Abor (2005), customer complaints are inevitable in any business including banking and financial institutions. Importantly, customer complaints play a mediating role between *customer satisfaction* and *service quality* (Chaffey, 2002). This suggests a positive correlation between customer service delivery and customer satisfaction. Thus, the handling of complaints or suggestions is key to explaining the dynamics of customer retention and loyalty. As contended by Bhatt (2001), interaction between customers and use of technology enable organizations such as banks to manage effectively their knowledge including customer complaints. Basu & Bhola (2014) raised a similar concern that banks need to take full advantage of new technologies especially the use of electronic delivery channels to change the ways customers interact with the bank. Though Polatoglu and Ekin (2001) were much inclined to efforts banks make to prevent and respond timely to customer complaints. Abor (2005) rather argued that banks need to follow clearly defined customer service standards and policies in order to prevent customer service-related problems. This means that without a comprehensive complaint or suggestion handling structure and procedure, it is almost impossible to formulate a strategy for complaint resolution. Though a manual approach to handling customers' complaints may be good to some extent, a means of collating and analyzing such complaints for effective customer feedback becomes a challenge, and this mostly affects the integral role of customers in the decision making process of banks **(**Zeithaml *et al.*, 1996). It must be pointed out that a complaint channel such as a customer care desk may be associated with some biases as

customers sometimes do not get the free will to give out their complaints or suggestions. As explained by Pikkarainen *et al.* (2004), dissatisfied customers are likely to become influencers to other potential and loyal customers, and perhaps a likely drop in total customer base.

A customer complaint analyzer is an integrated user-based application system primarily designed to receive and collate the opinions, perceptions, complaints or suggestions of customers about banking activities, and to provide feedback to customers as well as to enhance decision making processes of the bank for improved customer satisfaction. Raisinghani (2004) described such customer complaints analyzer as a complete and easy-to-use complaint system that enables banks to automate complaints' handling and resolution. Yooncheong *et al.* (2002) explained that online customer complaints system brings to light the origins and causes of online customer dissatisfaction. Hishamuddin and Panni (2009) stressed that the degree of responsiveness to customer complaints is an indication of how much banks value their customers. As noted by Zhu *et al.* (2002), developing and implementing any customer complaint system comes with additional cost; however it strengthens customer-bank relationship. Banking institutions are increasingly becoming more connected both internally and with other business partners (Perkins and Annan, 2013). Thus, it is the primary aim of every digitally inclined bank to react instantaneously when customers' bank transactions are effected on time or request serviced at the convenience of the customers. In Ghana, micro finance institutions, credit unions, rural banks, multi-national banks, commercial banks, etc. rely on technology initiatives to developing new banking products and services as a strategy for higher customer retention.

2. Design Approach and Tools

An evolutionary approach was first used to appreciate and understand the dynamics of banking operations in Ghana for which the Ghana Commercial Bank and the United Bank for Africa (UBA) were considered for the study.

2.1 The Design Model

The prototype model was thus used to allow more flexibility and greater interaction with the IT staffs of the banks especially during requirements elicitation. The study was specific on four major phases and these included planning, analyzing and designing, prototype construction, and testing and integration. This plan phase provided invaluable and intangible inputs which helped to determining the requirements for the system. The analyze and design phase helped to list requirements to establish connections among the various input requirements as well as those of the perceived output requirements. Evaluation and review of the final prototype constructed involved User Interface (UI) screens depicting input capture, processes involved and outputs or reports desired. At system level, both *unit testing* and *integrated testing* were done to ensure the workability of the system. ***Figure 1*** shows the four phases considered for the purpose of prototyping.

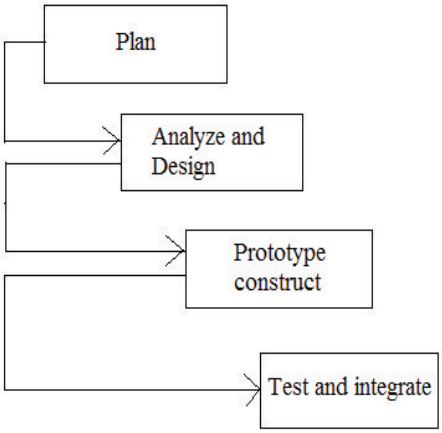

Figure 1. Phases of the simplified Prototype model

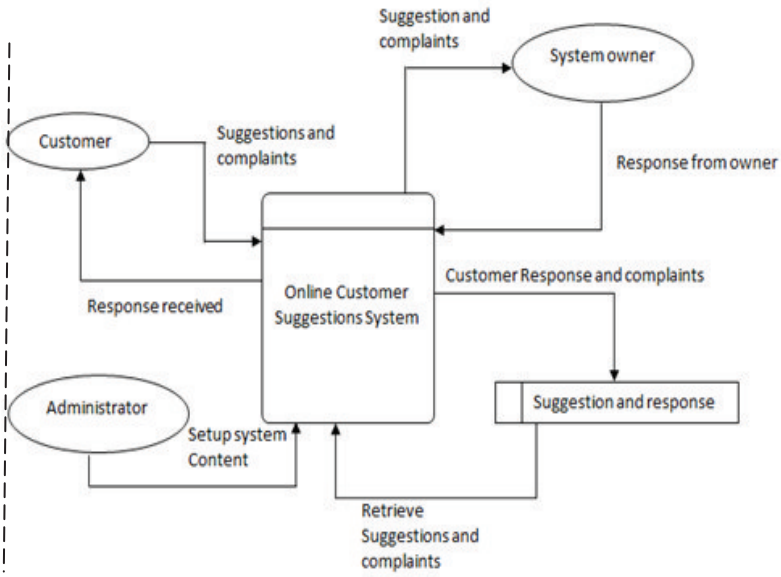

Figure 2. Simplified context diagram

Further, a context diagram (***Figure 2***) was necessary to give a simplified overview of the initial interactivity among the key stakeholders of the system. Thus, at the highest level, the system works as an online customer management system which interacts with customers, business owners and the system administrators to

respond to customer complaints and suggestions. In detail, customers are able to make suggestions and receive responses from the system in real time. This further allows the bank owners' or management to add or modify FAQs catalog as well as to view suggestions and responses reports. Three key actors were used to model the system and they were the *customer*, *administrator* and *system owner*. Report viewers and responders access the system only through a level of authentication which offers protection on the basis of confidentiality. By way of illustration and information details, a class diagram was used to provide a static view of the system's entities or objects and these were mainly java objects. These objects included System User, FAQs, Suggestion/Complaint and Response. Also, for the purpose of the web creation and interfacing, the ASP objects included *WebForm*, *MasterPage*, *DataAdapter*, *DataSource*, *GridView*, *DataTable* and *DataSet*. ***Figure 3*** shows the interconnections among the objects including event operations through a use case diagram.

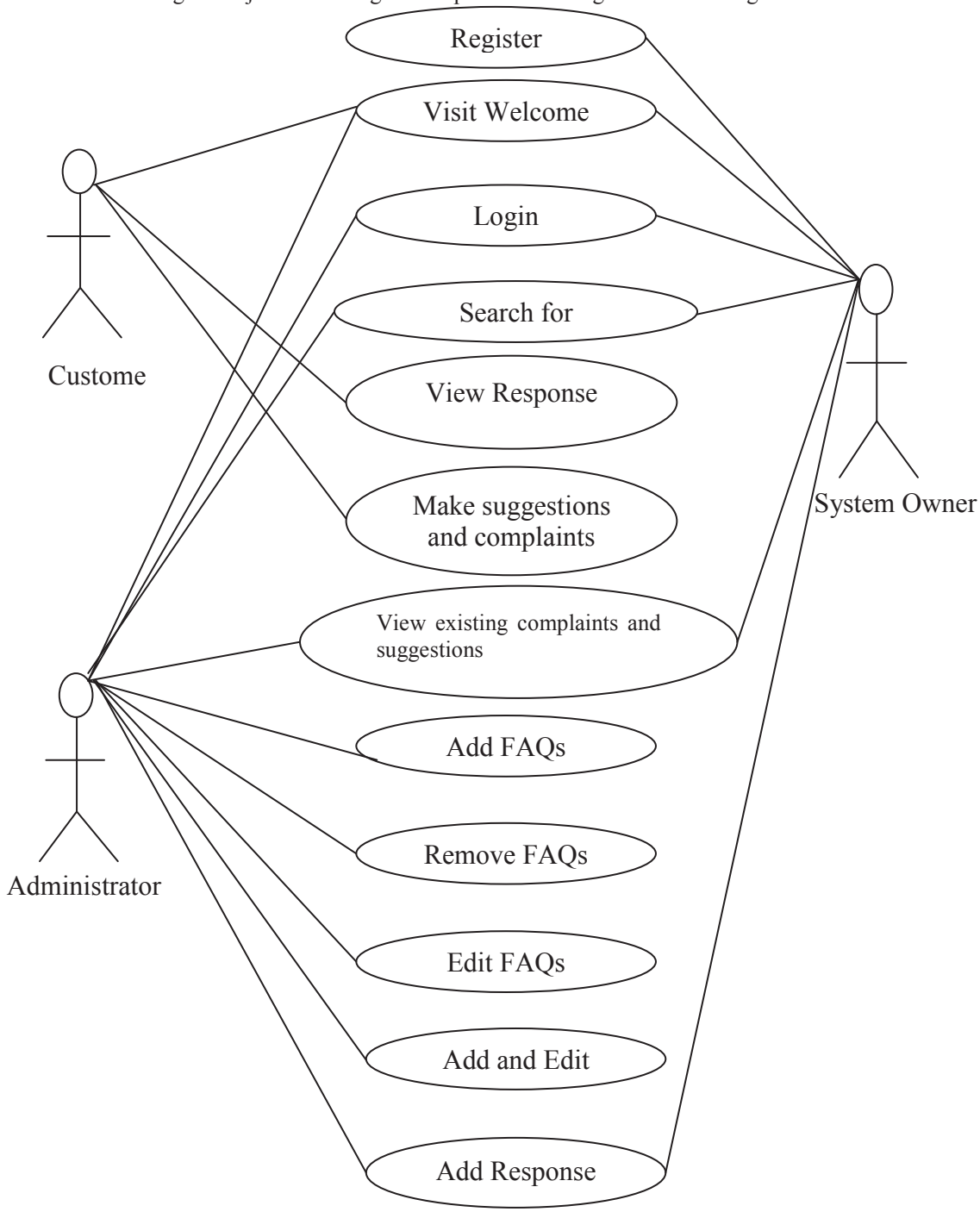

Figure 3. Use case diagram

2.2 Complaint/Suggestion Link Flow Diagram

Users' complaints and suggestions are examined initially to determine the direction of interpretation and analysis, and to obtain response from the appropriate division or unit responsible for such responses. Though there are fundamental supportive responses similar to those from the FAQs. Contextually, various reports are so produced to augment policy decisions on addressing the true needs of customers. In fact, Uchupalanan (2000) re-echoed that complaints or suggestions' dynamics are clear indicators of knowing the satisfactory levels of service delivery to customers of a bank. ***Figure 4*** shows complaints or suggestions flow from users' perspective.

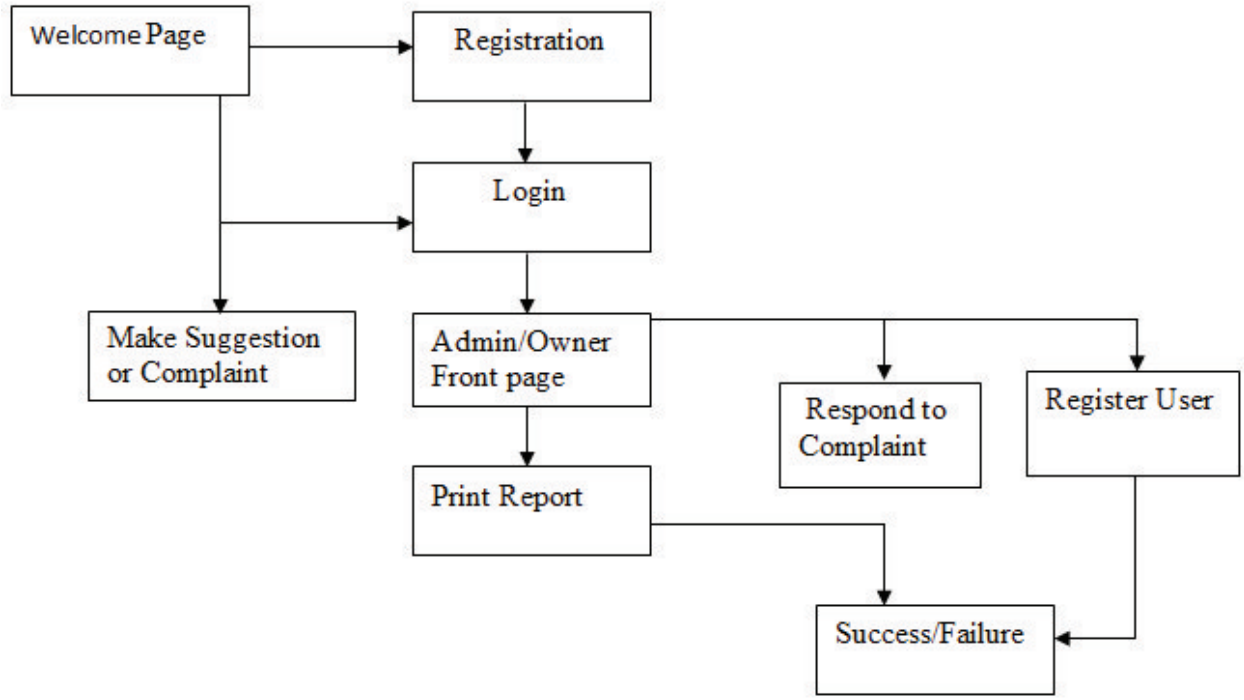

Figure 4. The link flow diagram

On the basis of customer service and satisfaction, the overall modeling of the customer complaint analyzer factored in SERVQUAL and SERVPERF dimensions which included *reliability*, *assurance*, *empathy*, *responsiveness*, and *tangibles* (Parasuraman *et al.*, 1985). These indicators were found to be more correlated to customers' expectations likely to arise from the complaints or suggestions submitted to the bank. Though the degree of correlation among these can be extended to explain the elements of customer satisfaction namely service quality, service loyalty, customer loyalty and customer retention. This study established that the overall customer satisfaction is not achievable by any of these individual elements but rather coexistence and a holistic approach to considering all these elements in a unified way. This means that effective e- delivery services/channels are necessary to enable traditional branch offices to provide a standard quality service to all customers both near and far (Ismail & Panni 2009). Interestingly, complaints resolution and feedback on suggestions to customers in real time were considered as an integral part of e-delivery services necessary to offer higher level satisfaction to customers. Thus, customer elements and service elements interplay to offer quality service delivery, and complaints or suggestions arising from these elements become very fundamental to customer complaint analyzer. ***Figure 5*** shows the interplay between customer elements and service elements.

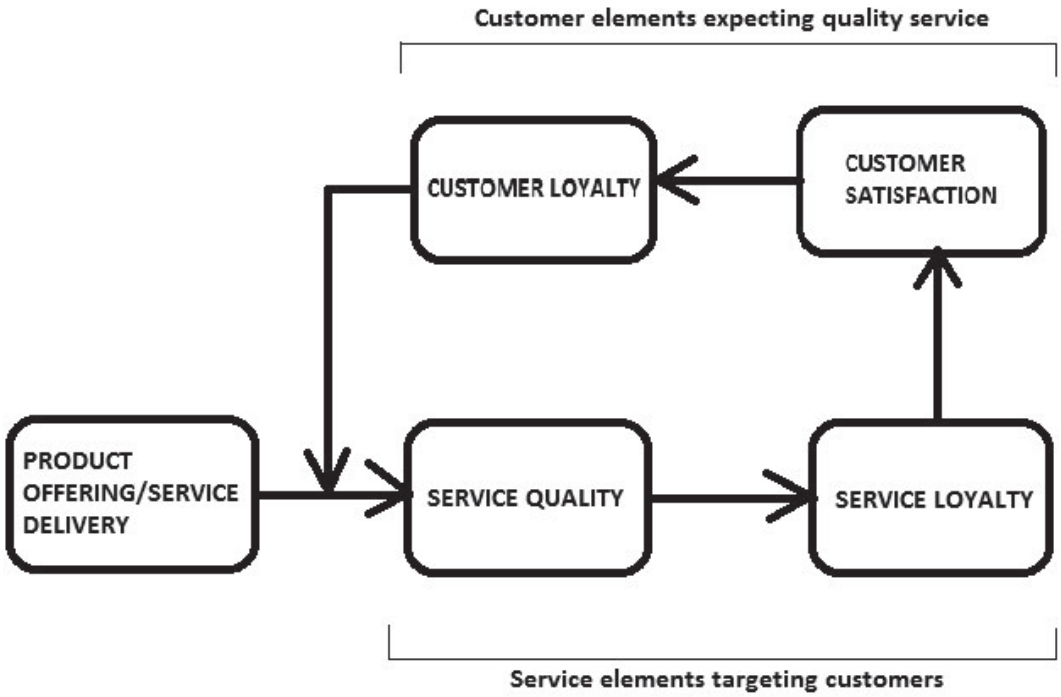

Figure 5. Interplay between customer elements and service elements for product or service delivery

Indeed, the customer complaint analyzer integrates the e-delivery system of the bank, and this can easily integrate other technologies and bridge Web technologies along the lines of the existing information systems that are used in the bank.

3. Discussion and System Implications

Feedback to customers in any form is required to provide detailed understanding of the issues about which complaints or suggestions are made. Communications tools and applications complement ways feedback is given to customers in real time and in a mild of realizing at least some attention given to customers. The study established that customers use mobile devices such as tablets, cellular phones, PDAs, laptop computers, and other special mobile devices to transact business with the banks in one way or the other. In respect of this initiative, customers are able to receive messages of different kinds regarding their transactions. However, customers are challenged in making their opinions known to management of the banks through suggestions and complaints. The study revealed that 88% of customers of the two banks (Ghana Commercial Bank and United Bank for Africa Group of Companies) considered for the study were in support of the use of such electronic medium to express what affects them. In this way, customers are able to send their suggestions or complaints through e-mail technology, cellular phone and tablets, and thereby making them partial contributors of the decisions of the bank.

3.1 Report Parameter Analyzer

The report parameter analyzer of the system provides scheduled reports primarily on weekly, monthly, quarterly, half yearly and annually from received complaints and suggestions. Reports can also be generated in between two specific time periods for the purposes of ad hoc measures on serious complaints received. Samples of monthly and quarterly reports are shown in ***Figure 6*** and ***Figure 7*** respectively. The respond option of the model explained earlier is used to deal with such customers' complaints and suggestions stored in the complaints/suggestions knowledge base. This means that the knowledge repository of all complaints and/or suggestions can be produced for analysis to streamline operational inefficiencies. This is necessary to enhance decisions of management especially areas that need careful attention, innovative drive and development. By categorizing and examining complaints and suggestions, Division or Unit responsible for providing needed solutions in respect of bank products or service delivery can quickly react to customers' expectations. In this manner, customers' pride and confidence in the bank are elevated and a possible positive impact on customer loyalty and retention.

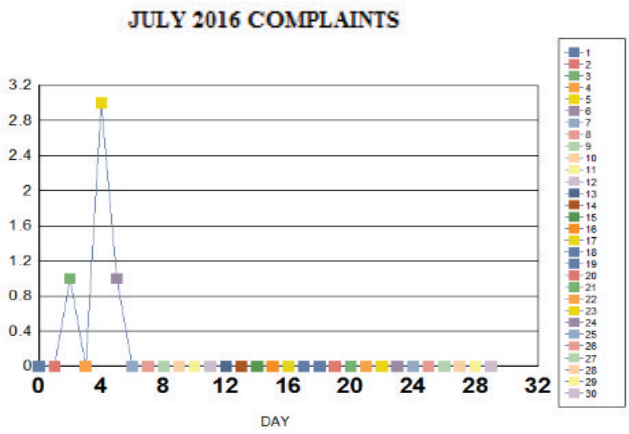

Figure 6. July 2016 complaints

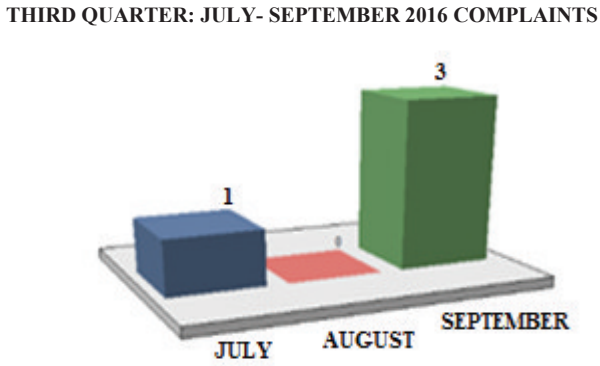

Figure 7. July–September 2016 Quarter report

Further, the parameter analyzer enables the bank's management to perform trend analysis especially in considering its effect on specific Department/Division/Unit of the bank. It is imperative to identify at a glance via trend reports produced by the system to know the exact Department/Division/Unit that need careful scrutiny and attention for the purpose of customer satisfaction. Directives and policy amendments can be initiated in Department/Division/Unit that experience high rate of complaints or suggestions from customers. This helps to reduce the dissatisfaction levels of customers, and help reshape service quality and delivery to the numerous customers of the bank. It must be emphasized that cumulated complaints or suggestions from customers over a period either annually or quarterly becomes easier to be aggregated for future forecast. This establishes good judgments on the basis of bringing change to Department/Division/Unit that get highly affected by customer complaints. For example, in ***Figure 8*** and based on sample test data, the Customer Care Service Unit received the most complaints for the three year period 2013-2016 followed by the Security Unit over this same period. Thus, customer complaints increase sharply between the months of August and October but with a relatively study rate from January to July. This is an indication that service quality declined over the three month period as against the other Department/Division/Unit of the bank.

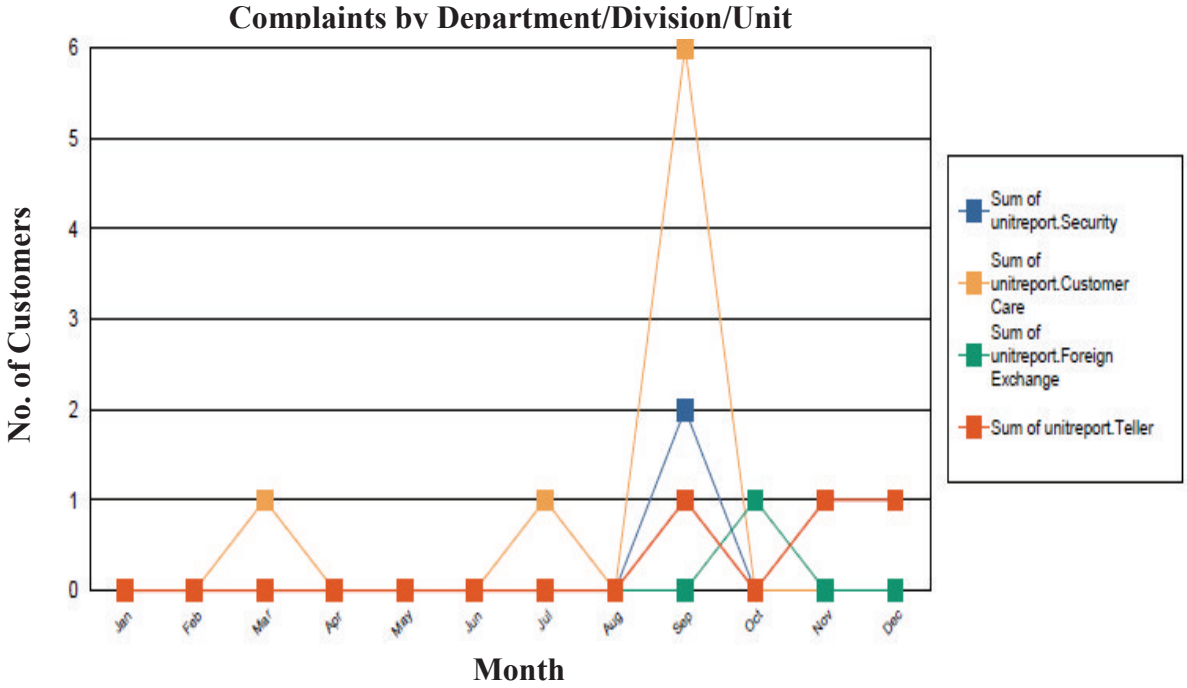

Figure 8. Aggregated complaints for the period 2013-2016

3.2 Department/Division/Unit Complaints Analysis

Complaints or suggestions received from customers are mainly stored as part of the bank's knowledge base and

this enhances the categorization of complaints or suggestions relative to customers transactions and Department/Division/Unit affected thereof. For the purpose of appraisal and performance of Departments or Units, it becomes easier to appreciate and understand causes and complexities that may perhaps lead to numerous complaints usually directed towards certain Departments or Units of the bank. For instance, as shown in ***Figure 9*** and based on sample test data, the Customer Care Service Unit received the greatest number of complaints from customers. This is an indication that management needs to re-examine the kind of services the Unit offers to customers and to answer the questions of why customers complain more about the Customer Care Service Unit than the rest of the Units. It is therefore possible that the operational procedures define for the Unit may demand further amendments so as to perfectly handle customers in the best interest of the bank as well as satisfying customers who mostly deal with the Customer Care Service Unit.

As banks strive to make available numerous e-products and e-services to customers both near and far, the customer complaint analyzer supports quality service and e-product initiatives of the bank. It augments the strategic ICT goals of the bank so that both customers and staff become equally digitally enabled to address and redress concerns for optimum product and quality service delivery. Besides, the system offers good grounds to appraise Units or Departments when measuring performance of Departments/Divisions/Units over a certain period of time.

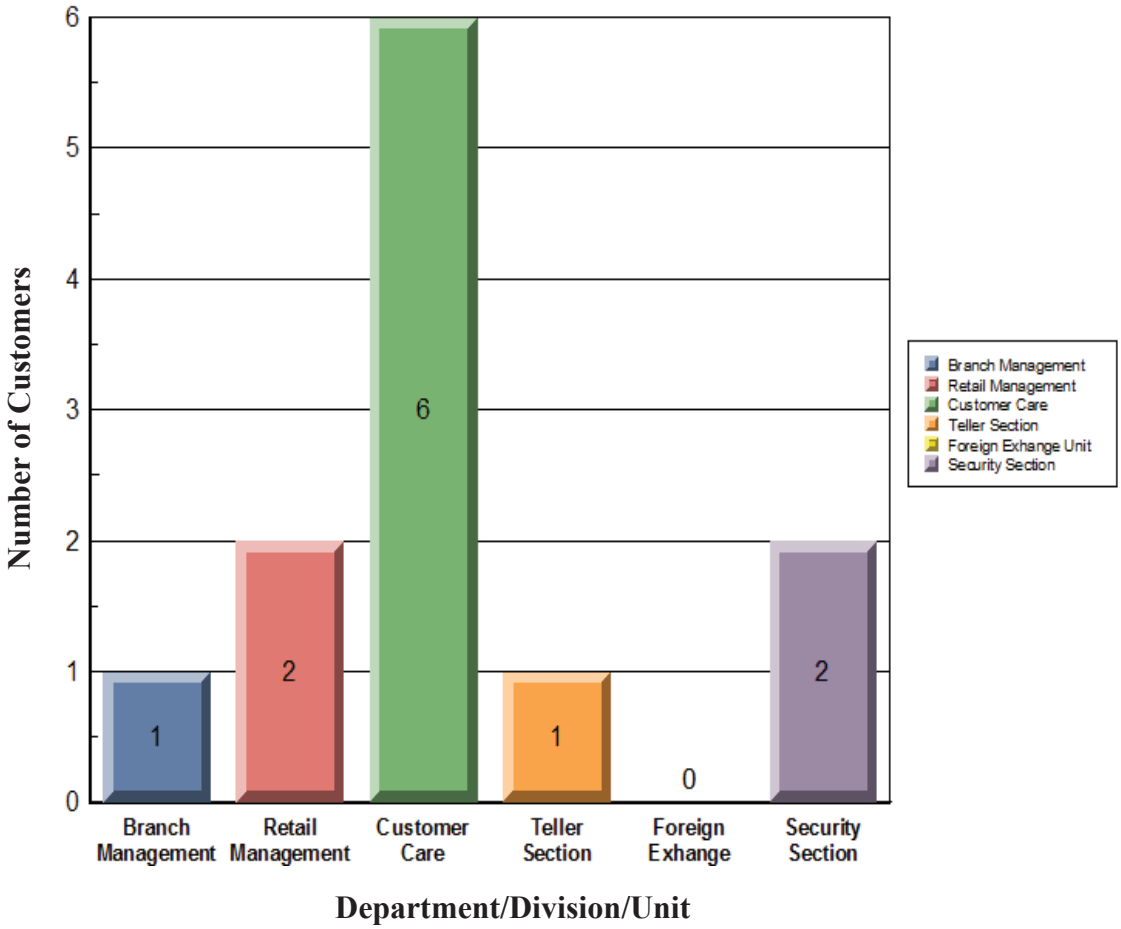

Figure 9. Complaints received from customers according to Departments/Divisions/Units

Such a web-based complaint/suggestion system can have policy direction, formulation and implementation, and hence a high level of satisfaction on the part of customers. Besides, nascent banks need information and quite often some help to set up a new business unit or open up other branches elsewhere. Impliedly, managers really need market intelligence supported by the customer-complaint analyzer to make informed decisions in order to keep pace with frequent changes that occur in the markets, society, patronage behaviours of customers, and technology. Thus, the customer-complaint analyzer facilitates banking machinery by unveiling the critical success indicators required to strengthen the customer-bank relationship.

4. Conclusion

Banks and small scale financial institutions in Ghana continue to increase in numbers as they compete for potential customers for business survival. On the basis of inconsistencies, delays and unreliable nature of

systems used by banks and other smaller financial institutions in Ghana, customers are gradually becoming accustomed to instant and daily money transfers than relying on banks for the same purpose. This has been partly attributed to banks not adhering to customers' needs especially the commercial banks like Ghana Commercial Bank which can be seen in every part of Ghana. It must be pointed out that the average turnaround time for customer service is a necessary motivator for customer retention, and for that matter a customer-complaint analyzer for improving customer service delivery. Thus, the customer-complaint analyzer offers a customer-based solution that satisfies both the bank and customers in business transactions and service delivery.

It is however important to emphasize that the customer-complaint analyzer serves as a tool to respond faster to customers' suggestions or complaints for the purpose of online customer satisfaction and increase efficiency as banks obtain greater feedback from their customers. Moreover, it offers a centralized repository of text-based customer suggestions and complaints information for quick feedback response, and provides analytical and reporting capabilities for generating complaint summary and categorization in respect of type of complaint or suggestion about a service or a product. This makes it easier for banks and financial institutions to employ strategies that are appropriate for ensuring product and service quality, service loyalty, customer satisfaction and customer loyalty. The customer is thus elevated as the most important factor in banking operations.

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