

## **An industry case study: a mobile-based business strategy to improve the customer care service in a major retail company**

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**Abstract.** Customer service is a key factor that influences customer loyalty and overall satisfaction during the buying experience. With the growth of e-commerce, many companies have detect several issues in the performance of their customer service departments. Customer dissatisfaction may represent significant losses in sales and reputation. In this context, this report describes a success experience in the industry of retail, in which a mobile-based solution was applied to improve the customer service performance and reduce overall costs of one of the major retailers of the US. We present preliminary results indicating the potential benefits of our solution to the company.

**Keyword:** retail, e-commerce, mobile, customer service, PBX.

### **1 Introduction**

By definition, e-commerce or electronic commerce, is the buying and selling of products or services via the Internet. It was not until only a few decades ago that the idea of e-commerce appeared. E-commerce was introduced 40 years ago and it continues to grow to this day with new technologies, innovations, and thousands of companies entering the online market each year. The e-commerce timeline can be separated in three stages:

- 1960-1982: Paving the way for Electronic Commerce, EDI (Electronic Data Interchange) replaced traditional mailing and faxing of documents with a digital transfer of data format.
- 1982-1990: In 1982, France launched the precursor to the internet called Minitel. The online service used a Videotex terminal machine that was accessed through telephone lines. The Minitel was free to telephone subscribers and connected millions of users to a computing network. The Minitel system peaked in 1991 and slowly met its demise after the success of the Internet 3 years later.
- 90's to Present: The birth of Internet, changed the idea of buying and selling products/services. When the National Science Foundation lifted its restrictions on

commercial use of the NET in 1991, the Internet and online shopping saw remarkable growth. The NSF began charging a fee for registering domain names.

The mid-nineties to 2000's saw major advancements in the commercial use of the Internet. One of the largest online retailer in the world, Amazon [1], was launched in 1995 as an online bookstore. Currently, Amazon offers not only books but also DVDs, CDs, MP3 downloads, computer software, video games, electronics, apparel, furniture, food, and toys. The company attracts approximately 65 million customers to its US website per month and it earned 34204 billion in revenue in 2010. Another major success story of the dot com bubble was EBay [3], an online auction site that debuted in 1995. Nowadays, EBay integrates the top 10 of the largest e-commerce platforms in the world, has an annual turnover of billions of dollars and its operations are localized in over 30 countries around the world.

To improve their competitiveness in the Internet market, in the last years online retail companies have paid special attention to their customer overall satisfaction. The increase in sales volume and customer subscriptions in e-commerce platforms [13] should be accompanied by improvements in the customer's buying experience. For example, a valuable characteristic of Amazon's website is the user review feature that includes a rating scale to review a product. Customer reviews are now considered one of the most effective social media tactic for driving sales.

It is also important to provide a support system to handle potential issues with products and services that are acquired through the platform. For instance, EBay (in the US) or MercadoLibre [7] (in Latin America) provides a Buyer Protection System Program, which emphasis on protecting the buyer from fraud. At the end, the buyer is the heart of the business. A well-known rule in retail business is that a happy customer will probably buy again. However, an unhappy customer will probably not only avoid buying again, but also provide negative feedback to other potential customers.

A poor customer service, especially via telephone, is one of the flaws of many retail business that have experienced a quick grow due to e-commerce. These companies, in general, are not used to deal with a high volume of complaints or requests, and they only provide telephone-based assistance to their customers. The dissatisfaction of customers is generally translated into loss of sales and the deterioration of companies reputation. With social media growing exponentially, a bad reputation can severely affect the ability to attract new customers.

In this report, we describe a success experience in the industry of retail, in which a mobile-based solution was applied to make the customer service more efficient and reduce overall costs of one of the major retailers of the US. This retailer has recently implemented an e-commerce platform to increase its sales [4], but this improvement revealed, as a side effect, serious operating issues in the performance of its current customer care service. To overcome this issues, an assessment was conducted to detect improvement opportunities. Therefore, a solution that takes advantage of the power of mobile devices, undervalued until this moment by the retailer, is proposed and implemented in one of the retailer stores as a case study. Preliminary results indicates that the proposed solution could solve the main issues in the customer service.

The rest of this article is organized as follows. Section 2 describes the context of the problem emphasizing on a major retail company of the United States and the importance of customer service. Section 3 describes the solution proposed from a functional and technical perspective. Section 4 shows the results obtained after implementing the solution. Section 5 discusses lessons learned and conclusions. Finally, Section 6 proposed future work.

## **2 A major retail company of the United States**

This report is centered in one of the major retail companies of the US, with headquarter in Chicago. We will refer to this one as THE COMPANY, due to privacy restrictions. THE COMPANY, which has started with a catalog-based sales strategy, grew to become one of the largest retailer from mid-twentieth century. THE COMPANY currently has almost 1700 stores across the US and has an annual operating income of about USD 1 billion. The company has been always characterized by their catalogs, which became very famous within the United States, and having a cordial face-to-face relationship with their customer.

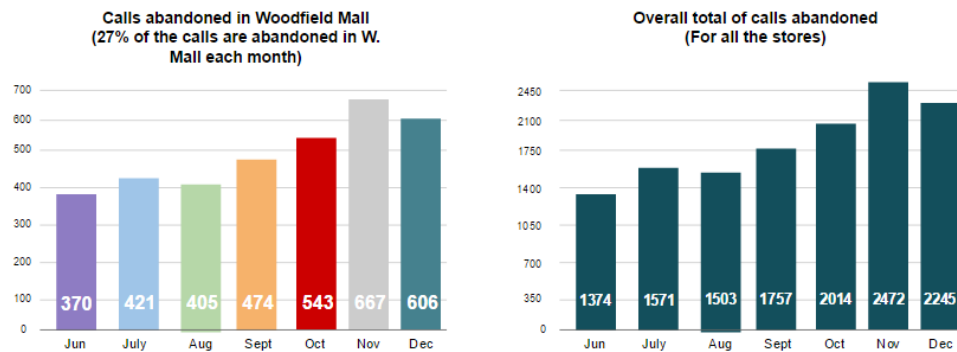
Nonetheless, THE COMPANY has experienced economical and operational issues during the last 10 years. These issues were mainly caused by a reduction in the number of customer per store, lost in sales, and the growing competition of tech-driven retailers like Amazon & EBay. In the last 4 years, THE COMPANY lost an estimate of USD 7 billion and was forced to close multiple stores in different states of US. The board of directors (BOD) realized that the traditional catalog strategy was not effective anymore, and that they should change their selling strategy to become a tech-driven retailer. The BOD and the top shareholders claimed that the sell-off of key assets in the last year has given the retailer the financial support to speed the selling paradigm transformation.

### **2.2 Inefficient customer service**

In addition to the adoption of an e-commerce selling platform, THE COMPANY required professional consulting services to assess its current customer service. The BOD were aware of the importance of providing an excellent customer service. A potential growth in sales due to an e-commerce platform could be affected by a poor customer service. Therefore, a study was conducted in one of the stores, located at Woodfield (Chicago, Illinois, US), as a case study. The store at Woodfield is one of most important ones and handles the majority of the customer service calls. The study revealed there were serious issues in the performance of the customer service as regards the telephone service. The results of this assessment can be summarized in the following statements and in Figure 1.

- 20% - 30% of the calls are abandoned in Woodfield mall each month.

- On average more than 2000 calls are abandoned each month in only one store
- 1 of every 4 clients does not get the right support from Sears in his vicinity
- Near 13000 calls were abandoned in the past 6 months.



**Fig. 1.** Amount of abandoned calls at Woodfield store and the rest of the stores.

A parallel study of the technology used in the stores and the telephone network was made. This second study revealed the following results:

- About 5 wireless phones are located in the store. That means limited reach in term of connected associates.
- Few of them are normally in the POS, and cashiers availability to take the call is limited.
- Cost generated by telephony systems is neither shared nor leveraged with any other channel.
- There is no indicator of quality or benefit for THE COMPANY for keeping this channel working.

Under the assumption of a general customer dissatisfaction in relation with the customer services, a final study was made to assess the feedback from customers. This study revealed that the amount of negative reviews in many popular online forums has alarmingly expanded in the last year. Figure 2 shows a small sample of the total amount of customer's negative feedback found.

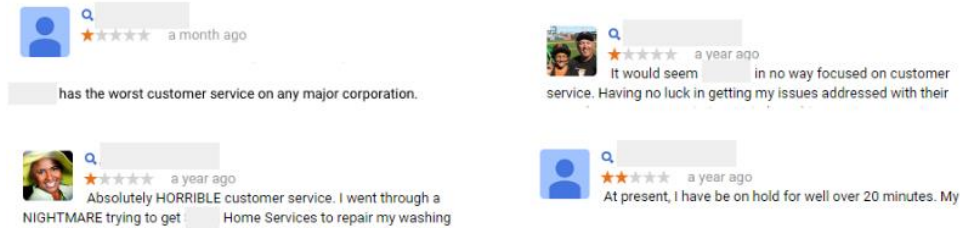


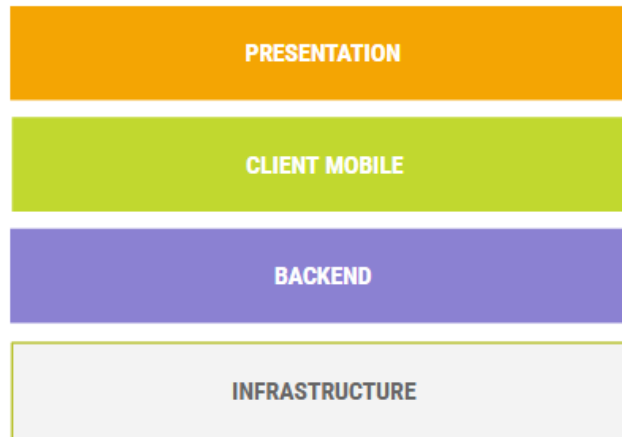
Fig. 2. Example of negative customers' reviews in online forums.

### 3 The proposed solution

The proposed solution, which was evaluated and accepted by THE COMPANY during the presales process, has the following main objectives:

- To add communication features to the mobile devices currently used in stores, enabling associates to take calls. This decision allows the company to include idle store employees in the support chain and reuse actual devices.
- To reduce operational cost by ending a costly contract with a technology and network company. Instead, we will develop a custom telephone central based on the PBX technology.
- To allow communications to be routed smarter and more efficiently by the new platform. This may decrease the number of abandoned calls that the store is currently having while, at the same time, increase customers' satisfaction.
- To provide customers an improved retail experience.

Based on these goals, we design an integral solution that involves a multi-platform application supported by mobile (iOS) and desktop devices. This solution also includes an infrastructure layer, which is composed by a telephone exchange and an openfire server for telephone and presence features. Figure 3 depicts a high level layer architecture diagram.



**Fig. 3.** High level architecture diagram of the solution.

The Presentation layer solve the UI requirements with web technologies (e.g., HTML5, CSS3, and Javascript). We employed a hybrid-mobile development [11] approach to target multiple mobile platforms from a single code base, rather than writing native code for each platform separately. Hybrid mobile apps can significantly reduce the time and cost of mobile app development. Another key decision was to develop this layer with AngularJS framework [2], which is a structural framework for dynamic web apps.

The Client Mobile layer is responsible for connecting the web application from presentation layer to the native functions of the mobile device. Initially, the application supports only iOS devices, so a native layer in iOS is developed. If we need support for other mobile platforms (e.g., Android, Microsoft Phone) in the future, we will only change this layer.

The Backend layer stores intermediate data needed from the different devices, such as available contact lists for each associate, the user configuration or session management. Also, this layer together with the infrastructure layer will be in charge of routing the calls in an efficient way. All these features will be developed in JAVA.

The Infrastructure layer is responsible for communications. Due to the need for devices to act as telephones, we used a PBX (Private Branch Exchange) [10], which is actually a telephone exchange directly connected to the public telephone network via trunk lines to manage in addition to internal calls, incoming and outgoing autonomously on any other exchange. Thus, the operational cost is significantly reduced, since the device becomes part of the company, instead of being provided Telephone Company. Another important consideration, is that we use an open source PBX called Freeswitch [5] to develop this layer. Furthermore, to check the user's connection (in telephony this requirement is called presence), we set up an openfire server connected to the PBX to manage presence feature.

To clarify how the different layers are deployed, in Figure 4 we present a conceptual schema of all the components and roles involved in the processing flow. It must be noted that the solution is a physically-distributed system which is used by several roles (e.g., Associates, Manager, CEOs).

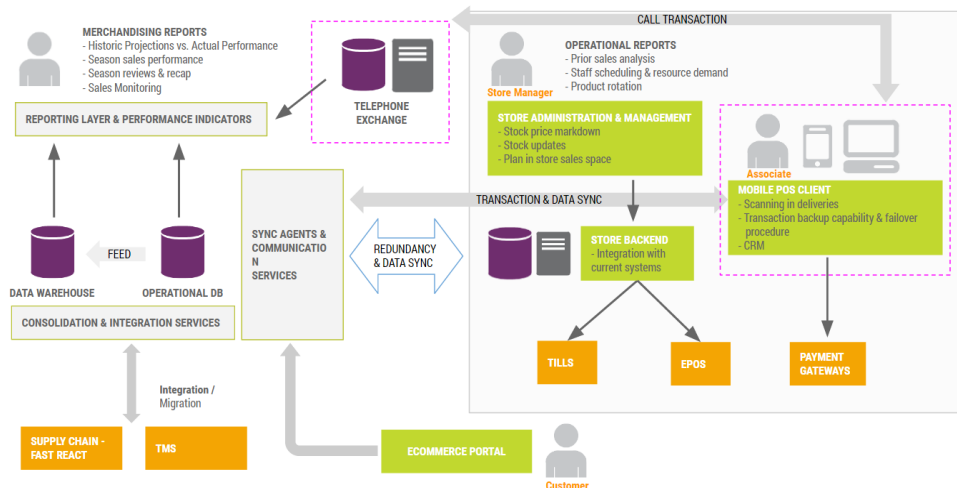


Fig. 4. Conceptual schema of the proposed processing flow.

### 3.1 An example use case of the proposed solution

For the sake of clarity, next we describe a common buying flow to contrast the customer service quality before and after our proposed solution.

Suppose that a customer purchases a LED TV at Woodfield store but she does not pick it up at the moment. She wants to receive the product at home. A similar situation would be that the same client, located at Chicago city, purchases the good by using the e-commerce system. When the customer receives his new TV at home, she tries to install and connect it, but she finally cannot make the TV works properly. Therefore she decides to call to the customer service.

Before our solution, the calls were mainly concentrated in the line boxes or at the manager's office, by using only 3 or 4 telephones. Since both, cashiers and manager, are commonly very busy, the calls were normally missed. If a call was taken by the manager, who normally does not have technical background, she must find for a person with the proper skills and the availability. This strategy was not only a waste of time of employees, but also generated a bad experience in the customer.

In our proposed solution, the system automatically routes the call based on associate activity status (Presence: Available, Not Disturb, Disconnected) and the best skills. The customer describes the issue by choosing categories (e.g., electronics, clothes, computers), and those categories are then matched with the different skills. The asso-

ciate takes the call immediately by using the mobile app. The different basic functionalities in the Mobile UI are described next, as well as in Figure 5.

- Receive calls in any in-store device.
- Set presence used to accept or reject calls.
- Smart call routing based on associate's presence and desirable skills to resolve the customer's issue.
- Automatically set presence based on associate activity status.
- Provide extended communication between associates: chat, broadcast messages.
- Fallback to nearby store when unavailable.
- Call your trusted associate to solve a particular issue.

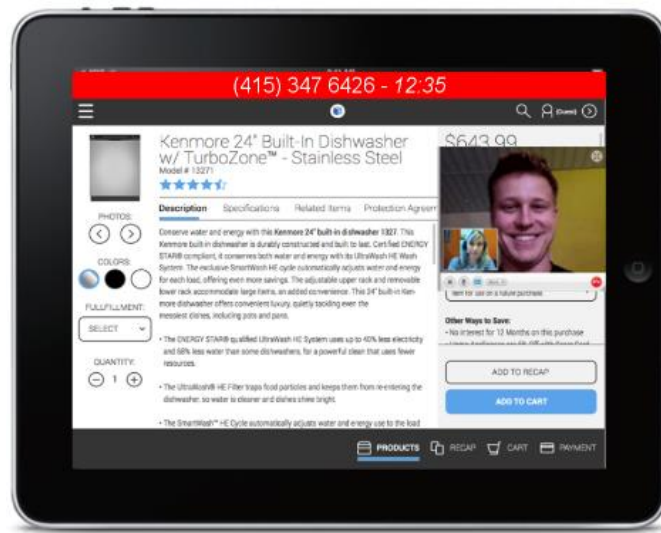


Fig. 5. Snapshot of the Mobile UI during a call.

As it can be inferred from the basic functionality list, there are some alternative flows that the service can take. For instance, if any of the associates at the store is available, the call is automatically redirected to the nearby store. If the associate realizes that she is not qualified to resolve that issue, then she transfers the call to a technically skilled person. The final goal is to help maximizing engagement level while building customers' loyalty and trust.

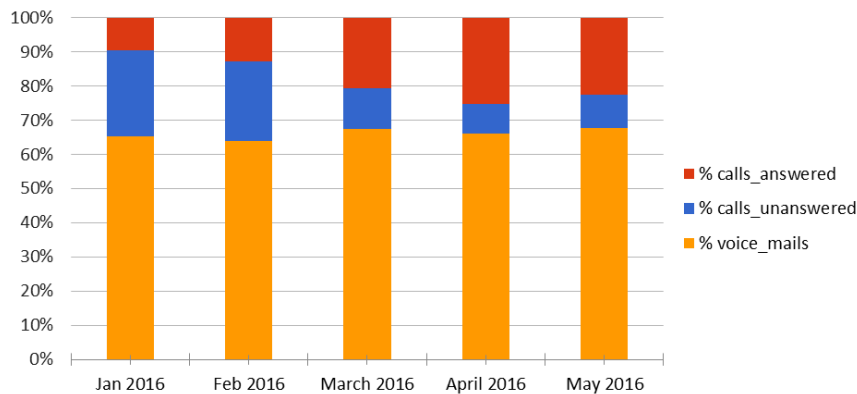


## 4 Results

Several metrics were taken into account to measure the performance of the customer service. Below, we describe the main measures.

- *Voice\_mails*: The number of calls attended by the voicemail. These calls were not attended by the associates or the managers.
- *Calls\_unanswered*: The number of calls that the clients refuse.
- *Call\_mod*: The number of calls attended by the manager. These calls were not attended by the associates.
- *Calls\_associates*: The number of calls picked up by the associates.
- *Calls\_answered*: The sum of *Call\_mod* and *Calls\_associates*.
- *Total\_calls\_received*: The total number of calls attended by store.

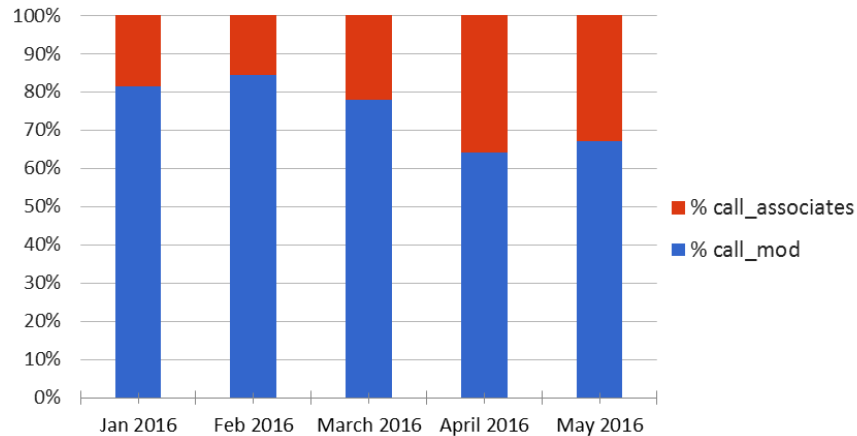
We deployed and assess the solution performance in March 2016. In order to have a baseline, we started to measure the performance of the customer service since January 2016. In Figure 6, we compare the unanswered and answered calls from January to May 2016. As can be seen in this bar chart, the abandoned calls in January and February are higher than in March, April and May. Therefore, it seems that the rate of abandoned calls decrease since the new mobile strategy was deployed in the store. In fact, the number of calls unanswered decreased from 25% to almost 10% in May 2016, whereas the response rate from employees increase from 10% to more than 20%.



**Fig. 6.** Answered vs. unanswered calls in 2016

Another metric to be considered regarding the performance of the customer service are the distribution of answered calls by employee type. As can be seen in Figure 7, there is a significant increase in the number of answered calls by associates, and a decrease in the number of calls answered by managers. This may indicate that the proposed solution has not only improve the overall performance of the customer service

by reducing the unanswered calls, but also reduces the workload on managers since associates seems to be more active and effective at taking calls.



**Fig. 7.** Answered calls by employee type.

## 5 Conclusions and Lessons Learned

From the experience of having developed this mobile strategy and the results obtained, we find the following benefits:

- *Leveraging Investments:* The proposed solution reuse the devices currently present in stores and external outsource telephone exchange services. Consequently, the operational costs are reduced significantly [9].
- *Customization:* Greater adaptability of functions and processes. Examples: 1) Having customers specify whether it is important for them to talk to this specific store or an expert in a certain department from any nearby store. 2) Identify specific associates they have worked with. 3) Start a sales process on the phone.
- *Integrated Retail:* The use of existing devices together with the ability to extend telephony behavior provides the associate smarter tools to cross match information about the user and to create an experience that is agnostic of the channel.
- *Tracking:* Setting up this plan as an overall solution will provide better ways to track effective communications by setting goals and measuring results. This information can be used not only to understand nature of traffic, but also to encourage associates in expected behavior with tools like gamification.

We have also found some negative points from the development experience:

- *Web - Client Mobile Integration:* Making a hybrid application brought about some difficulties when integrating the web application to the mobile client, especially regarding the integration of native functions. What is more, hybrid just does not look or feel as smooth and natural as native implementation.
- *Skilled People:* The type of project and the different technologies involved required skilled and flexible people to go ahead with this solution. Especially, skilled people to work with infrastructure layer.
- *Project Coordination:* The different technologies involved in the solution complicated the coordination and the planning of the project. In particular, when we had to define the dependency of the tasks and work with agile methodology [12].

## 6 Future Work

As we said, this report only includes the first stage of the project. In a future, this platform flexibility would allow extended use cases to be considered:

- *Time Saving:* 1) Prompt member info by phone number, 2) Message other associates requesting help on a specific scenario. 3) Call transfers and conference calls from associate device.
- *Customer Satisfaction:* 1) Connect member with the exact associate who worked with him on a store purchase. 2) Create task list for customers in need of help.
- *Sales Driver:* 1) Assist on e-shop sale and prepare for customer visit. 2) Connect to online cart and assist member upon the cart being built.
- *Extended Support:* Videoconference [8].

Other features that will help to improve the business and give information to take decisions are the statistics that we can get from the calls. For example, if a store has more incoming calls than other, we can modify the strategy: take the store with minimum calls and assign some of their associates to attend calls from other store. There is currently under development a prototype of an Analytics Dashboard for business intelligence purposes.

Another strategy to improve the employee motivation is to include gamification [6]. Gamification is the application of game mechanics to influence behaviors and activities to measure and motivate people. Gamification is a great place to start driving employee engagement because it speaks to three dimensions of how employees interact with their work and colleagues: commitment, competition and collaboration.

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