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**PROJECT TITLE: SECURE A PHOTOGRAPHY CUSTOMER RELATIONSHIP MANAGEMENT SYSTEM FROM CROSS-SITE REQUEST FORGERY (CSRF) ATTACKS**

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# CHAPTER ONE

## **INTRODUCTION**

## **1.0 Background study**

A **customer** is a person or organization that a marketer believes will earn benefit from the goods and service offered by the marketer’s organization

A **customer relationship** is a relationship composed of a series of interactive episodes between dyadic parties over time.

**Customer Relationship Management** (CRM) is the core business strategy that integrates internal processes and functions, and external networks, to create and deliver value to targeted customers at a profit. It is grounded on high quality customer-related data and enabled by information technology.

Cross-site request forgery (CSRF), also known as XSRF, Sea Surf or Session Riding, is an attack vector that tricks a web browser into executing an unwanted action in an application to which a user is logged in.

A successful CSRF attack can be devastating for both the business and user. It can result in damaged client relationships, unauthorized fund transfers, changed passwords and data theft—including stolen session cookies.

## **1.1 Problem statement**

Whilst Customer Relationship Management (CRM) systems are effective for helping businesses to better connect with customers as well as improving the way businesses are run, users can unfortunately encounter issues which mean that they fail to use CRM to its full potential which can prove to be a big waste of time and money. Here are some of the challenges faced within the process.

**Low employee engagement** Sometimes getting to grips with a new system, particularly when old systems have been in place for a long time, can mean that staff are reluctant to use the new CRM software.

Showing all staff levels, including management, how beneficial a CRM system can be to helping to improve the business as well as perhaps offering staff incentives for positive results using the system, can help to combat this.

**Security issues** the very nature of CRM software poses the potential for mistreatment of data. Such large databases, some holding hundreds of thousands of personal details, are stored online and accessed by teams around the globe.

Make sure employees are fully trained in how to handle sensitive information, and ensure your internal security systems are robust enough to inhibit external hacks. As with all online services, storing sensitive data is never 100% risk-free, but there are important measure you can take to drastically minimize these risks.

**Out-of-date information** Customer data changes often and changes frequently. Customer's tastes are constantly evolving and it is crucial that marketers do not fall behind by using old information.

Regularly auditing your data and asking your customers to verify their details regularly is an easy and effective way to ensure your available data stays relevant.

**Missing crucial data** Being clever with the kind of data you choose to collect can make a big different in your CRM’s effectiveness. Simply collecting sales data and personal details is no longer enough to stay ahead of the competition.

The best CRM systems will integrate with your social media channels, tracking interactions and engagement is a crucial tool. Actively engaging with your customers on social media can help you develop a better understanding of your customers and help enhance their experience. A good CRM system will allow you to capitalize on this ever-growing channel.

## **1.2 Objectives**

Cross-site request forgeries are a type of malicious exploit whereby unauthorized commands are performed on behalf of an authenticated user. And it can be prevented by adding a CSRF "token" for each active user session managed by the CRM. This token is used to verify that the authenticated user is the one actually making the requests to the CRM.

To create a simple analysis. For example, the user should able to create an analysis of the customer or a bar graph to show that the differences of number of customers at different states.

To provide the page permission control. The user only can access to the pages which they are permitted. The permission control is based on user group management.

To single customer profile. In the customer profile, it should include the information such as customer’s demographic data, photo sessions history, habit analysis and others. The habit analysis is included customer feature product, average monthly photos purchased amount and others.

To provide the promotion management. The promotion management should include create, modify and deliver the promotion to customers. Beside this, the promotion management also should be able to detect the respond of customer based on the promotion and analyze the respond.

**1.3 Justification**

The system will capture information about potential customers, or "leads". Photographer or administrator can type lead information into the system, visitors are invited to submit information on forms that the CRM software captures automatically.

The system will track information about customers such as photos purchased, dates of purchase, photographers involved, photo prices, special instructions and customer feedback. Once a person purchases from the company then he or she becomes a customer worth tracking.

The system will store useful data which can be aggregated and displayed in reports that answer specific marketing questions for example a customer’s details and which category of photos are selling and their prices.

The system will include information that helps the photographers with the customer’s service. For example customer purchase, the photo’s information and a knowledge base while also allowing the photographer or administrator to record service related information such as complaints from customers.

The system will secure the user identity and privileges from csrf attacks hence hackers using the csrf attack method on the system will not be able to impersonate the user and perform malicious activity or transactions. The attacker will not be able to also take advantage of user who have log in cookies stored in their browsers.

**1.4 Scope and limitation**

### **1.4.1 Scope**

Scope of this project is to deliver a customer relationship management (CRM) system to track the customers’ status. This CRM system will include the module such as analysis, emailing, user control, promotion management. This CRM system will be a web base application which the user can access through most of the internet browser available in the market.

By using the analysis module, marketer is able to analyze the market easier. After analyzed the market, the marketer was able to generate a list customers by selecting parameters.

CRM systems are heavily used across the East African countries such as Tanzania, Rwanda, Burundi, and Southern Sudan with a goal to achieve great relationship with their customers and improve their business sales. Upon covering such a large geographical area, I will focus on one of the company’s which is located in Nairobi where I have been carrying on with my research. After successful implementation I will later focus on the implementation of the system on the other geographical locations.

### **1.4.2 Limitations**

Customer relationship management are strategies that companies employ when dealing with customers. Many limitations with CRM solutions exist and overcoming these challenges has become a point of interest in business.

CRM helps a business acquire customer information, such as purchase habits and marketing strategies. However, **functional** limitations can cause a CRM to fail, including company employees who do not commit to a CRM, poor communication of the system to the employees or strict rules that do not allow for flexibility or changing of the CRM when necessary.

Every CRM system has **considerations** limitations that could include the functionality of a product, the cost to implement it, or whether it fits a particular business model. When selecting a particular CRM, a business must consider how long it will take to configure and setup the CRM, and how complex it is for end users.

The CRM may experience **type** limitation such as An outsourced CRM solution allows a company to quickly implement a system, but it may not work for larger companies with the in-house skills and time to develop a CRM solution. Off-the-shelf CRM solutions integrate into an existing business, but the system may not have all of the functionality a business requires. Custom CRM software can be tailored to specific company needs, but is often the most expensive CRM.

## **1.5 Budget**

The budget of the proposed application system serves as a blueprint for spending the project’s funds. The following table describes the project budget for Pixel photography studio customer relationship management (CRM).

|  |  |  |  |
| --- | --- | --- | --- |
| ITEM(s) | QUANTITY | COST | TOTAL |
| laptop | 1 | 60,000 | 60,000 |
| Maintenance of hosting and domain | Per year | 25,000 | 25,000 |
| antivirus | 1 | 2,000 | 2,000 |
| Backup drive | 1 | 2,000 | 2,000 |
| Internet browsing |  | 4,000 | 4,000 |
| Developer | 1 | 300,000 | 300,000 |
| Total Cost |  |  |  |
|  |  |  |  |

**1.6 Schedule**



**CHAPTER TWO**

**LITEREAURE REVIEW**

**2.1 Introduction**

A literature is the effective evaluation of selected documents on a research topic. A review may form an essential part of the research process or may constitute a research project in itself. In the context of a research paper or thesis, the literature review is a critical synthesis of previous research.

**2.2 Brief History**

The 1980’s digital rolodexes and database marketing was Pioneered by Robert and Kate Kestnbaum, database marketing collected and analyzed customer information. Using statistical modeling, that data was then used to help customize communications with other potential customers.

The beginning of the 90s brought the first major step toward true CRM software. Early innovators as Brock Control Systems helped push the evolution of contact management software toward sales force automation (SFA).

In the 2000’s like most software industries, the CRM industry was hit hard by the bursting of the dot-com bubble. The entire industry retracted, with giants like Oracle reporting license losses of more than twenty-five percent. Due to a reluctance to use “dot-com” technologies, e-CRM vendors were hit the hardest.

In 2007, Salesforce created the next big change in the CRM industry. Force.com introduced the world to cloud-based CRM. Force.com addressed the criticism that cloud-based applications were not customizable.

Social CRM exploded onto the market with the introduction of ComcastCares—an application that focused more on interaction than transaction. Most large corporations quickly followed Comcast’s example, solidifying the place of social CRM.

Through the end of the first decade, and up to the present day, cloud-based and SaaS CRM solutions continue to integrate more features like customer service and social CRM. Cloud-based and SaaS CRM solutions continue to gain popularity, largely due to their lower initial cost and easy integration with mobile devices.

**2.3 Functions of a CRM**

**Lead Capture**

CRM software captures information about potential customers, or "leads". Sales representatives can type lead information into the system manually, or, when the software is combined with a web site, visitors are invited to submit information on forms that the CRM software captures automatically.

**Prospect Tracking**

CRM software can track the behavior of leads who are displaying interest in becoming customers, or "prospects," by recording click-through and conversion of affiliate marketing ads, links in emails, website forms and even human-to-human contact such as on-site visits and phone calls. It will capture this information automatically, except for the human-to-human contact, which sales representatives must enter.

**Customer Tracking**

Once a prospect purchases from the company, he or she becomes a customer worth tracking. CRM software will track information about customers such as products purchased, dates of purchase, sales representatives involved, purchase prices, special instructions and customer feedback.

**Marketing Reporting**

The data in a CRM software system is useful when aggregated and displayed in reports that answer specific marketing questions. For example, marketing personnel will want to see customer demographics and which products are selling and at what prices.

**Service Tracking**

A CRM system may include information that helps representatives with customer service. For example, the system will give the representative access to customer purchase and service contract data, product information and a knowledge base while also allowing the representative to record service-related information such as complaints and support tracking numbers.

**2.4 Types**

There are 4 types of CRM implemented overall the business. There are Strategic CRM, operational CRM, Analytical CRM, and Collaborative CRM.

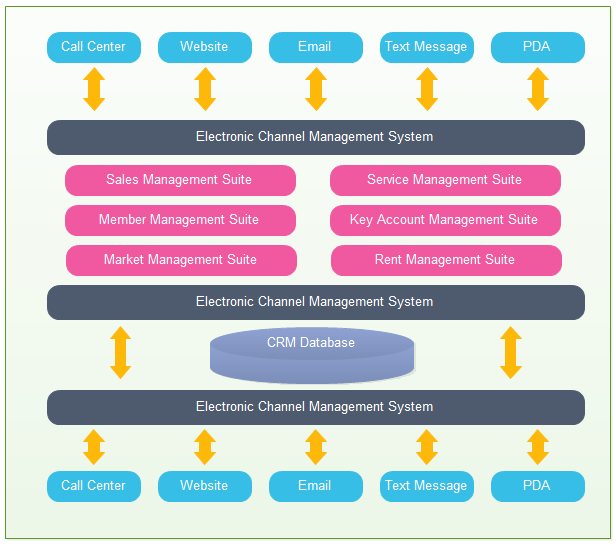
Strategic CRM is use to development a business with customer centric culture. This culture is dedicated to winning and keeping customers by creating and delivering better value than the competitors. Customer centricity is compete with 3 others business logic, which is product, production and sales. Product-oriented businesses believe that the product with best quality, performance, design or features will be chosen by customer. Production-oriented businesses believe that customer more likely to choose low cost product. Sales-oriented businesses believe that customer will be persuaded to buy their product if they do enough for advertising, selling and public relation.

Operational CRM use to automate and improves customer-facing and customer-supporting business process. CRM application can make the marketing, selling, and service process to be automated and integrated. There are 3 types of automation, which are Marketing automation, sales-force automation and service automation. Marketing automation allow marketer to use customer data to develop, execute and evaluate targeted communication and offers. Sales-force automation is use to managing selling activities, product configuration in sales-force automation allow customer to design their product by themselves, one of the example is the web-based laptop setting configuration and orders features offer by the DELL. Service automation is used to automate the serving service of the company, it was used widely by most of the company.

Analytical CRM is concerned with capturing, storing, extracting, integrating, processing, interpreting, distributing, using and reporting customer-related data to enhance both customer and company value. Analytical CRM normally can use to answer the marketing question of the businesses such as who is our most profitable customer? Which customer having the possibility of turnover to the competitor? Which customer have the high possibility to accept our offer? Analytical can help them to know which customer should give which level of services, and this could increase the possibility of customer to accept the offer.

Collaborative CRM is the term used to describe the strategic and tactical alignment of normally separate enterprises in the supply chain for the more profitable identification, attraction, retention and development of customers

**2.5 Architecture**



**Figure 1.0 CRM application architecture diagram.**

**2.6 Elements**

**Contact Management**

Top CRM systems are designed to help your business better connect with your customers. The systems allow businesses to record all customer data, assisting you in managing the contacts, and setting up reminders and meetings via the built-in calendar.

**Mobility**

The systems is cloud-based, providing you the luxury to access your client database wherever you are, through any device at any time. With an increasing number of users preferring mobile devices for CRM access, it is important that all CRM systems are optimized for mobile usage.

**Analytics**

The CRM systems provides you with detailed reports that shed light on behavioral patterns and consumption patterns of your customers, which will help you appropriately pitch your product or service to the customer and to ultimately finalize or close the deal.

**Customization**

Top CRM systems offer you the option of setting up your own customized dashboard, displaying the vital indicators necessary to close a deal with a client.

**Ease of Use**

Top CRM systems are preferred by the users because of the simplicity in which they can be operated, and how easy it is to get access to desired information that will help them make their customers feel that the business revolves around them. Users can get desired reports through a click of a button.

**2.7 Trends**

**Cloud-Based CRM**

[Cloud computing](https://www.techopedia.com/definition/2/cloud-computing) services continue to rise, and CRM has not been left behind in this area. According to Peter Coffee, Salesforce.com vice president and head of platform research, cloud-based software is a cost-efficient means of gathering customer data.

**Social CRM**

In 2008, Comcast was one of the first companies that took to [twitter](https://www.techopedia.com/definition/4957/twitter) to interact with customers, confirming the power of [social CRM](https://www.techopedia.com/definition/357/social-customer-relationship-management-social-crm). [Social media marketing](https://www.techopedia.com/definition/5396/social-media-marketing-smm) remains on an uptrend and companies are paying attention. Consumers are empowered by social networking sites to influence product or brand image and perception.

**Centralized data**

Batchbook president Pamela O’Hara also notes that by centralizing customer data through CRM, businesses will be able to target and engage customers more effectively. CRM data will not end with generating leads for the sales team but will be a continuing process that also includes maintaining relationships with a growing customer base.

**Mobility**

Forrester vice president and analyst William Band observes how mobility has turned into a critical corporate component. Customers are no longer bound to PCs and are constantly accessing data on the go. Frontline employees and customer service resources will increasingly be empowered by [mobile devices](https://www.techopedia.com/definition/23586/mobile-device) for support. On the other side of the coin, customer perception will also be shaped not only by real-world involvement, but also by online and mobile experiences.

**Crowdsourcing**

With customers gaining voice through social media, enterprises are increasingly able take advantage of [crowdsourcing](https://www.techopedia.com/definition/27816/crowdsourcing) for business improvements. Tapping current customers for fresh ideas, solutions and expectations can help employees across an organization provide the innovation and interactive relationship that a growing number of customers now expect. This means that CRM will no longer be just for [lead generation](https://www.techopedia.com/definition/14440/lead-generation) and marketing, it will also provide a source for new innovation.

**2.8 Competitors**

**SFA (Sales Force Automation)**

SFA takes many of the features of the database marketing, automates them and combine them with contact management this provided businesses with much more useful customer information. It also automates business tasks like inventory control, and sales tasks like customer interaction tracking.

**CMS (Contact Management Software)**

The arrival and mass rollout of PCs and server/client architecture saw businesses collecting and organizing customer data into what were effectively digital Rolodexes. The net result though was clunky, limited insights into customers and company interactions with them.

**2.9 Standards**

**Simple system,** a CRM implementation that’s chockablock with obscure features and functions can make the system seem cumbersome. The biggest challenge is usually to get the sales teams to embrace the new system, which is harder if there is a steep learning curve.

**Enticed system without forcing,** Sales reps embrace [CRM](http://www.getbase.com/) when they can see how it saves them time and helps them make more sales.  By contrast, trying to force a system down the throats of salespeople creates resistance and resentment.

**System that can articulate benefits,** If you expect salespeople to use a CRM system, you must first carefully and believably explain the benefits of the system, how the requirements evolved, how the system helps create opportunities, how it will be measured, and (most importantly) how it will help the sales reps to sell more.

**Hide system’s complexity,** When you turn the key in your new car, you do not care that there are silicon chips controlling every aspect of your car’s handling and performance. You just care that it starts and gets you where you’re going**.** Make a CRM system that’s intuitive and doesn’t require users to understand the internals.