



Social Email Marketing System Using Cloud

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Abstract— DigiMark provides insight into how customers interact with brands and improves customer engagement through powerful social network management. It enables organizations to attract the right users by leveraging technology at its best.

Through our integration with Facebook and LinkedIn, we can offer our users many benefits, including Direct Messages across social networks, as well as the ability to view and reply to posts and comments.

I. INTRODUCTION

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II. PROBLEM STATEMENT

Approximately 3 billion people use social media every day to share their likes, dislikes, and interests, as well as stumble upon brands they eventually become loyal customers of.

A. Hypothesis

What we want to prove or disprove

From SMEs to large corporations, businesses need a social media strategy to broaden their reach, raise brand awareness, attract new customers, and engage existing customers.

III. SOFTWARE REQUIREMENT SPECIFICATIONS

A. PURPOSE

With over 3 billion active users, social media is a platform where consumers spend time every day conversing to one another about their likes, dislikes, and interests, as well as stumbling across brands that they eventually become committed clients of.

Every business, from SMEs to large corporations, needs social media to plan to broaden its reach, raise brand awareness, attract new consumers, and engage existing customers with valuable content.



Recommended global growth.

A. Intended Use

Your customer support reps are equipped with the necessary information to offer quick resolutions and troubleshoot customer problems. Using a Social CRM tool provides you with valuable insights into

what makes your target audience tick by bringing in real-time data. You can use social media insights to hold meaningful conversations with your prospects, which humanizes your brand and fosters a stronger relationship.

B. Scope

To provide an autonomous social customer relationship management portal. A most effective, Flexible & Scalable one-stop solution to handle all the social media campaigns & supports.

To provide a web analytical interface for better prediction of the future marketing aspects.

C. User needs

Small/ medium enterprises: Manage their social media with ease and easily send saved responses to messengers and manage posts and their analytics.

Start-ups: Manage all kinds of social media and automate email marketing by leveraging LinkedIn connections and customer acquisitions.

F. System features and requirements:

1. Functional Requirements

1. Users should be able to in-app sign up to get access to the dashboard.
2. Users should be able to authenticate using their social media.
3. Users should be able to view their posts, messages, analytics and can reply to messages and comments from their respective social media handlers.
4. Users should be able to add emails.
5. An API interface to send emails to the email list.
6. Schedule Emails from the list.
7. vii. A history of emails sent to the users is to be maintained.

2. Non-Functional Requirements:

- Users should be able to change the password if they forget through a validation email.
- Every unsuccessful attempt by a user to access an item of data shall be recorded on an audit trail.

- A website should be capable enough to handle 20 million users without affecting its performance

iv. The software should be portable. So, moving from one OS to another OS does not create any problem.

v. Privacy of information, the export of restricted technologies, intellectual property rights, etc. should be audited.

3. External Interface requirements:

i. User Interfaces: Explain the logical characteristics of each interface between the software product and the users. You may include screen images, any GUI standards or product family style guides that need to be followed, screen layout constraints, standard buttons and functions (e.g., help) that are to appear on every screen, keyboard shortcuts, error message display standards, and so forth. Identify the software components for which a user interface is required. A separate user interface specification should describe the details of the user interface design.

ii. Software Interfaces: Describe the connections between this product and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. Specify a specific implementation constraint (for example, the use of a global data area in a multitasking operating system) if the data-sharing mechanism must be implemented in a specific way.

iii. Communications Interfaces: If this product requires communications functions, describe them, such as e-mail, web browser, network server protocols, electronic forms, and so on. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security

or encryption issues, data transfer rates, and synchronization mechanisms.

2. LITERATURE SURVEY CRM

Small and medium-sized enterprises (SMEs) are the prime movers of economic progress. The pace of digital disruption enables SMEs to innovate and flourish by strategically combining social media use with customer engagement activities. In recent academic literature, this innovation phenomenon has been acknowledged as social customer relationship management, namely social CRM.

[Social CRM in SMEs: A Systematic Literature Review] Elsevier Scopus Science Direct <https://www.sciencedirect.com/science/article/pii/S1877050921002428>

<https://ieeexplore.ieee.org/document/8663288>
A. In the current period we can observe more intensive use of information technologies for collecting and storing information about clients. This trend is also reflected in the use of innovative approaches to relationship marketing, which gave rise to new types of customer relationship management (CRM). These are primarily electronic (eCRM) and social (SCRM) CRM.

[Successful Application of Social CRM in The Company] Elsevier Scopus Science Direct <https://www.sciencedirect.com/science/article/pii/S2212567115004876>

[Change in IT world with the evolution of social media using Big Data]

<https://ieeexplore.ieee.org/document/8668165>
IEEE

Critics to Social CRM

When considering how many implementations actually deliver the promised benefits, the sobering reality is that up to 70% of CRM implementations fail. Anecdotally, failure could be attributed to companies not finding the promised benefits of system use, poor implementation and change management perspectives, or even the sheer complexity of CRM implementations.

[Reasons for Failures of CRM Implementations] IEEE TRANSACTIONS

<https://ieeexplore.ieee.org/document/9062323>

[Social CRM from the Customer Perspective: A Preliminary Analysis of Differences between Brazilian and German Users] IEEE

According to the current studies by the end of 2025, we will be having 175 zettabytes of data and we will not be having the specifically skilled manpower to manage this amount of data. In that case, DigiMark will be able to automate the whole process by the analytical tools available for the semantic analysis & other data analytics methods measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations.

[Social CRM in Digital Marketing Agencies: An Extensive Classification of Services] IEEE <https://ieeexplore.ieee.org/document/8609684>

Process Modelling and Analytics
Develop suitable business (process) models for organizational operations in various domains, in order to reflect their management perspectives and needs.

1/ Process modeling
Find appropriate business models and execution processes, create value for stakeholders, assure value assessment, and control for sustaining desired outcomes.

Establish co-creation platforms on social media, by developing an attractive community for value co-creation, facilitating in this way effective interactions in the virtual community.

[How Beneficial Is Social Media for Business Process Management? A Systematic Literature Review] IEEE Access

<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8663288>

3. COMPARISON OF EXISTING METHODS WITH MERITS AND DEMERITS.

Nowadays social CRM is not flexible as well as scalable; the typical cost of CRM is out of the

hands of a general or initial stage organization. CRM using the traditional or so-called providing limited usability at such a high cost is tedious for the future of Sales & Marketing automation. Social CRM using CDN is a solution but not worth it. Companies require a full-fledged portal to manage the whole social media along with the analytics with the whole flexible and scalable environment.

Content writing is the king. Content writers for hire are now in high demand. Great content can drive hundreds of traffic to your website.



Fig 1.2 Contrast between without CRM and With CRM

4. Methodology

Creating an efficient CRM for Small and Medium Enterprises, Organisations, and communities is a difficult task. Therefore, we used Bootstrap, HTML, and CSS, which have been converted into react components as a responsive frontend for better migration with social media giants. We have used the Facebook developer graph tool for getting the endpoints for messenger and posts.

For getting the endpoints, we have used the Facebook developer graph tool.

To integrate the Front end - Backend, we have used the Axios package, which is an NPM package to manage application programming interfaces i.e APIs, and then a few state management hooks provided by Facebook.

We used react.js tools i.e useState, use effect, and a very popular package Recoil for storing global states.

Login: For the login part I used Facebook SDK. Integration of the Messenger part was simple, and state management was made with property props and react hooks.

Messenger: The Messenger part was easy to integrate, state management was performed with props and react hooks. The API endpoints that is the access_key & pageid were fetched from a global state.

Posts: For the posts, the state management is the same as the messenger one. I was only challenged by mapping comments and replies, but We were able to do so using nested maps that worked well.

AWS MySQL database and Node Js created APIs to support different operations while serverless architecture with AWS Lambda, AWS API gateway, and AWS S3 bucket created a secure and managed backend for the app.

Finally

DigiMark has a Facebook integrated platform that holds all the information about the user. On clicking on any post of anyone, Users will be able to reply to them and can also see all their comments.

A single click to get the user to the messenger module where the user can view all the DM's, It is also possible to set up quick replies, which is a great way to save time and money

We can create content for your Facebook page by using the image of your Facebook post. We will post the content that you need on your Facebook page. Our quick responses can be set up easily to save time and money and we can create them whenever we need content for your Facebook page by using the image from your post.

DigiMark has an email marketing platform with several features. It has a clean dashboard for managing subscribers, templates, automation, etc.

The user can add a large amount of data to the software in a short period of time. No need for a developer to create a custom solution for this.

DigiMark is a perfect scheduling application for all types of businesses. With DigiMark, you can easily send scheduled emails to your clients and customer accounts.

Twitter

DigiMark helps you get the most out of your Twitter account. With the Real-time Trending tweets, you will get to know what is trending in your location and the ones you have tweeted, and the ones you have been mentioned in.

Campaigns We can help businesses with online listings, geotagging, and advertising. Customer Acquisitions We can help you determine your customers' interests and locations in order to target your content appropriately.

Using tools that automate and analyze data, you can get followers for your social media accounts.

5. Coding and testing

Coding languages used:

- Javascript
- Node.js
- React.js
- HTML5
- jQuery
- SCSS

Libraries being used:

- Cron schedules
- Nodemon
- Express
- Material UI
- Axios
- Twitter-v2
- Fb Auth

Coding Paradigm : Functional

It is a declarative type of programming style in which we attempt to bind everything in terms of pure mathematical functions. Its main focus is on "what to solve" in contrast to imperative style where the main objective is "how to solve."

Concepts of functional programming used:

- Pure functions
- Recursion
- Functions are First-Class and can be Higher-Order
- Variables are Immutable

5.1 Pure functions:

These activities have two key elements. First, they always produce the same output in the same arguments no matter what else.

Second, they have no adverse effects, i.e. they do not change any arguments or local/global variables or inputs/outputs.

Later the property is called immutability. The result of pure work is only the return value. They are deterministic.

Programs made using functional planning are easy to configure because pure functions have no negative effects or hidden I / O. Clean functions and make it easy to write compatible/compatible applications. When code is written this way, a smart producer can do a lot of things - he can keep up with the instructions, wait to check the results when he needs them, and memorize the results as the results never change as long as the input does not change.

example of pure work:

Pure work example: total (x, y) //

the total function that takes x and y as conflicts replacing x + y //

sum returns the sum of the conflicting values of x and y without changing them

5.2 Recursion:

There is no "for" or "time" loop in working languages. Repetition in working languages is used by repetition. Repetitive tasks are repeated over and over, until they reach the base case. example of repetitive work:

- fib (n)
- if (n <= 1)
- replace 1;
- other
- replace fib (n - 1) + fib (n - 2);

5.3 Functions are First-Class and can be

Higher-Order: Tasks for the first phase are considered flexible for the first phase. The first-class variables can be transferred to functions as parameters, can be retrieved from tasks, or stored in data structures. Highly organized jobs are jobs that take other jobs as arguments and can restore jobs.

5.4 Variables are Immutable

In the operating system, we cannot change the variables after it has been activated. We can create new variables - but we can not change existing variables, and this really helps to maintain status during the operating system. Once we have created a variable and set its value, we can have full confidence knowing that the value of that variable will not change.

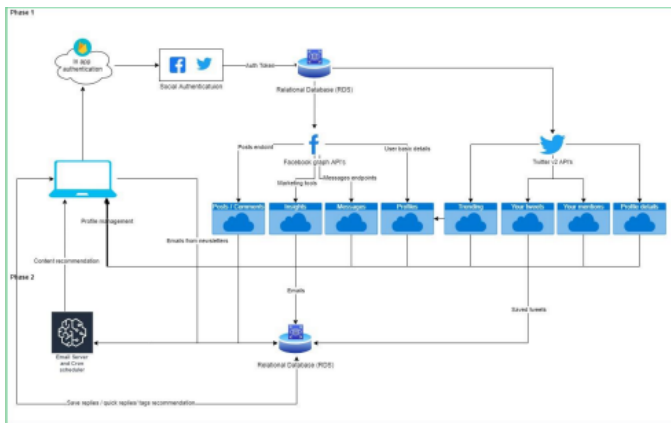


Fig 1.3 REST Architecture of the software

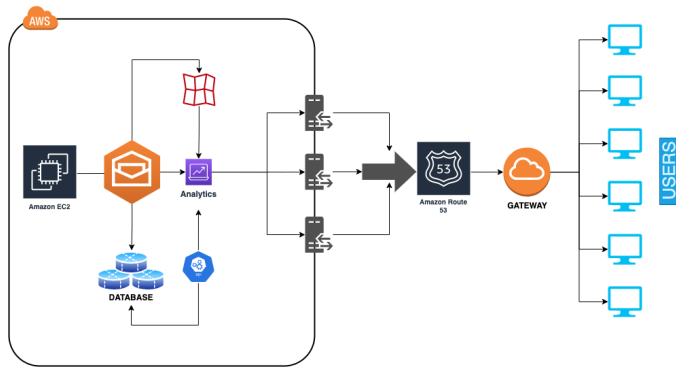


Fig 1.4 AWS Infrastructure

```

CustomReply
  POST createCustomReply
  GET getCustomReply
  GET getCustomReply default
  POST deleteCustomReply
Email Marketing
  POST SendMail
  POST addEmailList
  GET getEmailList
  GET getSendEmailList
  POST createMassMail
file upload
  POST upload file
  POST upload file Copy
  POST heroku file upload
  DELETE delete file
  GET list files in folder
LinkedIn API
  POST 1. LinkedIn Authorization Token
  POST 2. POST Request for Access Token
  GET 3. GET Your User Info with Access Token
  
```

```

Twitter
  GET getUserId
  GET getUserTimeline
  GET getUserMentionTimeline
UserDetails
  POST createUser
  GET getUserDetails
  POST createSocialToken
  GET getUserSocials
  
```

Fig 1.5 API endpoints



Fig 1.6 API Calls serverless architecture

7. Objectives

What we want to achieve
 To provide an autonomous social customer relationship management portal.

A most effective, Flexible & Scalable one-stop solution to handle all the social media campaigns & supports.

To provide a web analytical interface for better prediction of the future marketing aspects.

- Integration with multiple social media platforms.
- Replies to tags and comments from posts.
- Secure code and architecture with mobile encryption
- Sent cold emails to followers with the automated mail service.
- Post content and analyze their reach on different platforms

8. Result and discussion

The User interface part of the web app has been implemented which is then converted into react components.

Used Axios which is an NPM package for calling APIs and after that, We have used a few states management hooks provided by react.js i.e useState, use effect, and a very popular package Recoil for storing global states.

In the login method working as expected, We set all the required permissions for the access_key and then storing the pageid and access_key in a recoil global state.

The Messenger part was integrated, state management with props and react hooks. The API endpoints i.e the access_key and pageid were fetched from the global state.

For the posts, the state management is the same as the messenger one. The only tricky part was the mapping of comments and replies but We managed to do that using nested maps which worked well.

Leverage social information to understand and engage customers, gain market insights, and provide better customer service

Social media takes the power and control from the business and puts them in the hands of the customer. They are free to initiate conversations and interact with businesses at their leisure. With the help of analytics from your users, it is a great help for planning your content cycle and marketing strategies.

9. Future Advancement

• Some of the benefits of having an online presence include that potential clients can find you through search engines, making your business more visible to people who are actively looking for your services, which is especially helpful for competitive markets, and it can foster trust between you and existing and future customers. You can further that trust by providing examples of your work, testimonials (also helpful in the competitive markets), and pricing.

• Content can help clarify what your needs are, how you'll use the content, and your deadlines. Customer acquisition Get to know your customer's interests and locations to help you channelize your content for better reach

• Social media guidelines are important to follow to ensure that your social media presence is strong and that you're not losing followers. Here's the best way to follow the guidelines.

▪ Make a plan. Come up with a plan that you can easily follow and that will work best for your brand.

▪ Identify keywords. Look for keywords that you will use in your social media posts to target hashtags and groups.

▪ Make a list of accounts. Make a list of social media accounts you want to follow.

▪ Post regularly. Regularly post updates to your social media to create a stronger presence. Social media is an essential tool in marketing and it's important to be on top of the latest trends. Integrating social media influencers with other sites and services is a great way to get promotions and other offers out to other people who will be interested in your product.

▪ Having a decent following on social media can be a great asset to your company and allow you to get the word out about deals and other offers that your company is running!

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