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Optimization of Sales and Supply Chain Module

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Abstract

Supply Chain management comprises of managing material and information flowin a supply chain. This encompasses high customer satisfaction at low cost. This technology requires commitment of all stakeholders of the supply chain.Minimizing the total supply chain cost is meant for minimizing holding and shortage cost.

In this paper we present a system developed to optimize the Sales and Supply Chain Activities by using a multiple cloud based software solution. This solution will be able to optimize the Sales and Supply chain processes. Optimization of Sales and Supply chain means analyzing the organization past data and other information and giving the best plan to executed for minimizing supply cost, time and effective delivery of inquiries.

General Terms

Google Map API, SCM, TSP, Genetic Algorithm

Keywords: *Optimization, Sales and Supply Chain, SCMS, Mid-cap, Supply Chain, Intelligent Salesman*

INTRODUCTION

Todays scenario imposes a number of challenges on the way business has to be carried on because of advancement in digitalization globally effected by factors of technology, innovations and speed at which information is required. As result there is an effect on, new competitors, fast changing scenarios and demands of customers. Its a question of concern of what has to done to succeed and stay strong within the market.

During the past decades companies have started to increase their efforts to apply strategic management in order to achieve sustainable competitive advantage, the goal of which is to develop a superior performance to excel. As noted by professional experts a best to accomplished is to develop relationship with partners involve in supply chain network.

Supply Chain management comprises of managing material and information flow in a supply chain. This encompasses high customer satisfaction at low cost. **Supply chain management (SCM)** is the runtime management of materials, info, and finance arranged in a process from supplier through manufacturer to a wholesaler then to a retailer to a consumer. Supply chain management comprises of coordinating and integrating these flows internally and externally in companies. Inventory finally comes high as a ultimate goal of supply chain management. As a

solution for a appreciable supply chain management, well-known software systems with Web-portal interfaces are interfaced with web-based apps service providers which involves to offers part or all of the SCM services to a customer who buys their services.
It is definite that the function used in such systems have a great variability– it includes:

1. Customer requirement processing
2. Purchase order processing
3. Inventory management
4. Goods receipt and Warehouse management
5. Supplier Management/Sourcing

CRM: Customer Relation Management is all communications that a company has with its their customers and the working team. Though the CRM model is best described by the customer relationship in the basic modules of business like the B2B information is track using credentials of client, customers, winning the sale leads. NowdaysCRM solutions give industries business data to help provide services or products that their customers want, to provide best customer service, to reach and help sales teams to cross-sell and up-sell effectively, close deals, getting current customers and to understand exactly who your customers are.

So for solution to this we are implementing the Sales and Supply Chain Processes modules for the SME and Mid-Cap Market.

Literature Review

The growth of SCMS adoption is rapidly increasingand even more in the broader enterprise application software development market. SCM adoption leads to well management of information system and getting use of it in making sales and supply chain process more efficient and saving organizations cost and time for Mid Cap Markets and other, this has seen in the literature review in all of research papers published in International Journals.

Let's see what each paper focuses on what terms in using SCM.

Jianbin Shi and LiliQu [1] have suggested that if we adopt business process re-engineering, a CRM and SCM model theory to analyze an online order process it could be optimized easily rendering better results.

H. Schlenker and R. Kluge[2] talks about difficult challenges in its production and supply chain, both upstream on the production or sourcing side, and downstream on the market or delivery side . They have used optimization techniques from mathematics and special software tools to solve complex planning models.

Yina Li and XuejunXu [3] have considered inventory as pre-dominant factor with a controllable lead time for extra crashing cost of buyer and supplier reflected in short lead times.

A model based on Bayesian Network with a three-step decision structuring framework is used. This helps in support management risk strategies under different scenarios [4].

P. Radhakrishnan and Dr. V.M. Prasad [5] take Inventory Management into consideration in SCM Process. The determination of the inventory to be held at various levels in a supply chain becomes inevitable to ensure minimal cost for the supply chain

AlessioBechini[6], comments on the drawbacks emerging at different abstraction levels in atraceability systems that is developed. It introduces a new data model indicating traceability and represents a set of suitable patterns to encode generic traceability in the form of semantics and suitable technology which follows a standard to define, register, and enable a business collaboration.

Big Data outputs to problems focus on Supply Chains, these represent key disciplines handling the increased collaboration of exchanged data. The focus lays on optimizing Supply Chain Visibility to handle complexity. Thus there is a support decision making for managing risks and interruptions along supply chains.Therefore, Big Data concepts and technologies will play a key role By Boris Otto[7].

The development of Auto-ID technologies especially 2D-Barcode technology brings new opportunities for improving tracking and tracing process and thus increases the supply chain transparency and performances The formulations used here have not involved the developing details of a tracking and tracing system. This was brought forth as a bold remark by Rui Wang and Sergey Prives[8].

Martin Muller introduces supplier management for risks and performance and supply chain management for sustainable products. They discussed upon the Sustainable Supply Chain Management [9].

MamunHabib [10] experimented and demonstrated chronological prospective of SCM. He considered terms of time frame in different areas of manufacturing, service industries and Integrated Tertiary Educational Supply Chain Management (ITESCM) model. This could be verified through Structural Equation Modeling (SEM) Techniques.

As mentioned Prakhar Sharma and UmerfarukAnsari[11] Genetic Algorithm can predict metadata forDistributer and optimal convergent metadata for the input data available for the supply chain .

Methodology

System Architecture

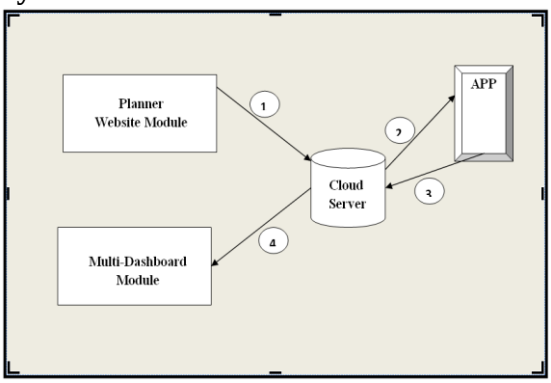

Fig 1: *System Architecture using modern technologies*

Fig.1 model represents the basic system architecture for a supply chain module which will be consisting of Intelligent Salesman android application and two web based dashboard for updating and analyzing the supply chains sales data.

A complete flow of information is done through

A. Daily Route Planner
B. Executive Salesman Tracking Multi-Dashboard
C. Android App
D. Cloud Server

The functionalities of each module are as below

Daily Route Planner(DRP)

- Plan the rout for sales rep
- Change in the planned route
- Optimization of the rout through Google maps APIs.
- Comparing the optimize and un optimize route

- Comparing the existing the plan with new one
- See the number of customer under that sales rep
- Playback : Playback is the functionality where you can see the changes and improvements in the collection and orders from the particular customer which will be shown on Google

Markers and another one is you can see the improvements and decrease in the order by using the Google heat maps.

All this functionality will use the Google Map JavaScript API integration in the DRP module.
All this data of route planning will be then stored on the database, which then will be fetch on android application.
Optimization of routes will be done by using the Google Map APIs.
Selecting the one route which is more efficient and less time-consuming by taking the traffic in consideration.

Executive Salesman Tracking Multi-Dashboard
In this module, executive of salesman will able to track the salesman, see the new updates from the salesman. All this functionality will be cover by an android app using GPS and Inquiry object updates.
Live Tracking of the multiple salesman will be possible through this module.

IntelligentSalesMan Android Application
This android app will be able to salesman
1.See the planned rout be the salesman executive
2.Follow the planned rout
3. To check the Inquiry of the visiting customer
4.Create or update the inquiry
5.To send the tracking data to dashboard.

This android app focus will be more on the Google maps and tracking the customer location in the minimal time and distance.
Figure 2 shows the functions of android Application.

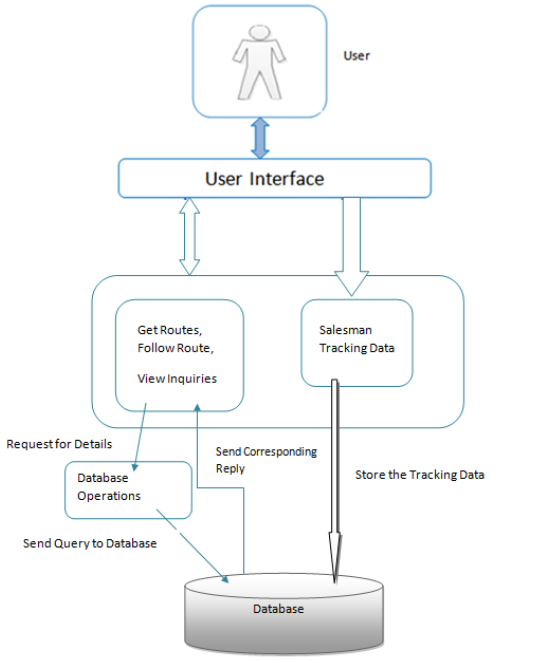

Fig 2: *Interaction and Functions of Android Application*

UML Designs

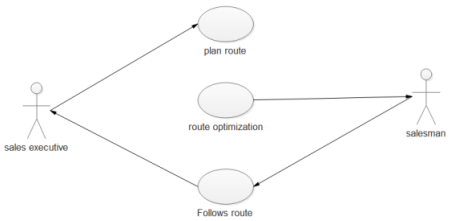

Fig 3: *Use case for route optimization*

Every system has to be given some input by user, for that user interacts with the systems directly or indirectly. Fig 3.shows Use Case diagram for our system. Here Sales Executive and Salesman interact with the wed based dashboards and android application to get and follow the optimized route.

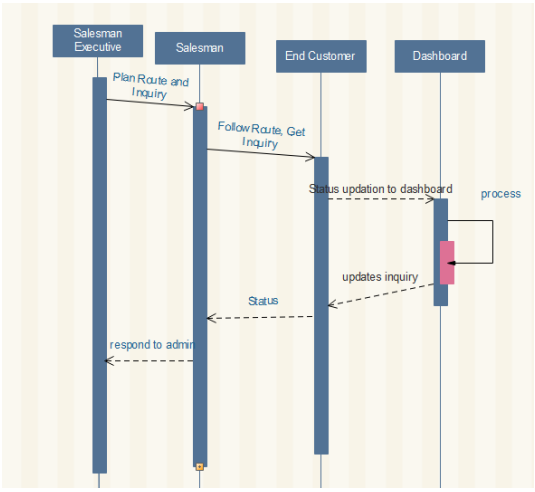

Fig 4: *Sequence diagram for system*

Fig 4. Shows the sequence diagram shows the complete flow of all input data, output data and instructions possible in the system and as such is a necessary tool for almost every project design.

EXPECTED RESULT

This entire system will lead to optimal sales and supply chain processes, including optimization of sales man route plans, inquiry updating directly from the android app, Salesman Executive will able to plan the route on the Google map on site. Due to use of such new technologies in sales force can save time, money and great relationships with customer by satisfying them.

When the sales process is highest priority and most complex process, and it is a tough time to set, manage, and track targets vs actual. Our system is able to get 50% output more from current sales team. The customer service has enhanced.
Before such a service came along, sales process was broken for years. The developed system team has created an advanced Sales tracking product which could be setup in days. Weekly Sales meetings can happen with screens from our system. The status of each Inquiry at any time can examined. The System has given over 10 reports updated daily.

CONCLUSION

This is a cloud based system, this entire system will lead to optimal sales and supply chain processes, including optimization of sales man route plans, inquiry updating directly from the Android Applications, Salesman Executive will be able to plan the route on the Google map on site.
Due to the use of new technologies in sales force can save time, money and great relationships with customer by satisfying them.

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