M-COMMERCE RECOMMENDATION WITH MOBILE CLOUD ARCHITECTURE

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ABSTRACT

The mobile cloud is the latest buzz in the field of information technology, the cloud computing shown enough benefits in almost every sector, in the field of E-commerce cloud computing can play very important role, the small devise smart phone can be used to perform E-business activities which gives lots of benefit to perform the user operation from anytime, anywhere and it turn out to be amazing experience to the user, you can use your small devise for recommendation for the particular product and you will get the instant reply for your E-commerce related query, all these can be possible if we can provide powerful Smartphone applications which will able to perform lots of analysis and provide result, the mobile cloud computing approach is the perfect match to this problem, the paper present the idea how cloud based M-Commerce architecture should look like and how it can provide various benefits such as recommendation, data analysis etc. Android based and java based j2me application with web service and later data fetching from cloud is proposed, cloud based system is used to demonstrate the purpose of M-Commerce analysis and recommendation system for small devise applications, if you analyze java based and Android based cover almost more that 95 percent of the mobile user hence proposed system considered both form, of mobile application development.
Keywords:- E-commerce, M-Commerce, Android, J2ME.

1. INTRODUCTION

Traditional E-commerce now carry out using small portable handset devise that can carry E-business activities easily, the recommendation is the major factor in the field of E-commerce since the beginning of E-commerce development, lots of algorithms proposed for the recommendation, the paper proposed recommendation using small devise mobile applications, one the major disadvantage of the mobile application that it can run on a single platform, for example mobile application developed in Android can runs only on Android based phones, we demonstrate the app in java based jar files so that same type of mobile app runs on Android as well as java enabled phones. The system uses simple mathematical analysis from the past transactional data based on customer mobile number as the key for the transaction, customers mobile number will be taken into account on every purchase and same key can be used for user rating, feedback about the product from time to time, in the background on the server side the mathematical analysis of the product will be done and using recommendation algorithm, accurate recommendation is proposed. The data further goes to cloud for analysis and big warehouse of the data collected at cloud and analysis will be done to further enhance the recommendation technique, the goal here is to provide strong mechanism for user. The past data shows that if E-commerce site provides good recommendation features, chances that the customer select the appropriate product and finalize the product on that instant only better recommendation is necessary feature for the better E-business system. The proposed system provides the mobile cloud based architecture which helps the E-business activity with M-Commerce and strong recommendation system so that customer can attract and high chance to perform the transaction without any delay. It improves the overall business performance, it also provide various analysis features so that user as well as manufacturer can study the strengths and weakness of the product for future enhancement, user can rely on the recommender system and helps decision making easy to the common user. The new framework proposed based on Cloud Computing for enhancing the E-commerce applications the new framework based on the cloud computing and solves the problem of enterprise E-commerce development. The several feature of cloud computing is shown and the reason why cloud computing play important role in E-commerce is focused. The benefits of adopting the cloud in the enterprise E-commerce are discussed in detail and new framework based on the principal is proposed. [1] The paper discuss the two uprising technologies i.e. cloud computing and M-Commerce the paper analyze the current actuality of the application for enterprise M-Commerce, and focus on main issues related to that, the influence of the cloud computing upon the E-commerce which come out with fact that cloud computing can provide good economical efficiency for the E-commerce application.[2]

2. RECOMMENDATION

Recommendation is just giving advice to the user to make decision, E-commerce sites requires good Recommender System, Recommender in M-Commerce systems have become business relevant in filtering as information available in internet to present useful product recommendations to the user. The recommendation referred as static most of times,. New products are introduced in the market from time to time whereas old ones vanish over the period of time. Hence, the products offered in a web application tends to change, and the recommendations have to base on the currently offered range of goods. However, traditional collaborative filtering suffers from sparse data problem and the lack of scalability. Therefore, new recommender system technologies are needed to address the sparse data problem and quickly produce high quality recommendations especially in large scale mobile environment. As the amount of information in E-commerce and mobile commence grows explosively filtering irrelevant information but finding useful contents and reliable sources has gained more importance. Recommender system has become a classic tool that interlinks users with information content and sources. Collaborative filtering (CF) is such a personalized recommendation technique that has been very promising both in research and industry. Recommender system is an integral part of E-commerce system many portal, big E-commerce application already using it for various purpose the Amazon is using recommender system to attract customer. A recommender system learns from a customer and recommends that he or she find most appropriate and valuable as compare of different range of the product with same category or price range, we can analyze how recommender system helps E-commerce process to increase sales we arrange several sites. The recommender system for E-commerce system, many of the largest commerce web sites are already using recommender system to help their customers find product and purchase the author focuses on how recommender system help E-commerce sites increase sales, and analyze few sites which uses recommender system, One can compare few E-commerce site and how they are using recommender system, Recommender systems used by E-commerce sites to suggest the products to their customers, the products can be recommended based on certain criteria like overall rating, based on analysis of the past behavior of buying customers which gives idea and prediction for future buying probability of the customers. According to the case study these techniques are part of personalization for each customer, recommender system automate the personalization for each customer. Paper discuss the few recommender system examples like Amazon.com, Eyes, Amazon.com Delivers, Book Matcher, Customer Comments, CDNOW, MyCDNOW, eBay, Levis, Moviefinder.com, Reel.com, MovieMap all the above recommender system discuss in brief and provide a summary in tabular format after that recommendation taxonomy is discussed by the author. The paper provides E-commerce opportunities for recommender system.[3]

3. M-COMMERCE

Mobile Commerce is the E-business on small devise like mobile phones, it is an extension to the E-commerce in which various E-business activities can be carried out using small portable hand held devices like mobile phones, tablets etc. M-Commerce is "the delivery of electronic commerce capabilities directly into the hands, anywhere, via wireless technology. The M-Commerce and wireless communication technology is being use in E-commerce and give rise to mobile E-commerce, one can find the pattern for mobile users behaviors such as their locations and purchase transaction in mobile E-commerce and provide service to the mobile commerce uses by applying weight frequent pattern and periodical pattern for prediction of purchase behavior of mobile user can be taken, one can have efficient mobile commerce pattern mining algorithm may designed for similarity inference models and develop prediction strategies for future enhancement. [4]. Mobile commerce services were first delivered in 1997, when the first two mobile-phone enabled Coca Cola vending machines were installed in the Helsinki area in Finland. The machines accepted payment via SMS text messages. The first mobile phone-based banking service was launched in 1997 by Merita Bank of Finland, also using SMS. The M-Commerce server developed in late 1997 by Kevin Duffey at Logica won the 1998 Financial Times award for "most innovative mobile product," in a solution implemented with De La Rue, Motorola and Logica. The Financial Times commended the solution for "turning mobile commerce into a reality [7]. The actual development of M-commerce starts In 1998, the first sales of digital content as downloads to mobile phones were made possible when the first commercial downloadable ringtones were launched in Finland Elisa Oyj).Two major national commercial platforms for mobile commerce were launched in 1999: Smart Money (http://smart.com.ph/money/) in the Philippines, and NTT DoCoMo's i-Mode Internet service in Japan. i-Mode offered a revolutionary revenue-sharing plan where NTT DoCoMo kept 9 percent of the fee users paid for content, and returned 91 percent to the content owner. As of may 2013, 56 % of US adults use smart phone and their main use is related to internet, that is the reason why late 1990s many argues that the transition to mobile, sometimes referred to as "Web 3.0" (Brynjolfsson et al.2013). Many technologies is emerging to implement M-Commerce the various technologies like Local Area Network (LAN), Telecommunication Technologies like GSM, 2G (2 Generation), 3G (3 Generation) and so on, Global Mobile -Commerce Technologies including WAP, J2ME , Android etc. From the past data it is observed that the growth of small devise is large, especially the growth of Android based smart phones is growing exponentially the need of better M-commerce architecture is the need of the hour to provides various business related service to the consumer using their small device mobile phones. The proposed system uses latest technology for M-

Commerce development like for smart phone Android, and for old phone java based J2ME M-Commerce development, the Android is growing in the Smartphone sector and seems to completely dominating the sector in the next two three year, whereas java based j2me is still hang around as a economical sector who cannot afford Smartphone, the proposed system consider both the options and suggested for the M-Commerce development tools and technique.

4. Advantages of M-Commerce

M-Commerce is related to E-commerce however the advantages of M-Commerce is still difference, following are the main advantages provided by typical M-Commerce application

1. M-Commerce is portable i.e. anytime, anywhere approach.

2. M-Commerce provides wider range.

3. Reducing Transaction Cost.

4. Much easier than E-commerce to use.

5. Reducing time to order.

Although along with some advantages there are some issue related to M-Commerce to deal with one of the major issue is mobile phones are battery constraints, memory constraints so the heavy networking application with heavy graphics may adversely affect the network traffic and application bandwidth. Such applications need to develop with high care to overcome such issues, The second most important issue is related to security, people may think the E-commerce is secure than M-Commerce, the security enhancement protocols and technique need to use to get the total confident of the consumer.

5. CLOUD COMPUTING

Cloud computing is attracted to almost all sector and research area since 2007, Google proposed cloud concept and big players like Amazon, Microsoft, Google etc user cloud computing in various applications and earn lots of benefits out of it, the E-commerce influenced by Cloud Computing more and more business applications and research organizations are trying for cloud implementation to get business benefits it provides dynamic computing capacity and completely centralize approach, cloud computing enables E-commerce organizations to rent required infrastructure rather than purchase hardware and software which decreases the overall cost of the system, this is beneficial for large scale E-commerce outlets[5]. Cloud computing shows enough enhancement in almost every sector for Information Technology requirement, it provides totally centralized approach to all the computing needs which includes required resources, Infrastructure, Storage and Data. The E-commerce or M-Commerce applications under cloud can provide centralize analysis capability, the proposed system consider this approach and suggested a cloud based architecture, system shows that the proposed architecture enhance the E-commerce or M-commerce based application and provides various benefits such as Recommendation, Decision making etc to the users, we can use cloud so that large amount of data can be analyze to make the Recommender system accurate and enhance the M-commerce applications. The trust is the major concern while considering the E-business applications, the system need to provide enough trust to perform business either online or on mobile, centralize trust management can be one the solution or third party trust model can also be considered[8]. M-commerce have several issues like low bandwidth, network related problems, cloud computing in M-commerce can address this issues especially 3G Mobile services provides good results for the mobile related issues, E-commerce development based on cloud computing also solves the problem of scalability and provides on demand services to the consumer[6].
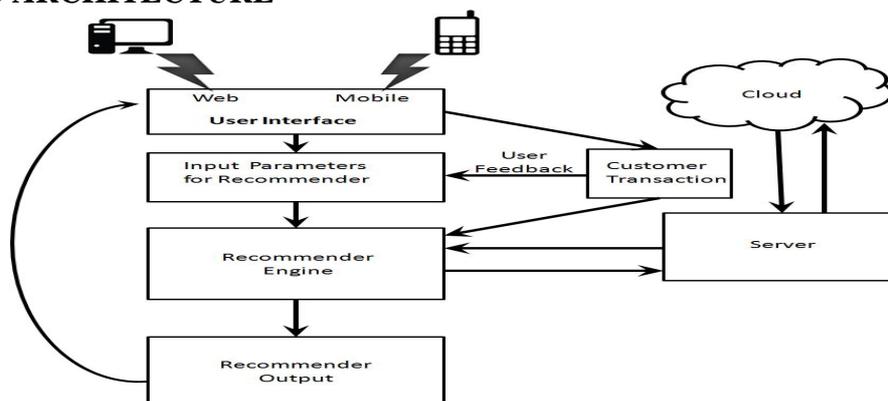
6. PROPOSED ARCHITECTURE

Fig.1 Cloud Based M-Commerce Proposed Architecture

The fig 1 shows the proposed M-commerce architrecture which is based on cloud, The Idea is to include the rating of each and individual shop , so that user come to know the value of the shop so that user first take decision about shop, and then purchase item from shop so its just like a relationship between shop and product, it is observed that the if value of the shop is good then product purchase from that perticular shop is likely to be good, we can have a analysis based on that. So the user will be likely to give the shop ratingas well as product rating, not only shop the product order from online portal like flipcart, ebay or amazon how their experience about portal as well as product will be considered and recommendation will be consider on the basis of analysis. The proposed architecture is java based J2ME mobile application and Android based smart phone application development to get wider range of user, the user will get mobile application install in their mobile devise either through net or link privided or by any other means with security, once user get the applications he/she can use application for UserRating/Product Fessdback and Maintenance of the product, also the application provides accurate and perfect Recommendation to the user with easy use Interface. The Recommender algorithms will be running on the server side all the user data will be stored to the cloud for the data analysis purpose and other M-Commerce related services can be provided through cloud computing on demand access. The mobile cloud computing architecture address the main issue of infrastructure management and network bandwith problem it also enhances the security of the M-commerce activities and as cloud computing is becoming the choice of various enterprices the architecture is helps in scalability issue as well. The Recommender engine uses a recommender algorithms which uses data from cloud as data from cloud is very large dataset the analysis need to be manage with limited resouces and provides better accuracy for the wide reange of products Recommendations.
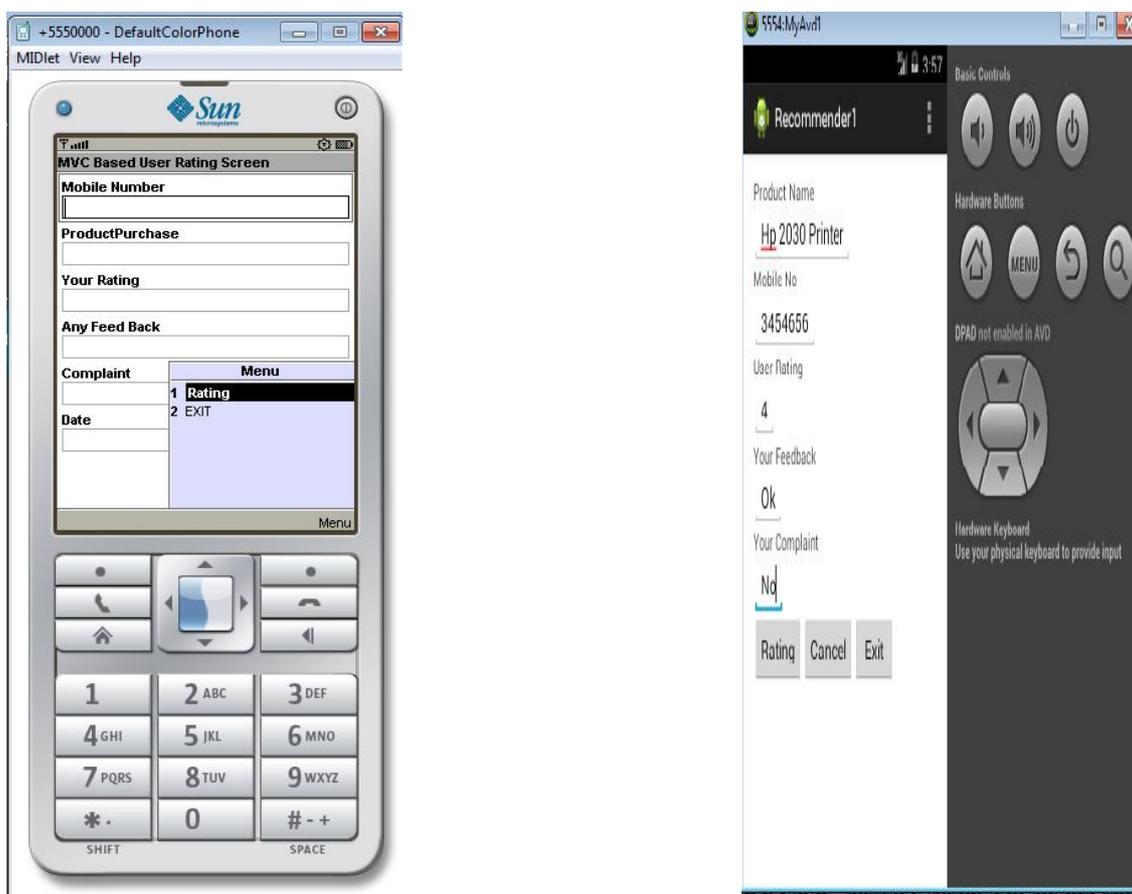
7. OUT PUT SCRRENS

Fig2 Output Screen for Java Based and Android Mobiles

The Fig 2 shows the output screens of mobile applications in both the format i.e. the J2ME jar application format and Android based apk format, the output screens shown in J2ME Emulator and Android Virtual Device simulators. User can perform simple operations using their small devices from anytime, anywhere and do the E-commerce effectively with the enhancement as M-Commerce. The data stored on cloud through Server and provides data analysis accurate for Recommendation process.

8. CONCLUSION

The Mobile Commerce with cloud based architecture solves the major issues related to M-commerce like bandwidth and scalability, the proposed architecture provides easy solution to M-commerce approach based on cloud computing.

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