



CLOUD BASED AGRICULTURE MARKETING APPLICATION FRAMEWORK FOR INDIAN FARMERS

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ABSTRACT

Agriculture based industries are backbone to Indian economy. The development in all phases of agriculture is needed to boost countries income. In this paper we developed a framework to support farmers in marketing their products more conveniently without intervention of mediators. The framework can be developed as mobile app which can be handy to farmers 24X7 support service mode. The model establishes a neat bridging between government marketing services and banking sectors. Also framework integrated with legal issues related to marketing to protect farmers during merchandise activities. It is a highly transparent and farmer centric application framework to strengthen farmers economically.

Key Words: Frame work, Agriculture Marketing, cloud services, kissan card, trading, Market Yards.

1. INTRODUCTION

Cloud Computing is a technology which provides support for resource, services, storage, computation sharing among networks. Cloud computing supports diverse range of services, functions and applications over Internet based on Virtual Servers [9]. Basically Cloud Computing can be classified as service models and deployment models [2, 10]. Most of companies are willing to implement cloud services as it reduces the capital costs. The services offered by Cloud Computing are IaaS (Infrastructure as a Service), PaaS (Platform as a Service) and SaaS (Software as a Service) [9, 10]. The deployment services [3, 8] supported by Cloud Computing are Public Cloud, Private Cloud, Community

Cloud and Hybrid Cloud services. These deployment services controlled by organization or Non-profit based organization (Ex: Google, G-mail...). Agriculture marketing infrastructure impacts the economic factors of country. A good marketing infrastructure leads to reduction of marketing costs, positive market growth and income distribution [5]. The marketing process in agriculture involves producers, farmers and consumers into a business chain [1]. The government organizes specific departments Directorate of Marketing & Inspection (DMI) to control and co-ordinate market yards, cold storage buildings and National Agriculture Co-operative Federation (NAFED) which promotes marketing activities under a harmonic environment [4, 5]. More attention is needed to create awareness for farmer in marketing, grading and dynamics of commodities. They must know various government schemes to get benefit from their products marketing through market yards. The cloud services introduction boosts the information technology such that even hand held smart devices can support robust large scale computations using virtual server technologies [1, 2, 5].

In Section 2 design issues related to framework model discussed. Section 3 presents the actual frame work model proposed for assistance to farmers in agriculture marketing. Section 4 gives a view of its future application as mobile app. Finally section 5 declares the conclusion and future scope of our work in brief.

2. DESIGN ISSUES

The design issues are tailored with security and flexibility over operations. Figure 1 provides vital design issues related to this frame work.

Authentication Service:

Farmers are authenticated with unique identification mechanism during transactions related to bank funds transfer, marketing agreement process. Cloud Servers [3] establish secured gateways over internet and safeguards their session data from identity thefts, hackings and security breaches.

Marketing Service:

A complete government undertaking marketing portal opens a business corridor at finger tips of farmers. Highly secured transaction management

supported by cloud server allocates separate accounts to each farmer for specific session. Farmers can manage their data on cloud storage at free of cost. A total B2C and C2C platform implemented through this cloud service.

Transaction Service:

A onetime password (OTP) based session established for each farmer. The data over session is highly guarded against attacks over internet. Each transaction deals with marketing process, legal agreements and bank fund transfers. All the transactions are maintained in log files for limited period by cloud servers. Farmers can backup important transaction details to their cloud storage.

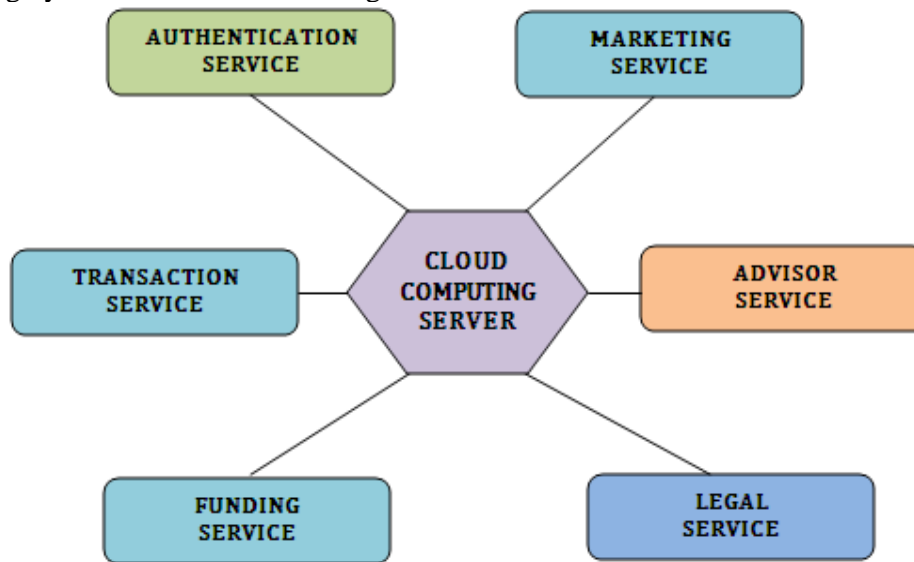


Figure 1. Design Issues

Funding Service:

Major nationalized banks integrated with this application. Farmers enrolled with respective banks can enter e-banking session to utilize cash-free fund transfer management services. This module is like an automatic fund transfer system between *buyer-seller*.

Legal Service:

Support variety of legal services related to business activities. The agreement between buyer and seller with legal approval generated. Farmers can approach directly to legal bench for any conflictions raised during their products marketing through this portal.

Advisor Service:

Cloud supported community oriented service specifically acts as help centre for farmers in agriculture product marketing. Farmer assisted

with marketing trends, advises, feed backs and query reply desks.

3. MODEL DESCRIPTION

The framework is a hierarchical collection of inter related modules highly influenced by Cloud Secured Servers [9] controlled by state government. Security intensity is higher in lower layers compared to higher layers due to diminished business transactions. Organization of service layers along with sub service modules in a neat hierarchical fashion. Farmers can establish their business rapport with merchandise. Each layer offers specific services through modules as described below and framework shown in figure 2.

3.1 Authentication Service Layer

Major modules in this layer are Farmer Authentication, Secured Service Activation and Marketing Service Activation.

Farmer Authentication: Each farmer recognized by holding Kissan-Card provided by state government of Andhra Pradesh. After enrollment of farmer an unique ID generated by system which is used for user login to system for current

session. After the session completion this unique ID becomes obsolete. For each farmer Kissan-Card number and owned password essential to enroll for session. Authenticated farmer can access Marketing Service layer services. Marketing Services activation and Secured Service Activation modules are triggered automatically with successful login by farmer valid credentials.

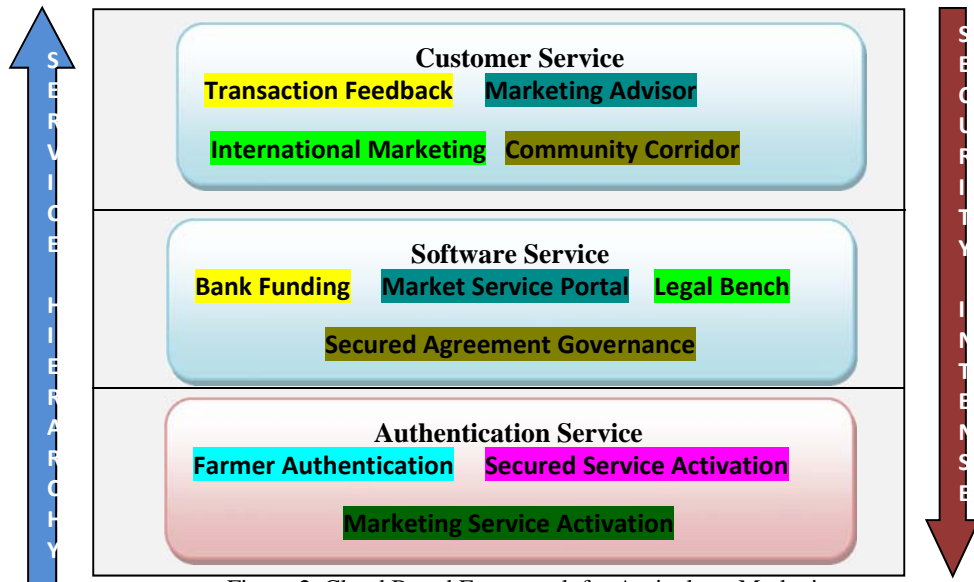


Figure 2. Cloud Based Framework for Agriculture Marketing

Marketing Service Activation: Establish connection to Agriculture Marketing Cloud Server and launches marketing service application on client's platform.

Secured Service Activation: Establish a secured pipeline of transactions between client and cloud server with high confidentiality and resistant to open network vulnerabilities.

3.2 Software Service Layer

The heart and core service layer for entire framework supported with following services

Market Service portal: Enriched with business functionalities related to trading. Support area wise market yards access, monitoring of market prices, buyers desks, government trading schemes and many more. A transparent business portal established between buyer and seller by this software module. Once farmer satisfied with buyer price he invokes secured agreement process.

Secured Agreement process: In association with Legal Bench module this service generates an agreement between buyer and seller. This agreement is in accordance to business laws and cyber laws of Indian Constitution. Once the

agreement e-paper exchanged between both parties Bank Funding Service invoked.

Bank Funding Service: This service transfers funds from buyer account to seller (farmer) account through a secured channel. This reduces the burden of huge cash transactions which are highly insecure. If farmer have no account in nationalized banks funds are transferred to postal department nearer to farmer's residential village panchayath in form of e-cash. By exhibiting his Kissan Card farmer can draw his cash from post office.

Legal Bench: Service supports criminal proceedings for conflicts raised during marketing transactions. Both parties (Buyer, Seller) can approach legal bench with agreement e-paper as a valid proof of business transaction. They can file suit against each other when violation to contract noticed using this application module. Cases registered under district session court Cloud Server automatically for further proceedings.

3.3 Customer Service Layer

The final layer which is the top most layer in framework. Supports farmers with following services

International Marketing: Offers services to farmers in understanding current International Marketing trends, overseas marketing schemes offered by Indian government, International product quality management techniques and query support service.

Community Corridor: Social network for various communities of farmers to share and prosper together with their own marketing cognizance.

Marketing Advisor: A help desk panel governed by state of Andhra Pradesh formed with experts in agriculture marketing issues to provide advices to farmer in better marketing techniques.

Transaction Feedback: Supports farmers with business transaction feedbacks and recorded vital transaction blueprints which can be stored by farmers on their cloud drives for future references. The transaction details are managed by cloud server for limited period only hence if necessary farmers can depend on the transaction feedbacks stored on their account drives provided by cloud service in future.

4. APPLICATION VIEW

In agriculture based countries like India this framework not only supports farmers to market their products but also improve knowledge in agriculture product marketing. Basically framework designed to mobile application so farmers can use this cloud based application from anywhere. Flexibility in marketing services, security in transaction management and dependability on business guidance services are the admirable advantages of this framework. The concept of Cloud Server technology [10] integration gives freedom from storing bulk applications as well as data on smart mobile devices. The transparency among legal and marketing modules is another great advantage to farmers in avoiding ploys from business traders. Infrastructure as a Service framework bundled with global business standards with a strong legal backbone and greater security standards [11]. Marketing infrastructure supported by cloud server is updated day to day accordance to government regulations and business trends.

5. CONCLUSION

In this paper a framework was presented to support farmers in marketing their agriculture goods. In future we are going to develop mobile app with software framework for this framework model. This mobile app turns the face of agriculture marketing, adds an innovative approach in marketing history. I wish with the co-operation of government of Andhra Pradesh and department of Agriculture Ministries this cloud based application comes to the hands of Indian farmers soon in future.

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