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A Study on Development of Online Marketing Information System for Agricultural Sector of KSA

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Abstract: ***Agriculture sector is a contributor of GDP and foreign exchange for a nation. Agriculture sector generates labor, capital and fulfill domestic demand to support growth in other sectors as well. Agriculture sector plays a key role in ensuring national food security. Access to the agricultural marketing information is an essential factor in promoting competitive markets, globalization, efficient marketing, market liberalization and improving development of agricultural sector. Majorities of the stakeholders of the said sector are deprived of agricultural marketing information. The stakeholders of agriculture sector of Saudi Arabia are in need of Agricultural Marketing Information System (AMIS). In this paper we proposed the AMIS for the Kingdom of Saudi Arabia. In summary, the said system is aimed at providing agricultural marketing information to all the stakeholders of Saudi agriculture sector.***

Keywords: Information Management, Data Processing and Analysis, Knowledge Acquisition, Agricultural Market Information Services, AMIS, Business Intelligence, Data warehousing.

1. Introduction:

Agrarian economy has many stakeholder; all seek information for taking rational decisions for their respective roles and objectives. Stakeholders of the agriculture sector include farmers, marketers, consumers, researchers, planners, enterprises, industry, students, government agencies, NGOs, politicians, world organizations etc. The system proposed in this paper is useful for all the said stakeholders.

The farming community and the agriculture are growing in Saudi Arabia. This fact is supported by the Saudi agriculture sector main indicators on the web page (http://saudi-agriculture.com/), which reflects two important facts:

1. A population of 31 million; which is 150% of the total population of the Five Gulf Cooperation Council (GCC) is engaged in agriculture.
2. Saudi agriculture's contribution is 5.2% to the GDP, with a total of SR 52 billion [1]

Saudi Arabia agricultural area was at level of 173,647 1000 ha in 2014 , up from 173,295 1000 ha previous year, this is a change of 0.20 % [10]. Planted area of vegetables in Saudi Arabia is about 106 thousand hectares annually, while the area planted with fruit is about 195 thousand hectares annually (besides cereal and other crops). The markets of Kingdom of Saudi Arabia are open to the world, interact with export and import activities in the framework of the trade policies of Saudi Arabia [2].

Agriculture markets in Saudi Arabia are grouped in to five regions as:

1. Western region.
2. Central region.
3. Eastern region.
4. Northern region.
5. Southern region.

1.1. Market Classification:

In collection and dissemination of agricultural market data, one of the important aspects is to understand the types of markets. One can group the agriculture markets in the following five ways:

1. First method of grouping agricultural markets is based on geographic extent of markets, which classifies markets in to the following six categories:
   1. Local Market
   2. Regional Market
   3. Province or State Market
   4. National Market
   5. Continental Markets (Export Markets)
   6. Global or World Market (Export Markets)
2. Second way of classifying agricultural markets is on the basis of volume of sales in the market, which gives following four types:
   1. Retail Market (Grocery Shops, Malls, Stores)
   2. Aggregate Market
   3. Whole Sale Market
   4. Super Whole Sale Market
3. Third practice of grouping agriculture markets is based on the type of control; agricultural markets can be of following type:
   1. Unorganized or Open Markets
   2. Organized Markets: are of following types:
      a. Government Markets
      b. Markets governed by Marketing Board, Marketing Societies and Cooperatives.
4. The time period of operation of market is the fourth way, it puts the agriculture markets into the following two types:
   1. Regular Markets
   2. Seasonal Markets
5. Fifth way of classifying agriculture markets is based on the type commodities traded in the market:
   1. Cereals Market
   2. Flower Market
   3. Vegetable Market
   4. Fruit Market

   . . . etc.

Sugarcane crop is the special case, where the crop produce is given to the sugar producing factories.

1.2. Significance of this Research:

The system will directly impact stakeholders of agriculture sector to make a difference in their lives for years to come. Through automating the whole process, the scheme will help to solve the problems faced by the stated stakeholders.

Monopoly and semi-monopoly in the agriculture sector can be controlled by the AMIS. It is observed that in some cases Government intervention strategy aggravated stakeholders' problems instead of helping them. According to a FAO survey of 120 countries during 1995 - 1996, there were 53 government operated AMIS, most of which were limited to data collection and had little association to the needs of the farmers and traders [3].

Agricultural marketing information system can be used to develop a farmer advisory system to help find the most convenient information on market, storage and planting advice.

1.3. Role of AMIS:

Market information products include market news (e.g. information on prices, quantities, market conditions, and business contacts), market analytical reports (e.g. reports that analyze factors that cause changes in market conditions and their effects on stakeholders), and business reports (e.g. providing information that can help stakeholders identify reliable trade partners).

Market information services usually involve the regular collection of commodity prices from major markets and supply conditions, processing and storing them, and disseminating the information to different stakeholders using one or more channels.

The ideal AMIS is responsible for:

1. Collecting all the market data/information being gathered by various agencies;
2. Initiating data collection where it is nonexistent and strengthening existing data collection procedures;
3. Processing and analyzing collected data/information to turn it into useable information and knowledge;
4. Developing mechanisms/systems for information/knowledge dissemination through various media such as radio, TV, newsletters, magazines, bulletins, email, websites, mobile phone calls, mobile applications, SMS etc.

Information use in marketing systems can be categorized as either up-to-date i.e. current market information, and information compiled over time, usually several years, referred to as historical information. Current information facilitates efficient bargaining which meets the immediate commercial needs of farmers and traders while historical information is used for production planning, storage decisions, government planning, policy making and early warning system for food security [4].

2. Research Objectives:

The objective of this study was to explore the agricultural market information services. The main objective is to develop an Agricultural Marketing Information System for Kingdom that will serve the information needs for all the stakeholders of the agricultural sector.

3. Research Methodology:

The information required for the research essentially come from various reports, documents and web site resources. Further study of agriculture marketing information systems currently being used by other countries is conducted. Also interviews and actual field visits are carried out. Documents were reviewed for collection of data, rules, results of field experiments reported by various agencies (research stations) and collection of market behavior of farming commodities.

The information has been analyzed to illustrate the use of market information, describe the underlying concepts. Also to generate lessons, ideas, insights useful for developing and strengthening agricultural marketing information system.

4. Literature Review:

Agriculture marketing plays an important role in accelerating the pace of economic development in addition to stimulating production and consumption [8]. Safar H. Al-Khatano et. al. has reported various issue in detail related to the problems agricultural sector is facing in the Kingdom. They also focused on the need of agricultural marketing information system for the Kingdom [2]. A number of measures have been taken by the Government to protect and safeguard the interests of farmers. Still the benefits are not percolating down to the farmers, as they are unable to plan their strategies for sale of their produce at remunerative prices, in the absence of correct and timely market information and advice about arrivals, prices, market trend, etc. [9]. AMIS can be used as a vehicle of extension services. Extension can help devising suitable solutions to address the farming issues like: lower yields and profit margins; crop diseases; insect-pest attacks; poor marketing facilities; low water availability and poor soil conditions. Extension can certainly come up with workable solutions and help farmers to practice sustainable agriculture [6].

Dr. Subhi Mohammed Ismail et. al. in their book mentioned details about the concept and importance of agricultural marketing, types of agriculture markets, working of agriculture markets, pricing mechanisms, grading methods, storage, marketing margins etc. of Saudi Arabia [5].

Syed Khizer (May 2017) has presented a framework and model for the development of AMIS. The suggested model is used here in the development of the AMIS for the kingdom [7].

5. Agriculture Marketing Information Systems Studied:

In order to have the clear and complete understanding about the agricultural marketing information systems, a study has been carried of the existing AMIS. Following AMIS were studied:

5.1. AGMARKNET:

We found the following distinctive features of AGMARKNET in our study:

a. It is online; internet based nationwide information system, catering to diversified demands of information.
b. It facilitates speedy collection, dissemination and sharing of information and development of data infrastructure for stakeholders.
c. Sensitize and orient farmers to respond to new challenges in agricultural marketing by using IT as a vehicle of extension.
d. Provide assistance for marketing research to generate marketing information at grassroots level to create an ambiance of good marketing prices in the country.
e. This website is multi lingual, supports local language.

AGMARKNET provides range of Market Information products as follows:

a. The markets are reporting data relating to daily, weekly, monthly basis of prices and arrivals.
b. Provides market profile and infrastructure information.
c. Commodity profiles are being loaded on the portal.
d. Linkages with various organizations concerned with agricultural marketing.
e. Spot and future prices, Minimum Support Price (MSP) and international commodity prices (http://agmarknet.nic.in) [11].

5.2. ITC E-Choupal:

E-Choupals system aggregates the supply and demand of the thousands of farmers; offers direct business links to ITC; provides marketing information about the products of farmers; and lets the farmers explore the competitive offers (www.echoupal.com).

A website for each of the crops, such as soya, wheat, pulses, maize, coffee and aquaculture (shrimp) is setup. The farmers can gain market knowledge about their products as well as they can browse websites to know farming techniques, price trend, weather forecast, etc. For this, they do not have to pay anything, and they are also free to sell their products to any place they choose. The system links the farmers to the agricultural universities, newspapers, meteorological departments, banks, and technical analysts for the information. If they wish they can sell their product online, farmers can also order agricultural inputs online with the help of the managers. The system helps achieve virtual aggregation of product supplies from the farmers, reducing costs of procurement to ITC. On the other hand, the farmers can also gain by aggregating their demands for inputs. They can also seek for other services like sale and hire of tractors and harvesters, soil testing, and insurance. This website is multi lingual, supports local language [9].

5.3. AMIS Pakistan:

AMIS aims at providing comprehensive one-step market price information services. It aims to provide agricultural commodity intelligence to wider audiences at once. It provides information on prices of agriculture commodities in different forms. It provides statistical data of agricultural commodities. Also it provides the publication in the AMIS sector. Besides it also provides other information generally found on the AMIS web-sites. This website is bilingual (English and Urdu) (www.amis.pk).

5.4. Agricultural Marketing Information – Cambodia:

It is an online portal for tools that provide valuable information, helping farmers and traders to succeed in the Cambodian agricultural market places. Here you will find the latest available price and production data, and use various information resources. This web-site provides summarized data in the form of graph and charts. This website is bilingual. (www.agriculturalmarketinformation.org.kh).

Besides the above mentioned one, few more AMISs were studied. It includes AMIS of USA, UK, and Japan etc.

6. Data Sources and Data Collection:

Market profile and infrastructure information (such as market charges, transactional methods, market functionaries, standards /grades, labeling, sanitary and phyto-sanitary requirement, physical infrastructure of storage and warehousing, marketing laws, cold storage, direct marketing, grading, re-handling and repacking, etc.) is obtained from various government websites, websites of private companies, marketing boards, marketing societies and marketing committees. Also the said information is obtained from the various published documents and reports by the researchers and government ministries. Following is the list of resources used for data collection:

1. www.moa.gov.sa
2. FAW STAT, Database, Agriculture production in Saudi Arabia, 2000.
3. SAMIRAD. (2005). The Saudi Arabian market information resource. Agricultural developments in Saudi Arabia. 21 September, 2005. Accessed March 30, 2009 from http://www.saudinf.com/main/f41.htm
4. Strategic Media. (2009). Cultivating Sustainable Agriculture. The Kingdom of Saudi Arabia. Strategic Powerhouse, Global Strength, Part II, Special Report prepared by Media Report. www.foreignaffairs.com/ files/ attachments/saudi_arabia_7.pdf
5. Imports and Exports: Saudi Arabia total Cereals, AMIS Statistics, Source: FAO-AMIS, 1627679876185262.xls, 9637537008600129.xls.
6. Ministry of Planning (2000), The Seventh Saudi Development Plan. Riyadh. The Kingdom of Saudi Arabia
7. Country Market Study: Saudi Arabia, Sub-directorate: Europe, Russia and Middle East, Department of Agriculture, Forestry and Fisheries, March 2010 Authors: Mr. Gert van Rensburg and Ms. Joyce Letswalo.

Following published reports in Arabic language were also used for information, procedures and data collection of arrival, prices:

1.المملكة العربية السعودية
وزارة الزراعة وكالة الوزارة لشؤون الأبحاث والتنمية الزراعية
إدارة التسويق الزراعي
السلاسل الزمنية لأسعار المنتجات الزراعية المحلية والمستوردة
بأسواق المناطق الرئيسية بالمملكة
خلال الفترة من عام 1999م إلى عام 2008م
إصدار إدارة التسويق الزراعي

Figure 5.1.: Sample data sheet from agri_book_1.pdf (through book4)

2. المملكة العربية السعودية وزارة الزراعة
وكالة الوزارة لشؤون الأبحاث والتنمية الزراعية
إدارة التسويق الزراعي

المحلية والمستوردة بأسواق المناطق الرئيسية بالمملكة

File Names: Price_1.pdf, price_2.pdf عام 2009 عام 1430 هـ
-
عام 2011 عام 1432 هـ

Figure: 5.2.:.Sample data sheet from Agriculture_Book_Average_prices.pdf

3.الزراعة العضوية في المملكة العربية السعودية
تأليف: ماركو هارتمان، سعد خليل، توماس بيرنت، فليكس رولاند، أيمن الغامدي
مراجعة: أ.د. إبراهيم الشهوان
تقرير عن القطاع الزراعي العضوي 1433هـ / 2012م
File Name: KSA-Studiefor_Arabic.pdf

4.تشابك أنظمة تسويق المنتجات الزراعية وأهمية التنسيق التسويقي في المملكة العربية السعودية
دكتور: صبحي محمد إسماعيل
أستاذ الاقتصاد الزراعي بكلية الزراعة جامعة الملك سعود
File Name: Mar.Sys.in KSA.doc

5.التســـويـق الـزراعـــي
الأستاذ الدكتور صبحي مـحمـد إسـماعيـل
الأستاذ الدكتور مـحمـد الـحمـد القـنيـبط
قسم الاقتصاد الزراعي
كليـة الزراعـة ـ جامعة الملك سـعود
الـريـاض ـ المملكة العربية الـسعودية
File Name: Ag.Mr.1,2.doc

7. Implementation of AMISKSA:

The system is internet based and has a web interface. Sample screens of the system are as:

Figure 7.1.: Main/Home page of AMISKSA

The main page of the system (Figure 7.1.) shows general information, local weather information, agriculture sector news, current crop arrival and crop prices data. Further it has links to access the rest of services provided by the system.

Figure 7.2.: View data webpage of AMISKSA

The view data web page (Figure 7.2.) of the system allows users to view the historical import, export, arrival and prices data with different aspects.

Figure 7.3.: Data entry webpage of AMISKSA

The data entry web page (Figure 7.3.) of the system allows registered users of the system to enter the import, export, arrival and prices data in to the systems database.

Besides these web-pages the website has many other pages such as reports, market profile, crop information, planting advice, infrastructure information. Further it also has usual pages like any other information system web-site. (e.g. About us, News page, Weather data, Contact us, Sign In, Sign Up, Logout, Help, Discussions, Publications, Forget Password, FAQs, .. etc.).

8. Conclusion:

In this paper, we have provided an analytical study of all the services that can be provided by an agricultural marketing information system for the kingdom. We have proposed a system for the agricultural marketing information system to fulfill the information needs of all the stakeholder of the kingdoms' agriculture sector. We have provided the details that have to be used by the system to achieve its functionalities and services. From this it is clear that the objective is met and accomplished successfully.

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