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META ANALYSIS ON CROPPING PATTERN INFLUENCING MARKETING SYSTEM

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ABSTRACT

Agriculture plays a vital role in improving Indian economy. Food, fiber, biofuel and medicinal products obtained from it which is essential for sustainability of human life. The crops are cultivated in a state based on its demand and availability of natural resources. In order to market the cultivated crop in an efficient manner, the merchant needs information such as productivity of that crop in particular locations and its demand in the market. The agricultural information system is available to assist the merchant in an efficient crop marketing. Thereby it provides information such as if the productivity of the crop increases in the state, the cost of the crop in that state will decrease and the cost of buying the same crop in a state where the yield is less will increase. Therefore, based on the analysis of this Information System the merchant can decide which crop has to buy from which state and to sell in which state and hereby giving him the maximum profit out of the transaction.

KEYWORDS: **Preprocessing, Yield prediction, Information system, Prediction, Classification tree.**

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INTRODUCTION

Information technology has revolutionized the agricultural field which in turn improves the Indian economy. Precision farming is achieved using information system, thereby it increases the agricultural productivity. Farmers can overcome the difficulty in decision making, better farming with the help of decision support system. This system is more reliable which is also very useful for agrarian to take timely decision in such a way they can do efficient farming. The important information technology effects are improved decision making, better planning, community involvement, agricultural breakthroughs and etc.The Agriculture management information system gives better decision for buying and selling the crop.For the reason there is a need to understand the function and the use of the information system to manage and improve them. The information system collect, process, transmit and disseminate the data to the merchant which is used to taking better decision making. This information system helps to the farmer to take advantage of market opportunities and manage continue changing in the production system.[1]

RELATED WORK

The growth of high-value Agri-food exports from developing countries, all around the significance of high-esteem items – which is normally characterized as including natural products, vegetables, and meat and dairy items, with a moderately high for each unit or per weight value – has expanded from 32% in 1980 to 41% in 2010. In the meantime, the significance of topical items and of oats and animal feed altogether Agri-food exchange has diminished extensively. This movement towards high-value trades has been most emotional in creating locales. In South and Southeast Asia and in Latin-America, high-esteem items are the primary part of agri-food sends out. Their significance expanded from 27% in 1980 to 41% in 2010 in South and Southeast Asia, and from 20% in 1980 to 37% in 2010 in Latin-America.[2] Mukherjee et al explains the High food prices, economic growth and Foreign direct Investment (FDI) in Agri-food chains in developing countries. Private foreign investments in the agricultural and food sector have been increasing rapidly in developing countries. Worldwide total inflows of FDI have increased from 54 billion USD in 1980 to 1,350 billion USD in 2012 (calculations based on UNCTAD statistics). There are several reasons for this increase in FDI. The first reason is the wave of investment liberalizations in the past 20 years, which have made it easier for FDI to flow in. The second reason is strong economic growth in emerging and developing countries, which has triggered increases in demand for higher quality products and, with growing urbanization as part of the economic development process, and increasing demand for retail and processed products in urban areas.The third factor is higher food prices on global markets. This factor has induced, more than the other two factors, an interest in agricultural production itself.[3] Krishna Kumar et al explores the question of convergence in total factor productivity (TFP) in agriculture across fourteen major agricultural states of India. Using a Törnqvist–Theil index for TFP growth for the period 1973–1993, we find no evidence to support convergence to a single TFP level (σ-convergence). After grouping the various states on the basis of their productivity, performance, we find that the high-performing states show a gradual movement towards the trend, whereas the low-performing states generally show more volatility. Testing for long-run convergence in levels of agricultural productivity, we find evidence of conditional beta-convergence after controlling for state-specific factors and idiosyncratic year-specific volatility. The results are robust to alternative specifications of tests of unit root in panel data developed recently.[4] Heinemann et al discussed the recent developments in Indian agriculture state level analysis and introduced an investigation of crop–climate connections in India, utilizing memorable creative insights for real harvests (rice, wheat, sorghum, groundnut and sugarcane) and for total nourishment grain, oat, heartbeats and oilseed generation.[5] An agrarian spatial decision support system (DSS) casing was considered and created to meet the expanding requests. A noteworthy segment of an agriculture decision support system is the capacity to precisely survey the state of product development and nourishment supply to give fitting methodologies or countermeasures. However, a predetermined number of these strategies are used together to serve local micromanagement of rural exercises.[6] Here a web-based agricultural decision support system on crop growth monitoring and food security strategies has been explained. The administration of farming generation can be mind boggling and overwhelming. An administrator who is confronted with a choice defies numerous variables that should be at the same time considered. Choice emotionally supportive networks give administrators with suggestions to particular circumstances and help in breaking down decisions. To better comprehend choice emotionally supportive networks, it comprehends the significance of frameworks and framework investigation.[7] The proposals for ranchers depend on correspondence in the middle of agriculturists and specialists and distinctive specialists have an assortment of suggestions. This framework can be utilized by agriculturist's android based cell phones. The application can be utilized for expanding the product yield. Likewise the suggested manures can be obtained from the site.[8] The decision support system (DSS) formulates a Crop recommendation and fertilizer purchase system. This is a try to evaluate the quantum and dispersal of data sponsorships across other states in Indian agribusiness in the midst of 1980s. The dissipating case of data allotments has proposals for persuading power structures winning in the agrarian sections of different states and also efficiency (and along these lines relative purpose of inclination) in progress of rustic things transversely over regions and states. The DSS thinks about revealing that total data appointment, landed at the midpoint of over seven years, 1980-81 to 1986-87, winds up being about Rs 9,000 crore by any methods India level. It is around 17 for each penny of net quality included Indian agribusiness. More than 70 for each penny of total data blessing is on watering framework through major and medium arrangements. Dhawanet et al deals with the price distortions and resource-use efficiency in Indian

agriculture. Provincial destitution rankings of Indian states in 1990 were altogether different from those of 1960. This unevenness in advancement permits us to think about the reasons for neediness in a creating rustic economy. They were demonstrating the development of different destitution measures utilizing pooled state-level information for the period 1957–91. Contrasts in pattern rates of destitution diminishment are credited to varying development rates of ranch yield per section of land and contrasting introductory conditions; states beginning with better foundation and he saw altogether higher long haul rates of neediness lessening. Deviations from the pattern are credited to expansion (which hurt the poor in the short term) and stuns to cultivate and non-ranch yield.[8] The Public investment in Indian agriculture along with the trends and determinants have been discussed and optimized in this paper. The determinants of private endeavors are really especially recognized in a behavioristic packaging in hypothesis composing. The same, in any case, can't be demanded about open theories which have been normally viewed as exogenous variables by analysts in their full scale showing of the Indian economy. This study is an exploratory effort in setting up a down to earth relationship to open capital advancement in Indian cultivating.

FRAMEWORK OVERVIEW

The proposed system presents a method to determine the best trading place for a given crop the data is supplied by government database available for agriculture. The data is preprocessed and sent to a classification algorithm which predicts the outcome of the yield of the crop for next year based on the data given to it as an input. The system proposes a plan where such a system when incorporated with a proper user interface can be used as a suggestion system for various buyers and sellers of crops as they get a well-informed prediction about where they may get the maximum profit from the crop. This system draws graphs of various states in India along with the year they yield is shown so that the user can see for themselves the accuracy of the data. For an uninformed user this system when used in a proper user interface can help them a lot. The farmers have to gain knowledge on demand of crops in the market in order to do efficient and profitable farming for which information system is very helpful. Agricultural information system also provides information such as weather conditions, demand, market prices for their goods which highly influences the farmers.

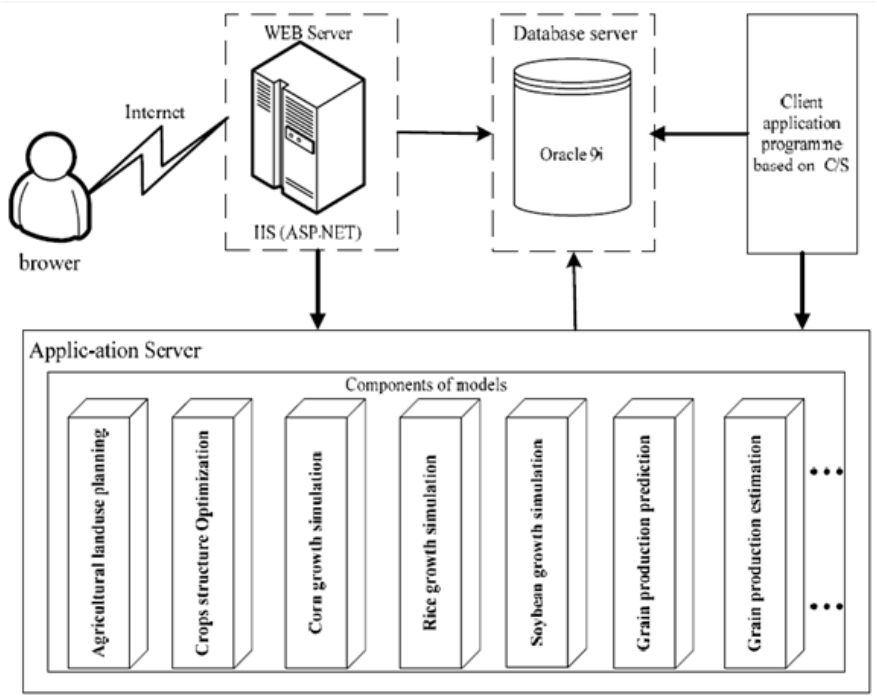

Figure 1
framework for crop recognition and market recommendation system

The system has been made using classification tree based algorithm and this is implemented using a tool called orange. Orange uses python language to execute its code. Also the data set used presently has been acquired from a publicly available dataset on the dataset repository mention below.[13] The data have been edited to some extent to fit the algorithm in the best way possible. The data in future implementations can be acquired from government agencies and entered in a manner which is favorable to the system.The figure1 shows the accommodation of the given system into a proper user interface and connection to a well-recognized database. The browser implies to a user who accesses the system through the internet. The web server and database server are the backend of the user interface. The application server is the place where the system which we have proposed really works, it gives the interface proper predictions and other values to give proper output to the user. The components of models include separate applications for different crops separately as the user needs to first specify the crops they need data on, this also facilitates in the fact that decision making process is easier if the data is separately given for each crop hence forming different

applications. The database can be maintained by any countries agricultural authority so that only updated data is supplied to them.

MARKETING BASED ON CROP YEILDING PATTERN

The data to be supplied using an Excel file format which contains the data about the agricultural output of a given state as per the past years. This data is supplied to a data sampler so that the software can formulate its decision making criteria. Upon this the software uses a predefined algorithm to make the decisions and supplies it to a prediction unit, this unit predicts the decisions that should be taken for the next year. This data is then supplied into a table creator and a distribution graph creator these generate outputs which are in an easily readable format to the user.The data flow diagram of the application has been shown below (fig: 2) the DFD shown is about the basic idea included in the system which is a decision support system. Whenever there is a need for a decision to be made the user starts the program and the systems gathers the information it needs for itself, once this is done the system checks if it works correctly and then takes the input from the user, based on these inputs the system makes recommendations to the user then it chooses the best alternative and hence suggest that an alternative to the user.

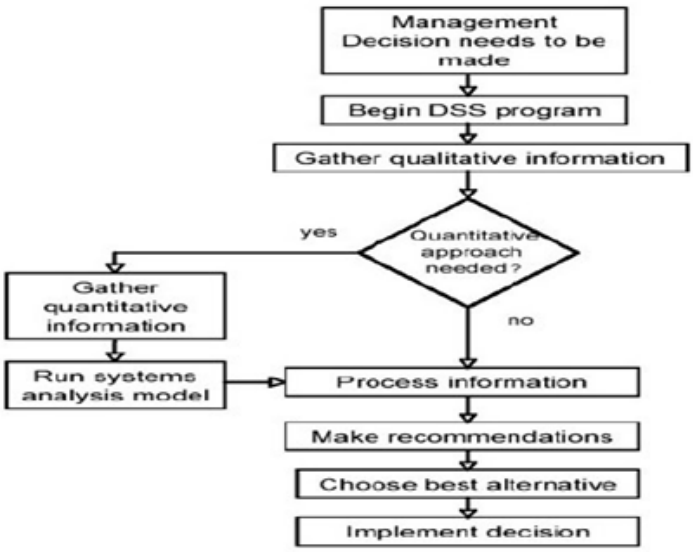

Figure 2
DFD of decision support system

EXPERIMENTS AND RESULTS

The following table (fig 3) shows the dataset that has been working on it contains the name of states as one attribute and years of yield as another the data within shows the total yield in that year.This (fig 4) shows the process of the paper that has been done using a tool for analytics. This has steps like preprocessing data which makes the continuous values in the table above into discrete values, also it has the classification tree algorithm included which finds the probability of a yield to be good or bad. The predictions predict for values in the next year. Finally the results are shown by two means, namely distribution graph and data table.The following picture (fig 5) shows the result of the data table in the last step the last column of the table shows values like 1, 0 and 0.75 each of these values imply to an answer, i.e. 0 is for selling, 1 is for buying, any other value tells the option of buying and selling weight. The following two pictures (fig 6) show the distribution graph output of our experiments explaining the density of the buying or selling probabilities in the states in a specific year. This shows the year 2007-08 has 4 selling places marked with blue and 2 red places to buy from hence showing the trends in prior years.This picture (fig 7) shows the density in year 2001-02 showing one blue, which shows selling place and many small red places showing buying in less quantity.

DISCUSSION

The information systems provide detail on demand of a crop in certain location which is very useful for both merchants and farmers. Both of them can make the right decision out of this information, thereby merchants can do efficient marketing and farmers can do farming of the right crop. They can gain the deserved profit through this information which in turn increases the Indian economy. This system not only plays a vital role in improving the Indian economy, but also very efficient to get rid of crop failure mechanisms and to overcome the famine condition by doing proper storage of crops.This system delivered a statistical report based on year and location which is useful for both merchant and farmer. This report helps to identify the market strategy and improve the profit level. The existing system does not provide such kind of details and not user friendly.

	1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	year
rapradesh	636	1261	1359	1947	2392	2936	2978	2596	3009	3111	2939	2984	3344	0
al pradesh	-	-	839	1058	1172	1119	1126	1224	1297	1110	1195	1195	1275	1
assam	864	939	1007	1109	1313	1511	1519	1471	1534	1460	1468	1332	1428	0
bihar	436	856	787	1015	1218	1489	1465	1419	1523	792	1075	1486	1237	1
hattisgarh	-	-	-	-	-	629	1332	697	1454	1170	1337	1354	1446	0
goa	-	-	-	2208	2528	2484	2561	2685	3233	2771	2822	2458	2330	0
gujarat	694	518	1223	1165	1490	810	1557	1155	1891	1806	1949	1894	1942	0
harayana	-	-	1710	2602	2775	2557	2652	2724	2749	2941	3051	3238	3361	0
al pradesh	558	640	1181	1138	1247	1533	1705	1029	1483	1506	1412	1559	1546	0
J&K	953	1103	1788	2065	2086	1700	1689	1782	1941	1969	2150	2194	2133	1
jharkhand	-	-	-	-	-	1111	1198	998	1695	1305	1150	1828	2018	0
karnataka	876	1196	1684	2007	2059	2593	2281	2070	2375	2712	3868	2470	2625	1
kerala	929	1365	1483	1646	1945	2162	2182	2219	1983	2301	2284	2390	2310	1
a pradesh	382	824	843	834	1121	575	953	614	1018	720	999	824	938	1
harashtra	827	1026	1226	1570	1464	1276	1751	1217	1853	1425	1779	1680	1903	1
manipur	1048	780	1143	1444	1745	2431	2382	2302	2416	2472	2322	2322	2446	1
manipur	-	-	1129	1343	1154	1679	1755	1773	1830	1737	1508	1916	1880	0
mizoram	-	-	938	966	1255	1998	1894	1912	1926	1900	1778	559	288	0
nagaland	-	1273	885	892	1197	1533	1516	1490	1600	1698	1682	1600	1685	0
orissa	518	971	962	1033	1198	1041	1588	767	1496	1446	1531	1534	1694	0
punjab	714	973	1764	2736	3229	3506	3545	3510	3694	3943	3858	3868	4019	0
rajasthan	809	646	1125	882	1183	936	1247	809	1653	1485	1425	1577	2031	0
sikkim	-	-	-	-	1316	1408	1420	1432	1442	1469	1433	1433	1636	0
tamilnadu	1015	1483	1974	1865	3115	3541	3196	2359	2308	2703	2546	3423	2817	0
tripura	854	918	955	1354	1828	2129	2381	2359	2173	2247	2260	2472	2633	0
tarakhand	-	-	-	-	-	1989	2056	1707	1942	1869	1954	1979	2052	0
arpradesh	511	733	811	1050	1827	1977	2118	1841	2187	1790	1996	1879	2063	1
estbengal	986	1165	1239	1442	1795	2287	2514	2463	2504	2574	2509	2593	2573	1
& nicobar	1000	-	1250	1500	2583	2954	2786	2945	2915	2729	2896	2896	3000	0

Figure 3
Data table

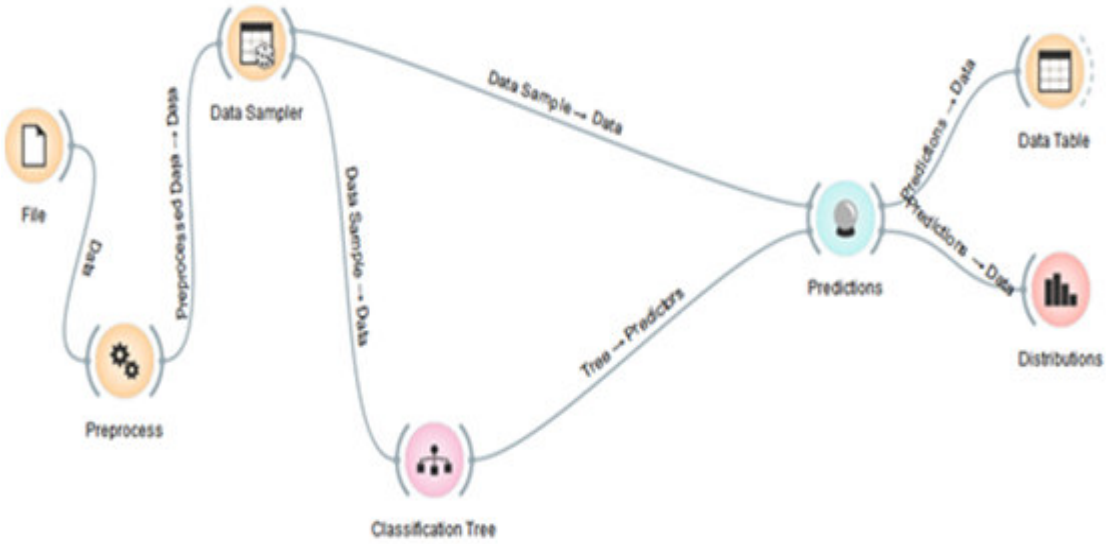

Figure 4
Data analysis and evaluation

		2006-07	2007-08	year	1950-51	1960-61	1970-71	1980-81	1990-91	lassification Tree	ssification Tree((	ssification Tree(1
1	81	0.580	0.695	1.0	875.8588927519...	1195.661302018...	1683.620689655...	2007.266121707...	2058.823529411...	1.0	0.000	1.000
2	52	-0.927	-0.864	0.0	863.6919315403...	939.2201834862...	1006.605691056...	1109.010989010...	1313.253012048...	0.0	1.000	0.000
3	71	-0.572	-0.530	0.0	-	1272.727272727...	885.2459016393...	892.1568627450...	1196.850393700...	0.0	1.000	0.000
4	28	1.596	1.655	0.0	-	-	1710.037174721...	2601.694915254...	2774.583963691...	0.0	1.000	0.000
5	81	1.260	1.633	0.0	635.5010061459...	1261.079600945...	1359.272933825...	1947.448823709...	2391.97224975223	0.0	1.000	0.000
6	20	-0.183	-0.195	0.0	694.4444444444...	517.5005041679...	1222.903885480...	1165.271966527...	1489.642184557...	0.0	1.000	0.000
7	99	-0.154	-0.276	0.0	-	-	1128.712871287...	1343.434343434...	1153.846153846...	0.0	1.000	0.000
8	69	-0.723	-1.114	1.0	435.5312312897...	856.3643812284...	787.4881516587...	1015.205289422...	1217.584863661...	1.0	0.250	0.750
9	70	-0.270	-0.096	0.0	-	-	-	-	-	1.0	0.250	0.750
10	69	0.383	0.462	1.0	1048.192771084...	779.874213836478	1142.857142857...	1444.444444444...	1745.222929936...	1.0	0.000	1.000
11	26	-0.626	-0.711	0.0	558.1395348837...	639.8037346888...	1180.952380952...	1137.899543378...	1247.058823529...	0.0	1.000	0.000
12	59	-0.203	-0.036	1.0	510.5988457454...	733.0532905032...	811.0891957045...	1049.990349353...	1826.597828022...	1.0	0.000	1.000
13	98	-0.793	-0.594	0.0	-	-	-	-	1315.789473684...	0.0	1.000	0.000
14	45	-1.950	-2.351	0.0	-	-	937.5	965.5172413793...	1254.901960784...	0.0	1.000	0.000
15	24	1.143	1.184	0.0	1000.0	-	1250.0	1500.0	2583.333333333...	0.0	1.000	0.000
16	26	0.564	0.310	0.0	-	-	-	2207.547169811...	2528.301886792...	0.0	1.000	0.000
17	16	0.742	0.628	1.0	985.9159971336...	1165.230965082...	1238.902340597...	1442.426584234...	1795.458455186...	1.0	0.000	1.000
18	10	-1.107	-1.064	1.0	-	-	839.2857142857...	1057.553956834...	1172.131147540...	1.0	0.250	0.750
19	68	-1.599	-1.504	1.0	382.1989661066...	823.9002994426...	843.2937956204...	834.0975406419...	1121.141070730...	1.0	0.250	0.750
20	64	1.840	0.946	0.0	1015.294257658...	1483.499040176...	1974.311243484...	1865.022421524...	3115.301724137...	0.0	1.000	0.000
21	24	-0.898	-0.841	0.0	-	-	-	-	-	0.0	1.000	0.000

Figure 5
Answer based table

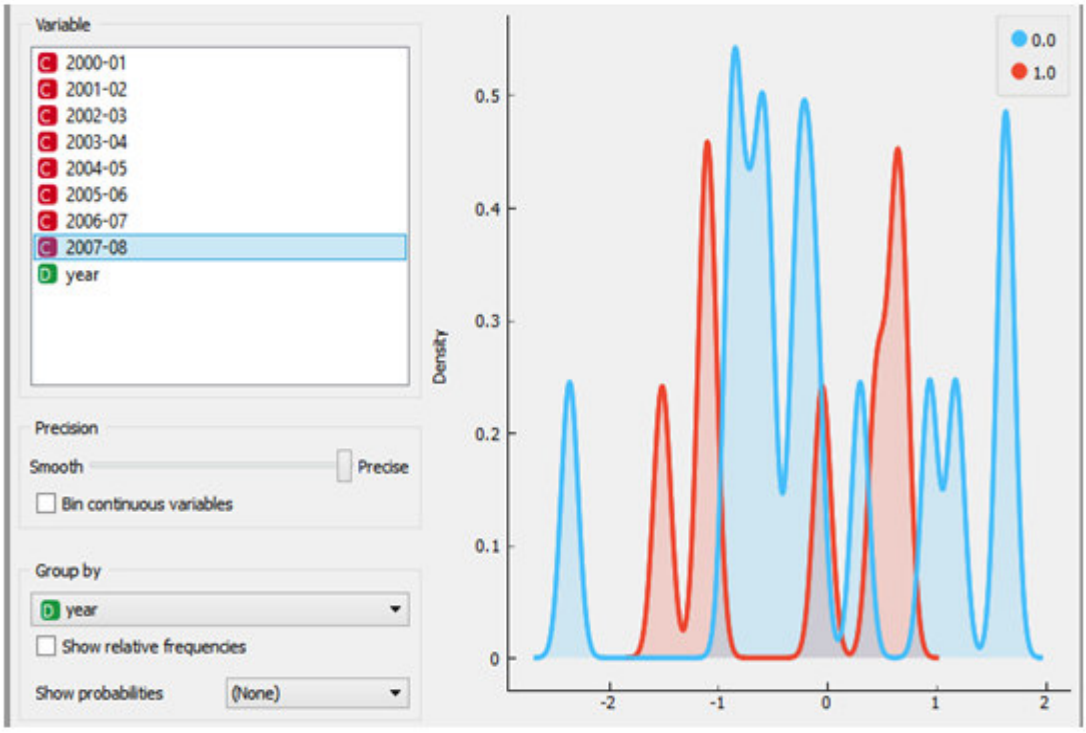

Figure 6
Distribution graph of year 2007-08

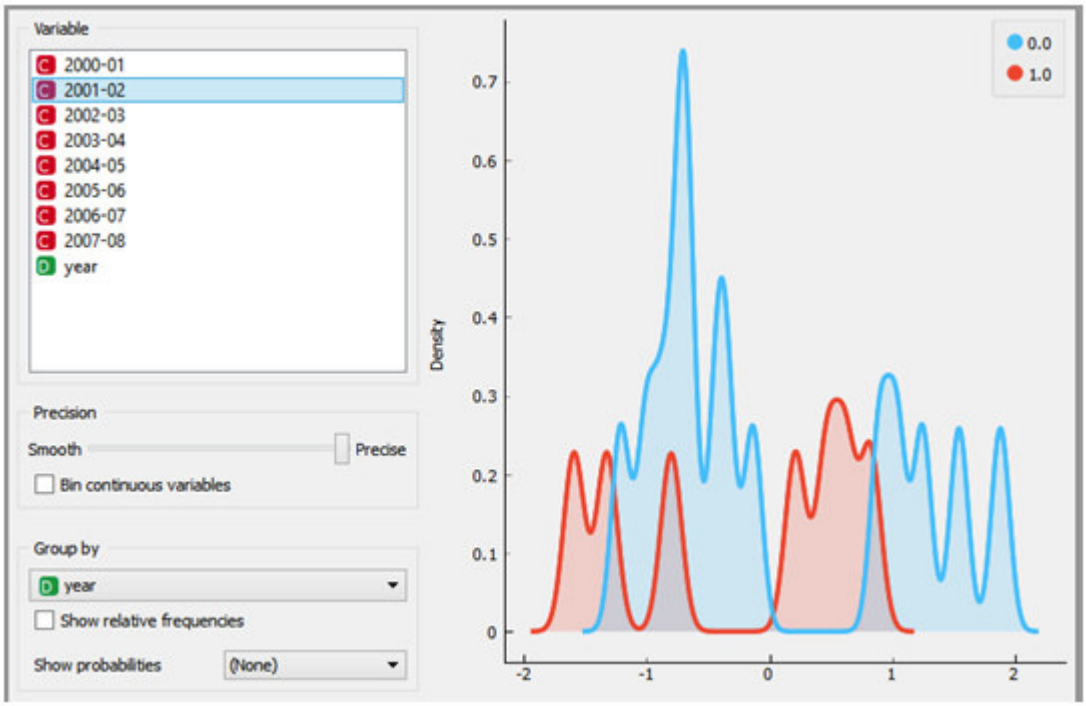

Figure 7
Distribution graph for year 2001-02

CONCLUSION

This paper promotes the idea of using management information techniques in the most backward areas and most technologically part of the country namely the agricultural sector. The method doesn't only help the business men to make a profit, but may also keep farmers informed to remove the middle man trading so that they can earn the amount they deserve. This can be used in many other parts such as crop failure prevention mechanisms and famine prediction so that there is better management of the crops in the country as a lot of crops is wasted due to improper storage while a part of the country suffers a famine. It is easy to incorporate in a user interface and hence give easier usability to the non-technical business oriented people in the long run.

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