

A Study on Government's Roles , Responsibilities and initiatives on Sustainable Practices in context to Organic Food Market in Bengaluru

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ABSTRACT

It has been 72 years of Independence and more than 25 years of economic independence for India. India contributes largely to the world economy. Economic independence resulted as a major contributor for India's fearless position amongst other nations. Export of food products (pulses, lentils, wheat, maize barley, tea, cotton, rubber, spices etc.) have contributed largely towards the GDP (GROSS DOMESTIC PRODUCT) of our country which stands 7% today. Out of this agricultural sector (which includes various sub-sectors) contributes approximately 17% to the GDP. If we focus on local consumption of agricultural food products, all those available in bulk in the market are purely chemically induced and still is there full gamut for organic food products to be introduced in the market.

Here the roles and responsibilities of state and central government come into purview. Specially after 1965 when Green Revolution enabled the farmers to achieve economic and monetary security and adopt pesticides, weedicides and harmful fertilizers to enhance the production of staple and other crops .Such crops were then made available to population for consumption and thus food security in our country was achieved. For another 20 years, with the ever growing increase of chemical smitten food products available in the market for consumption, the health of soil, individuals, livestock are at stake. Entire food chain has become polluted; as a result consumers are at high risk. Heavy use of chemicals in the agricultural products is life threatening to the common people. Gone are those days when farmers used traditional approach of cultivation of crops. It is a high time when we as individuals and group start understanding the ill effects of consuming chemical treated food products.

So the purpose of the paper is to understand the policies framed by government at state and central level towards creating awareness of people towards use of organic food products. The paper also aims at understanding the level of awareness of people towards government role in educating the population of the country to the use of organic food products.

Keywords: Government initiative, Green Revolution, Organic food, Poison free farming, Pollution.

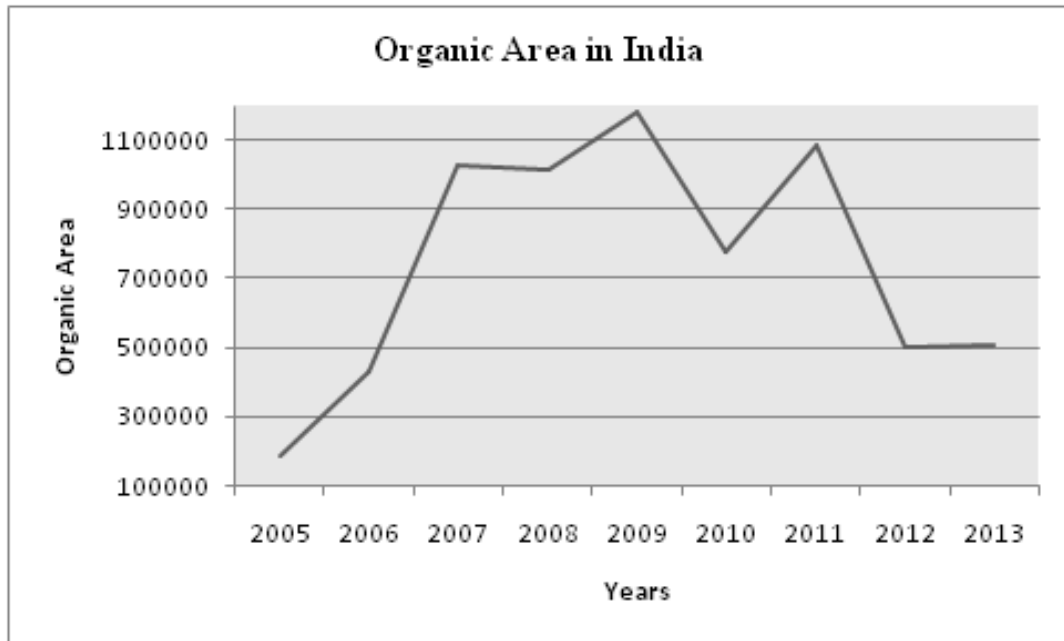
Introduction:

Overview of Indian Agriculture:

If we look backwards and analyze the progress of Indian agriculture, we see that India had a large and diverse agricultural sector, thanks to its diverse variety of soil scattered throughout India and favourable terrain. On an average Indian agriculture contributes about 17% of India's GDP and 10% of export earnings. India's arable land area stands 159.7 million hectares (394.6 million acres) approximately. Its total irrigated crop area stands at 82.6 million hectares (215.6 million acres) in the last fiscal year India ranks amongst the top three

global producers of many crops, including wheat, rice, pulses, cotton, peanuts, fruits and vegetables (According to FOA).

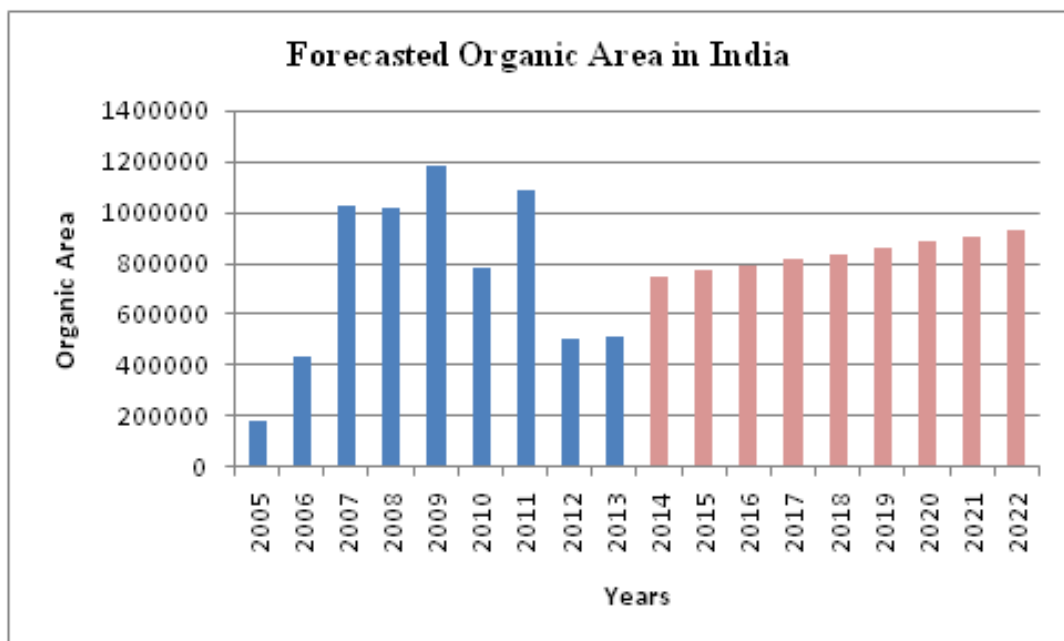
Fig 1: Organic Area in India over years



Source: FIBL-AMI Organic Data Network Survey 2000-2015

The total area under organic farming was 0.186 million hectares in 2005 which had increased to 0.51 million hectare in 2013. Although the maximum coverage was found in the year 2009 which is nearly equal to 1.18 million hectares. The compound growth rate from 2005 to 2013 had been 7.45% which is considerably a low growth rate for 8 years. Figure 2 shows the forecasted values of organic areas in India for the coming years. In 2022, the value is estimated to be 0.93 million hectares.

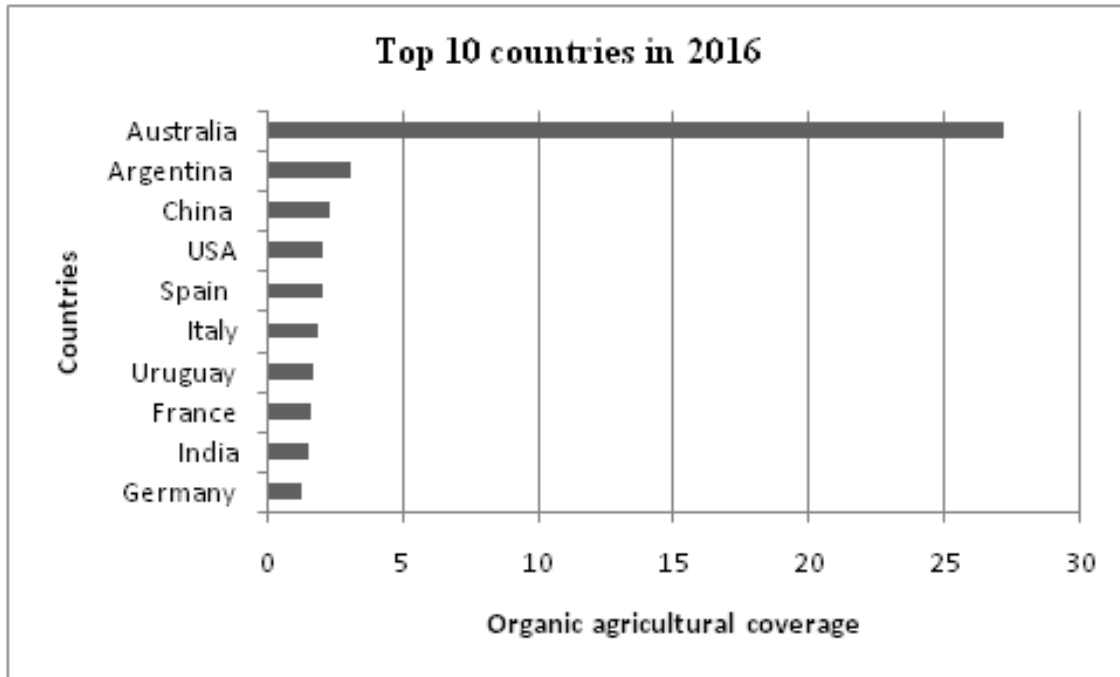
Fig 2: Forecasted Organic Area in India over years



Source: FIBL-AMI Organic Data Network Survey 2000-2015

According to World of Organic Agriculture Report, 2018 India has the largest number of organic producers in the world. It is home to more than 30% of total the number of organic producers (2.7 million) in the world, with approximately 835,000 certified organic producers. But, when it comes to area under certified organic cultivation, India contributes only 2.59% (1.5 million hectares) of the total cultivable area in India (57.8 million hectares). Figure 3 shows that India is among the top ten countries having largest area under organic agriculture.

Fig 3: Countries having maximum organic farming area



Source: <https://www.downtoearth.org.in/news/agriculture/30-per-cent-of-world-s-organic-producers-are-in-india-59748>

Landscape of Indian Agriculture Regulatory System:

The government of India, from past five years is actively engaged in promoting organic farming. Government has also made certain framework to boost organic farming like APEDA, PGS, NPOP, PARAMPARAGAT KRISHI VIKAS YOJANA, JAIVIK KRISHI etc. Government tends to promote the same through fairs and exhibitions, but in reality it does not really help on the ground until there is a steady, sustainable, organized and growing market for organic produce throughout the country.

Before going further, the example of arid Ahmednagar district of Maharashtra, should be considered. Hiware Bazar was in dearth of poverty and drought some 30 years ago. But after 1990s (AFTER LPG) the fate of the village has changed, and it transformed into a wealthy village. The primary occupation of people here is farming. The farmers have adopted organic form of agriculture and have become millionaires by adopting modern as well as conventional way of cultivation of crops. The credit for this transformation goes to the village head Popat Baguji Powar for changing the fate of the village. This village stands as an example of encouragement to other villages in India. It has been titled as “Ideal Village” by government of Maharashtra and required help and assistance is provided by state and central government from time to time.

But this is only one example out of many. Not all districts, villages have improved this much in socio-economic conditions.

Since there is huge hue and cry over ill effects of non-organic way of farming, government have come with various initiatives/plans for promoting organic food products in India. Not to forget Sikkim being the only state to be declared as first fully organic state of India. The prominent programs launched by government are as follows:

- Paramparagat Krishi Vikas Yojana
- National Program for organic production
- Jaivik Bharat and others

Problems encountered in regards to Organic Food Products:

In spite of a good initiative of central and state governments this has also caused chaos within the farmers because with scarce resources they have to undergo process of certification.

On the contrary when interviewed 20 farmers from M.P, Chhattisgarh region it was found that no measures have being taken by government on ground level in this area. All these farmers whose primary occupation is agriculture have their fields in Muglia hatt (Madhya Pradesh), Bairagarh (Madhya Pradesh), Kanpur (Uttar Pradesh) varying from 2 – 20 acres of land and they cultivate variety of crops like soya bean, jeera, chana daal, wheat, rice, sugarcane, seasonal vegetables, fruits. They have adopted unique style of organic agriculture which is called Agnihotra farming. In this all natural/organic ingredients are used to keep plant free of pests and insects. In order to ensure healthy growth of plants, crops and to protect against incidences of diseases a solution is prepared consisting of Agnihotra Ash+ Cow's Urine+ Cow's Dung+ water in a ratio of 1:2:2:4 is prepared and kept reserved for at least three days. This solution is then diluted in 1000 liters of water and then used for soil and seed treatment before sowing. This solution can also act as natural fertilizer and can be easily replaced with chemical compost. According to these farmers no strong and specific regulations has being launched by government to encourage farmers to practice more of organic way of farming.

These farmers sell organic crops in local mandi only. Around 10% of farmers said in one to one interaction that they are selling their products in government controlled organization with no extra benefits. It is purchased at the same rate as other farmer's non-organic crops. This suggests that government has not taken any initiative to enable farmers to sell organic product at a rate higher than other.

Literature review:

Government has taken various initiatives to promote organic food products for domestic as well as for international market. Arpita Mukherjee, Avantika and Souvik Dutta (2018) have given this opinion and also referred that companies engaged in manufacture of organic food business, are facing problems in their day to day operations, no liaison between various nodal agencies under Government bodies, low quality of organic product, lack of consistent supply of food products from farmers and lack of proper supply chain management. Also the cost of chemical inputs is subsidized and regulated in India while no such benefit is given to organic inputs.

In another study conducted by Sagar Maitra and A Zaman analysed present status, scope and future potential of organic farming in India in context to global operations. The demand for organic products both in the

domestic and international market is huge. The basic system and regulations required for accreditation and certification of organic products in India are in place. So the organic farming and sale of organic products will progress tremendously in India and will give self-reliance to the farmers and stable livelihood to the farming community. Nayana Sharma and Dr. Ritu Singhvi (2018) also mentioned about growing demand of organic food products in future and found out that the availability of the market can influence consumer's preferences and choices for purchasing organic food products.

According to an online report by EY on The Indian Organic Market –A new Paradigm in Agriculture, the area under cultivation in India has grown consistently at a CAGR of 6% and the organic market is expanding at a pace, predicted at 20%-25% for 2017 to 2022. A domestic market segment includes mass segment which prefers organic products, mid-segment organic product and premium organic products. E-commerce platforms are booming opportunities. The Government is optimistic about organic cultivation and farmers are encouraged through various schemes. However, there is a need to have a systematic and simple organic policy by government understandable by educated and uneducated farmers to monitor organic cultivation and to replace the use of chemical fertilizers and pesticide with that of bio-products to decrease the cost of cultivation.

Research objective:

The objective is to analyze what people think about government's role and responsibilities with respect to creating awareness about organic food and its advantages among common people. Effect of different demographic factors on respondents' perception is studied. Also the dependence of awareness, preference and consumption of organic food products among people on government initiative is also analyzed.

Research Methodology:**Data:**

Primary data had been collected from different locations of Bengaluru by means of structured questionnaire. The sample size is 105. Convenient sampling has been conducted.

Bengaluru or Bangalore is capital of Karnataka, a southern state in India. It is located in Deccan Plateau in southeastern Karnataka. It is the third largest city and fifth largest metropolitan city in India.

Bengaluru is a metropolitan and cosmopolitan city that comprises of people from different cultures, religions, castes, languages, occupations, income groups and different food preferences. It is IT hub of India and is called Silicon Valley of India.

It has several organic food outlets along with potential buyers who can afford organic food products. There is also an increasing demand for organic food here. Bengaluru is organic hub of India and has the highest sales of organic food product as well as the largest number of organic outlets growing at the rate of 35-40% per year. So Bengaluru is selected as the field of investigation for the analysis.

Statistical Tools Used:

- Microsoft Excel for the graphs and charts
- R for statistical tests and calculations

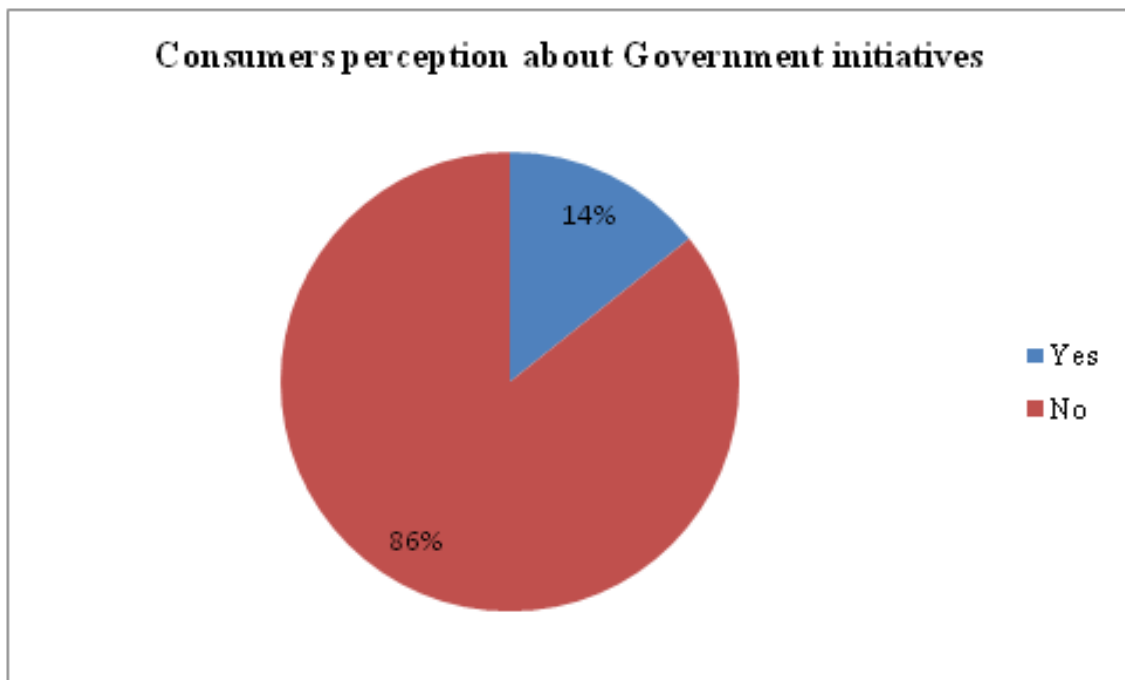
Statistical Techniques Used:

- Chi-square test for testing homogeneity and independence.
- Descriptive statistics like mean, mode, range and correlation.
- Regression analysis

Analysis of primary data:

The analysis starts with what people think about government's actions taken with respect to organic food products.

Fig 4: People's thoughts about Government initiatives



It is very clear from the Figure 4 that only 14% people agree to the fact that government is doing enough to create awareness about organic food among people while 86% disagree to this fact. Different demographic factors like age, sex, educational qualification, marital status and native place (Viz. Bangalore or outside) have been considered in the data. It will be interesting to find out whether this thought is uniform throughout all groups of the demographic factors. Before testing, a demographic analysis is done at the beginning of the analysis as the data is not uniform according to all demographic factors.

Table 1: Age-distribution

Age-Group	No. of Respondents
20-25	13
25-30	26
30-35	39
35-40	17
40-45	7
45-50	3
Total	105

Source: Primary data

In the data there are 64% female respondents and only 36% are male. Talking about educational qualifications, 5 levels had been considered, namely secondary, higher secondary graduate, post graduate and doctorate. None of our respondents belong to the second level i.e. higher secondary. There are 1% respondents from secondary, 28% graduate, 67% post graduate and 4% doctorate. 74% respondents are married while 26% are single. 35% of the respondents are original natives of Bangalore while 65% are from outside who are residing in Bangalore currently. This factor had been considered as Bangalore being the IT capital of India attracts a lot of job seekers from rest of India.

Test of Homogeneity of people's perception of government initiatives with respect to different demographic factors:

As mentioned earlier there are 5 demographic factors that had been considered in the given data. So there will be 5 hypotheses in connection to 5 tests. They are stated below.

H_{A0} : Consumers perception about government initiatives is homogenous in all age-groups against H_{A1} : Consumers perception about government initiatives is not homogenous in all age-groups.

H_{S0} : Consumers perception about government initiatives is homogenous among male and female respondents against H_{S1} : Consumers perception about government initiatives is not homogenous among male and female respondents.

H_{E0} : Consumers perception about government initiatives is homogenous in all education groups against H_{E1} : Consumers perception about government initiatives is not homogenous in all education groups.

H_{M0} : Consumers perception about government initiatives is homogenous among married and single respondents against H_{M1} : Consumers perception about government initiatives is not homogenous among married and single respondents.

H_{P0} : Consumers perception about government initiatives is homogenous among natives and outsiders of Bangalore and against H_{P1} : Consumers perception about government initiatives is not homogenous among natives and outsiders of Bangalore.

Chi-square test is conducted for all the demographic factors and the following results are obtained.

Table 2: Results of Chi-square tests according to demographic factors

Demographic factors	Chi-Square value	Degrees of freedom	P-value	Comparison with p-value	Decision
Age	12.643	5	0.0269	< 0.05	Reject
Sex	1.5×10^{-31}	1	0.96	> 0.05	Accept
Education	8.1661	3	0.0427	< 0.05	Reject
M.S.	5.8×10^{-30}	1	0.99	> 0.05	Accept
Native/Outsider	4.7×10^{-31}	1	0.981	> 0.05	Accept

Source: Primary Data

Footnote: M.S. is Marital Status.

After testing it has been found that people's thought about the proper steps taken by government is not uniform in the different age-groups and also in different educational qualification groups. But it is uniform for rest of the factors.

Analysis with respect to age and education:

Figure 5 reveals that people belonging to age-group 40-45 years have maximum faith in government. Almost 42% of people in this group feel that initiatives taken from government side in enough. On the other hand, there is no single respondent from the 45-50 age-group who has shown faith in government. Respondents of age lying between 25 years to 35 years have very less trust in this regard. Figure 5 completely justifies the chi-square test done previously.

Fig 5: Proportion of respondents who feel positive about government initiative

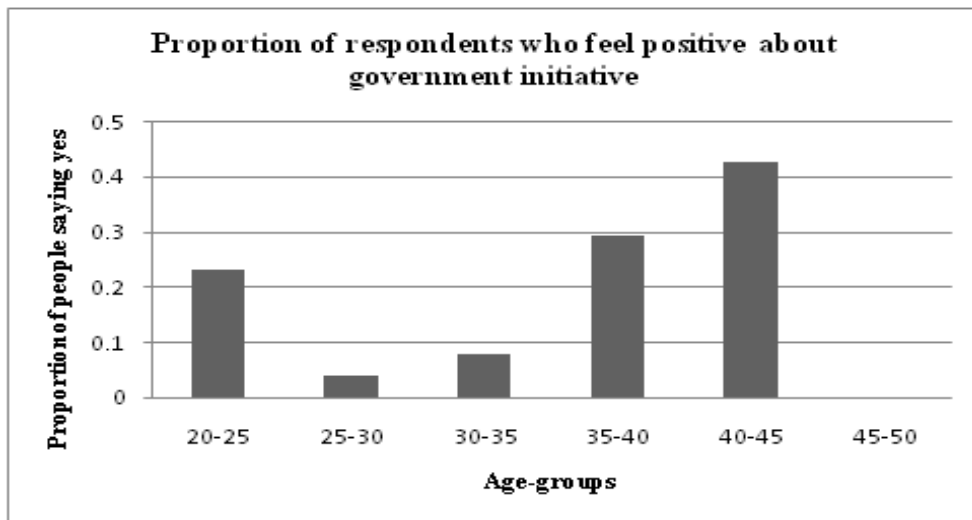
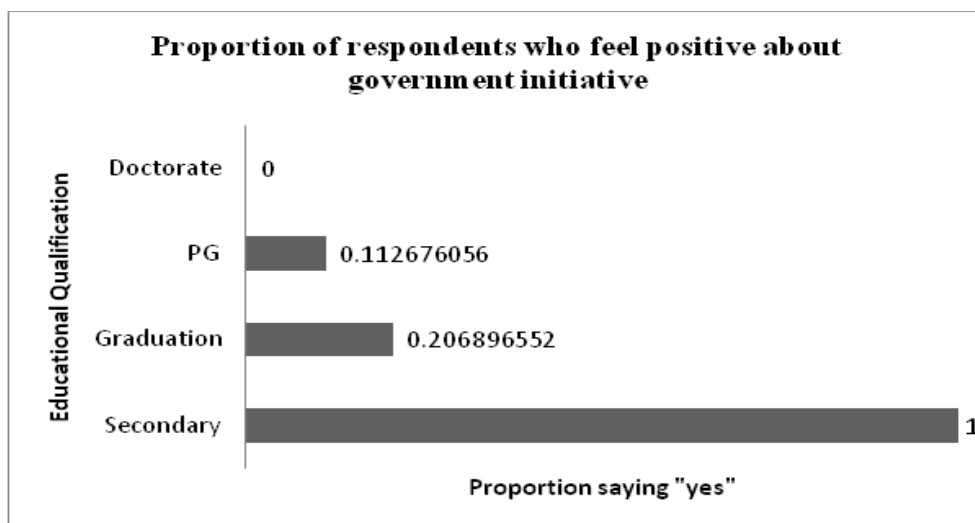


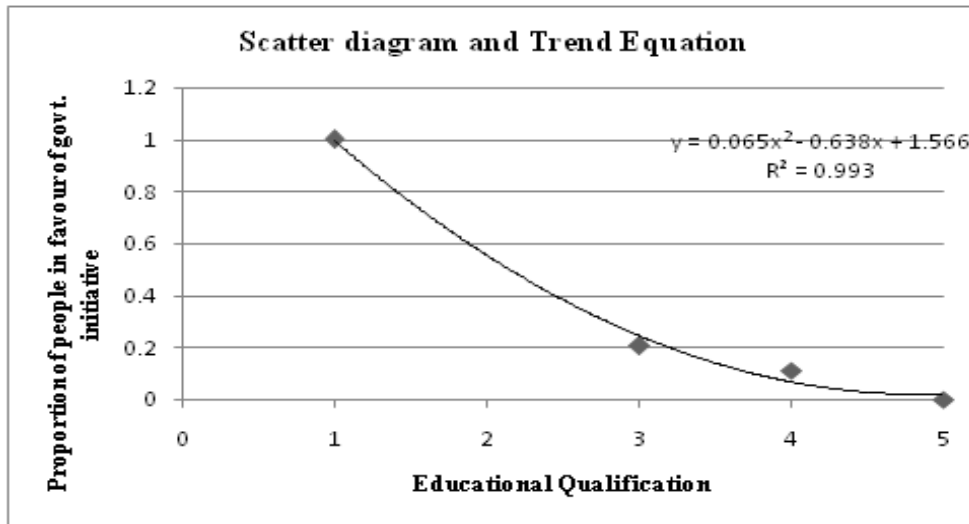
Figure 6 does complete justification of the result that had been obtained in the chi-square test considering the educational qualification. The reason is none of the doctorates were in favour of government but 100% respondents having secondary degree were. In fact a particular decreasing trend had been found i.e. as educational qualification increases, the faith in government decreases. The correlation coefficient = -0.9518 which further supports our statement.

Fig :6 Proportion of respondents who feel positive about government initiative



A regression equation is fitted taking x as educational qualification and y as proportion of respondents who have given positive feedback about government initiative and the following regression equation of second order is obtained. A high value of R^2 interprets that the fit is good. The proportion of higher secondary is estimated which is equal to 0.5527.

Fig 7: Scatter plot and trend equation



Analysis with respect to awareness, preference and consumption of organic food:

Figure 8 shows 95% people know about organic food while Figure 4 reveals that 86% respondents feel that government has not taken proper action to create awareness. Although most of the people think that government has failed to create awareness about benefits of organic food and encourage its consumption, majority of the respondents are well aware of organic food and its advantages. It seems that the public awareness which is present in the society does not depend on government. To test, the null hypothesis is stated as H_{B0} : Awareness of organic food is independent of government initiative against H_{B1} : Awareness of organic food is not independent of government initiative. The p-value = 0.98 > 0.05 leads to the acceptance of null hypothesis which concludes that people are aware of organic food from some different sources.

Fig 8: Respondents aware about organic food.

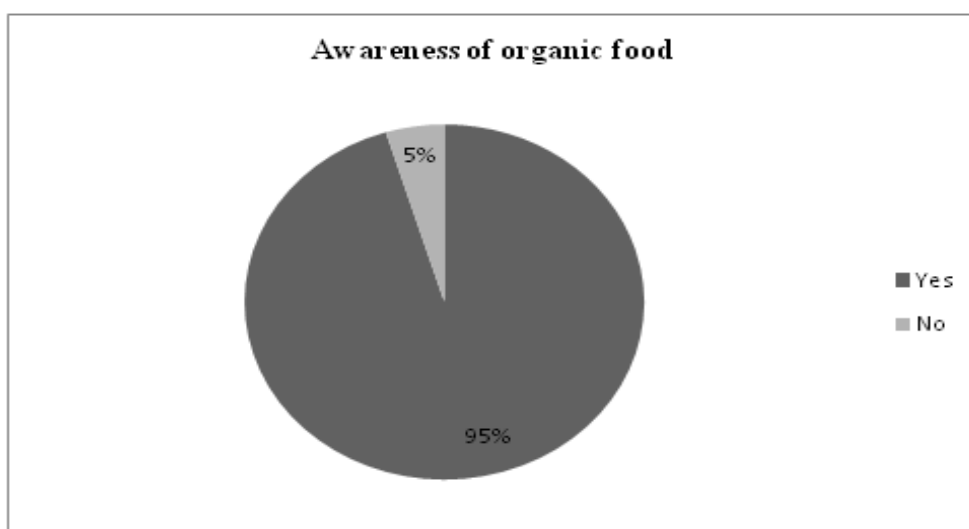


Fig 9: Respondents aware about advantages of organic food.

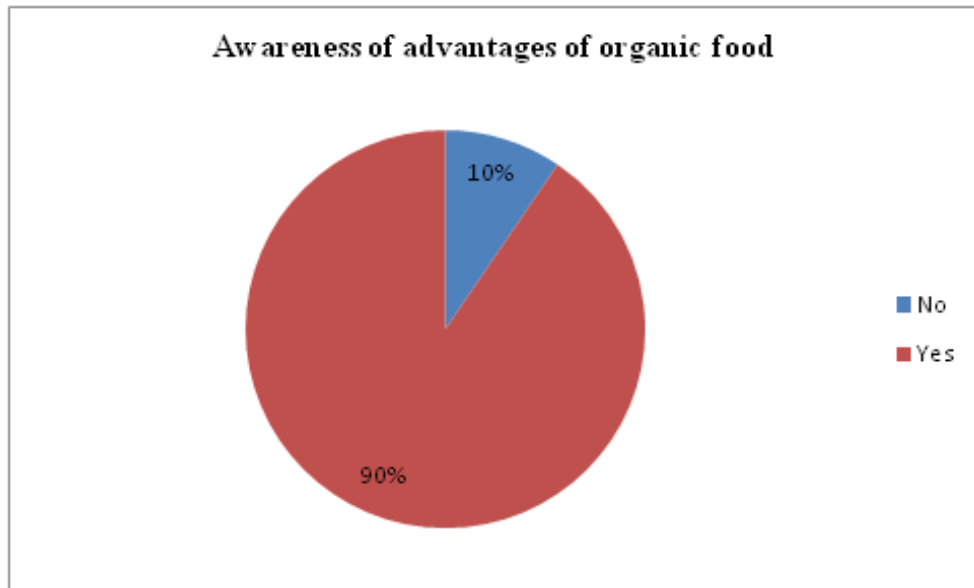


Figure 9 has a similarity with figure 8 but total dissimilarity with figure 4. Just like the previous test, another test is performed to check dependency of awareness of advantages on government steps. To test, the null hypothesis is stated as H_{c0} : Awareness of advantages of organic food is independent of government initiative against H_{c1} : Awareness of advantages of organic food is not independent of government initiative. The p-value = 0.3777 > 0.05 leads to the acceptance of null hypothesis which concludes that people are aware of advantages of organic food but not due to government interventions.

Fig 10: Customers' preference of organic food.

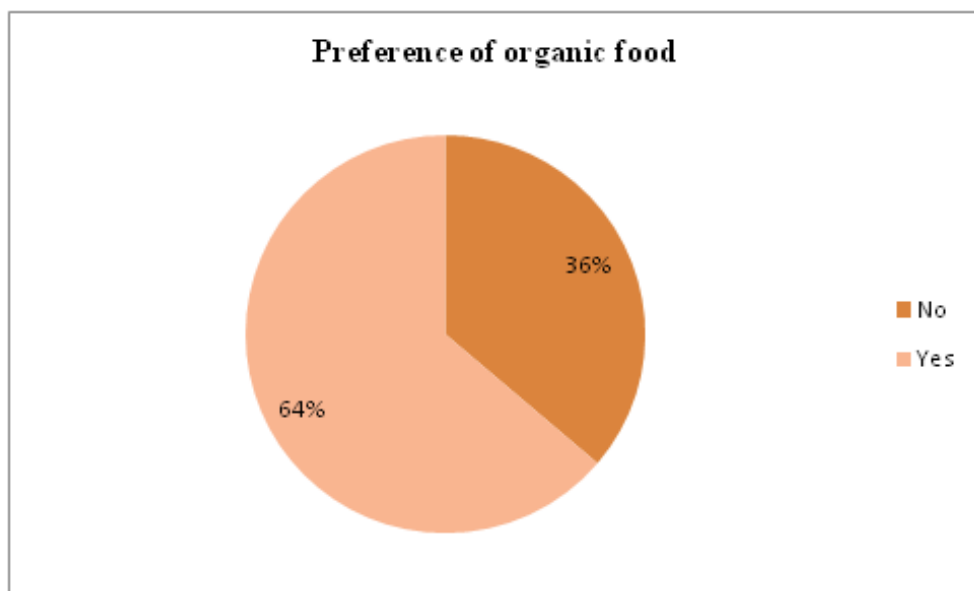
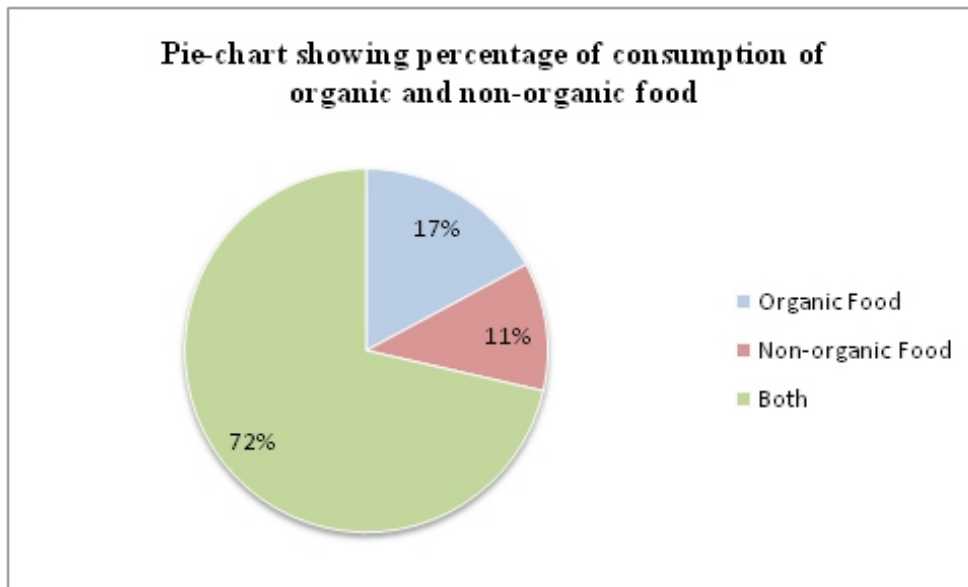


Figure 10 interprets that preference has a different kind of pattern than that of awareness. It is clear that number of people who are aware of organic food and its advantages is much more than the number of people preferring it. That means not all those who knows the benefits of organic food necessarily prefer it. This is a scope of research but the aim of this paper focuses on different aspect. To test the dependence of preference on

government initiatives, the null hypothesis is stated as H_{D0} : Preference of organic food is independent of government initiative against H_{D1} : Preference of organic food is not independent of government initiative. The p -value = $0.59 > 0.05$ leads to the acceptance of null hypothesis giving an insignificant result. Hence it can be inferred that preference of organic food is completely independent of what government is doing.

Till now the discussion was about awareness and preference, next factor to be considered is consumption. Figure 11 describes the consumption pattern of organic food among different respondents.

Fig 11: Customers consumption of organic and non-organic food



According to the figure 11, only 11% of the respondents solely consume non-organic food. 17% people consume only organic food products which is low, while 72% people consume both organic and non-organic food. So it is very clear that maximum people do not depend solely on organic food on daily basis. This is a matter of concern but on the other hand, $17+72=89\%$ of respondents include organic food in their daily diet, which can be considered to be very positive.

Again a test of dependency of consumption on government initiative is run and the null hypothesis is stated as H_{E0} : Consumption of different types of food is independent of government initiative against H_{E1} : Consumption of different types of food is not independent of government initiative. The p -value = $0.1709 > 0.05$ leads to the acceptance of null hypothesis giving an insignificant result. Hence it can be inferred that the consumption pattern of respondents is completely independent of what they think about government is doing.

Findings:

- Out of 105 respondents, 86% think that government has not taken proper steps and actions to promote organic food and farming.
- In spite of government's failure to bring a positive attitude among respondents about its own actions, 95% of the respondents are aware of organic food in the market and 90% are well aware of the advantages also.
- 64% of the respondents prefer organic food rather than inorganic ones.

- Only 11% of respondents consume inorganic food only in their daily diet while 17% of respondents consume organic food only while the rest i.e. 72% depend on both.
- Respondents' perception of government's initiative is homogenous among male and female respondents.
- It is also uniform between single and married people.
- People residing in Bangalore are categorized into two groups, viz. native and outsiders. The perception of government is also found to be homogenous in these two groups.
- The perception is not homogenous in all the age groups. People belonging to age 40-45 years are satisfied with what government is doing but those to belong to 45-50 years group totally disagree to this.
- The perception is also not homogenous in all groups of educational qualification.
- As the educational qualification increases, people's faith in government decreases.

Conclusion:

After studying and analysing various factors it can be concluded that there are efforts made by Central and state governments for more than 10 years to improve the condition of Indian Agriculture. In this process of improvisation government had concentrated more on increasing the yield of farming products (in order to facilitate exports and satisfy the local needs), but conscious effort was ignored to safeguard soil quality and lives and health of living organisms. Even the deliberate efforts by government are not very satisfactory. The changes thus met are more on personal level, like group of farmers in certain parts of India but not by district, state or central governments. Around 24-31% of Indian population is involved with agriculture or allied services. Sadly, this percentage is dropping day by day due to various problems encountered by farmers like depletion of ground water level, expensive seeds and fertilizers, old and obsolete techniques, lack of proper knowledge and training etc. All these problems should be encountered by government and appropriate step to be taken.

Apart from organic food and beverages markets, health and wellness, beauty and personal care market opportunities have grown immensely and good examples of these are companies like Forest Essentials and Himalaya Herbal emerging as successful brands.

Suggestions:

More concentrated, deliberate efforts are required by government to encourage cultivation of organic products in India. Apart from waiving loan of farmers in certain states of India, simpler, easier policies need to be framed by government. Certification process (under PGS) needs to be simplified for rural and urban farmers. Accessibility of organic seeds, raw material and agricultural inputs should be made possible by decentralised management system.

Organisations like Madhav Ashram, Organic Mandya and other NGOS working for the welfare of society, farmers with their holistic concept of farming to be given more financial aid by the respective state governments. Apart from policies launched by present government more elaborate rule and regulations to be framed by government so that each and every farmer can be benefitted.

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