

Agriculture-Information Systems Adaptation Phenomenon of Small Farmers in India

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ABSTRACT

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Human on social media and the authors were able to identify the location of the accused. The research paper is attempting to explain the dynamics of crime and victimization of sextortion from a cyber psychological perspective.

Keywords: Cyber Psychology, Sextortion, Cyber Crime, Cyber Forensics, Online Blackmailing, Phishing, Organized Crime, Intimate Photo/Video, Nude Video Call

I. INTRODUCTION

Information Systems (IS) are the combinations of hardware, software and telecommunications networks that people build and use to collect create and distribute useful data, typically in organizational settings. (Leonard and Wallace, pp. 10-11, 2011). Agriculture is the science of farming, including the cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products. (Oxford Dictionaries, on 06/09/2013). Agriculture - Information systems are Information systems associated with the agriculture.

Adaptation means adapting to a device or mechanism, that is changed or changes so as to become suitable to a new or special application or situation. In other words, only a full use of innovation as intended by the designer without modification can be called an adaptation. Adaptation is usually not spontaneous. The technology has to be taught and learned - adapted to existing experiences and integrated into agriculture activities. It is suggested that there is disparity in adaptation between different sizes and types of farm (Warren, 2020). It's clearly illustrates that the complexity of farm, degree of external support, age, time, experiences, network, availability of information, personality and approach to learning enhanced or diminished a framers computer use (Iddings and Apps, 1990). The process is a series of actions or steps taken to achieve an end, here it's the adaptation to the agriculture - information system.

The policy reforms of the 1990s more or less eliminated the bias against agriculture by lowering industrial tariffs and correcting for the overvalued exchange rates which lead to an improvement in the terms of trade in favour of agriculture. ‘The introduction of internet enabled services into the agriculture support services the dynamics of the service have strongly advocated the integration of Indian agriculture with the world market, on the plea that such a process would improve terms of trade of agriculture, the benefits of which would also percolate to the poor’ (Gulati, et al, 1994). The World Bank recognizes that “making effective use of knowledge in any country requires developing appropriate policies and institutions to promote entrepreneurship and efficient use of knowledge” (Michael, 2005). The advancement of technology had sensed the agriculture too for its penetration.

Changes does not just limit to technology, there are lot changes that have come into the socioeconomic life of the Indian society due to globalization and liberalization policy. Globalization is defined as the integration of the economies through the world, enabled by innovation and technological progress (IMF, 2002). Globalization was termed by Friedman in New York Times foreign affairs - “The world is flat” Globalization has three phases, namely as listed below Region.

1.1 Globalization Phase Impacts

1492-1800	Countries	Europeans and Americans
1800-2000	Companies	Europeans and Americans
2000-now	Individuals and small groups	Worldwide

Source: Today's Information Systems by Leonard and Wallace, pp. 15-16, 2011

In the last decade of the 20th century, a number of technological and societal changes took place, and many of the changes contributed to a flatter world which had wide impact, including the people of India.

Agriculture is very vital for the Indian economy. Looking from the perspective of the Indian farmers on an individual basis of globalization is the subject of study. In India farmers can be classified into three broad categories of large, medium and small based on the amount of land they hold. Thus India's small-farmers (those holding lands less than 2.0 ha of farmland) comprise 78 per cent of the country's farmers, but own only 33 per cent of the total cultivated land; they nonetheless produce 41 per cent of the country's food-grains (Singh, et al 2002). Understanding the existing agricultural scenario and adaptive strategies of small farmers in specific geographic contexts is a first step toward the identification of appropriate options to increase the potential for adaptation of particular farmer groups.

Thus this research paper contributes to prioritize adaptation interventions of small farmers. Small land holders (small-farmers) also face new challenges on integration of value chains, liberalization and globalization effects, market volatility and other risks and vulnerability, adaptation to climate change, technology adaptation and non-deterministic risks. (Thapa and Gaiha, 2011). It is known that small farmers face several challenges in the access to inputs and marketing. Hence the paper focuses on the study of small farmers to the adaptation process of agriculture-information

system in India. Since small farmers need a level playing field with large farms in terms of accessing land, water, inputs, credit, technology and markets. The remainder of the paper gives a brief literature is section two where the review of the best documented study literature. In section three the methodology is described with regards to how the study is conducted followed by the analysis and outcomes of the study is section three. Finally we discuss about the implications of the outcomes in section four and followed by conclusion in section five.

1.2 Application softwares in agriculture information system:

Present-day best apps for farmers include FarmLogs, Climate FieldView, Farmers Edge, Agrian, Trimble, Agrivi, Granular, FarmShots, Strider, Proagrica, AgriEdge, and EOS Crop Monitoring. FAOSTAT is the world's most comprehensive statistical database on food, agriculture, fisheries, forestry, natural resources management and nutrition. Farm management software provides the farmer with a holistic view of all farm activities and inputs through a single platform, which enables efficient planning, the capacity to track activities in real-time and thus take the right decisions. Farm Management Software is used to optimize and manage farm operations and production activities. The software helps in automating farm activities such as record management, data storage, monitoring and analyzing farming activities, as well as streamlining production, and, work, schedules

II. Literature Review

There had been various attempts to study the farmers' attitude to access to agricultural information have been changed because of the very fast networking of information and communication technology. Especially rural marketing exploring in a new ways as farmers' access to market information. Various projects have been developed that integrate ICTs into the dissemination of agricultural information to farmers'. (Caesar, Khan, and Alam, 2011). Information system adaptation within SMEs is a complex socio-technical phenomenon (McMaster, 2001, pp. 1-2). Information and communication technologies (ICT) offer a unique opportunity to obtain an easy access to information on agriculture technologies, inputs, weather, markets, prices, etc. Several studies have shown that access to information via telephones, mobile phones and internet reduces costs associated with information search significantly and helps farmers obtain higher yields, reduce risks and relies better prices for their produce (Jenson, 2007; Aker, 2010; Goyal, 2010; Mittal et al., 2010; Ali, 2012).

Small farmers dominate Indian agriculture (BIRTHAL, 2013). 'Farmers will demand varied types of information to take rational decisions in respect of choice of crops, inputs, technologies, markets etc, as to improve productivity and maximise profit, and to comply with market preferences for diverse, safe and quality food whilst preserving the natural resources. To adjust to these changes and remain competitive in the market, the farmers need a variety of information on a continuum from plough to plate.' (BIRTHAL, 2013) And the Information system is technically complex and costly for the small-farmers to adapt to it spontaneously. Small farmers could not to adapt to technology because of complexity and cost(BIRTHAL, 2013).

Digital Green is one such research project that seeks to disseminate targeted agricultural information to small and marginal farmers in India using digital video. The unique components of

Digital Green are: (1) a participatory process for content production; (2) a locally generated digital video database; (3) a human-mediated instruction model for dissemination and training; and (4) regimented sequencing to initiate new communities. Unlike some systems that expect information or communication technology alone to deliver useful knowledge to marginal farmers, Digital Green works with existing, people based extension systems and aims to amplify their effectiveness. While video provides a point of focus, it is people and social dynamics that ultimately make Digital Green work. Local social networks are tapped to connect farmers with experts, the thrill of appearing “on TV” motivates farmers, and homophily is exploited to minimize the distance between teacher and learner. (Gandhi et al, 2009, pp.1–15). This is one of the many project to mention as an initiative takenup.

Information and communication technologies (ICT) offer a unique opportunity to obtain an easy access to information on agriculture technologies, inputs, weather, markets, prices, etc. Several studies have shown that access to information via telephones, mobiles phones and internet reduces costs associated with information search significantly and helps farmers obtain higher yields, reduce risks and relies better prices for their produce (Jenson, 2007; Aker, 2010; Goyal, 2010; Mittal et al., 2010; Ali, 2012)

User acceptance can be defined as “the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support ” (Dillon and Morris, 1996, p.5). Nevertheless, there are many efforts in India and other developing countries to demonstrate the concrete benefits of ICT for rural population and to carry out the same in a manner that makes economic sense. (Singh, Nirvikar, 2004). In addition to individual decisions concerning whether or not to adapt a particular technology, there are often social and institutional mandates that encourage technological adaptation. Bagchi et al. (2008) argue that institutional indicators have an impact on ICT [Information Communication Technology] diffusion, and government attitudes toward specific technologies have been shown to promote diffusion. In such a situation, at times it may seem that the individual has little choice but to adapt technology.

Economic environment strategy depends on the perceived economic benefit of responding to standards in major foreign market. Globalization has increased due to reduced barriers to trade and (foreign direct investment) FDI. Increasing globalization has concerns about environmental impacts (WTO, 2000), because current regulatory framework for environment protection does not work effectively in the presence of globalization. “The structural reforms and stabilization policies introduced in India in 1991 initially focused on industry, tax reforms, foreign trade and investment, banking and capital markets. The economic reforms did not include any specific package specifically designed for agriculture. In the post-reform (since 1991) period, India has done well in some indicators such as economic growth, exports, balance of payments, resilience to external shocks, service sector growth, significant accumulation of foreign exchange, Information technology (IT) and stock market, improvements in telecommunications etc. GDP growth was around 8 to 9% per annum in the period 2004-05 to 2007-08. India is now 2 trillion dollar economy. Investment and savings rates were quite high 32 to 36%.” (Dev, 2021). Through the appropriate established technological, policy and institutional support, the small farmers can harness their potential to enhance their income and livelihood status (Birthal, 2013). The study is an attempt to understand the adaption of IS

in agriculture which is not been studied from the perspective of the small-farmers adaptation to agriculture-IS in India.

2.1 Phenomenology

Phenomenology simply is the study of the consciousness of people-the perceptions, conceptions, and imaginings that make up their subjective experiences and stream of consciousness (Hanson, 2001). Phenomenologists make no assertions about the nature of the so-called objective, material, or real world. They concentrate on those aspects of the "real" world that are constructed in the mind and recognized in consciousness (Pappas 1995). Here we collected the experience stories of the small farmers and the cases are as listed below through semi-structured interview.

The experience of small farmers in the rural India where asked to narrate in the form of the story. These stories are recorded and where repetitively played to analyse and grasp the intended meaning that the subject had expressed. The brief of the story that the subject had expressed with regard to the context of study is listed below:

3.1 Case I:

The small farmer from village Karkapalli , taluka Humnabad , district Bidar , State Karnataka , India by name [...]

1 : What do you know information dissimilation centre?

A : Yes I know about the information centre, they the required information about the cultivation, pesticides and other related diseases associated with the farm cultivation is being provided to farmers at these centres. The usage of different types of pesticides and the volume with which it need to be sprinkled is provided to us by the information centre. They provide the information with the preparation of home prepared techniques that can be adapted at the low cost and would be economical for us. They give various analysis tricks to maximise profit with the lost cost practices for the cultivation. This kind of information is found to very helpful and useful for us which in turn is shared through word of mouth to various our colleagues / friend-farmers. This way I had successful effort by shifting to commercial crop that is sugar in my field. The information provided by these information are of very much useful to most of us these to avoid disastrous and to maximise my income. My experiment with the cultivation has very fruitful in the regard of information and techniques adaption by the information centre. They provided the usage of micro-nutrients for the crop, which ultimately had yielded good result.

2. How did you come to know that this kind of information is available here, at the office?

A. There is a co-ordinator (helper) for each village in this regard who guide us, and suggest us where, whom, when to go and contact to obtain the information. I going to these centres since 2010, and these centre have been very help for us. Its not necessary for all of us to go to the centres, any one of us can go and acquire the information and then come impart to the others.

3. Generally we showcase the practically to other co-colleagues with any of the adapted standing crop and build the confidence for others to adopt. We generally provide detailed experience of

us to others so that success can be repeated. We even suggest the reliable source from where to get required elements of good quality so we don't get cheated. Since generation we no knowledge of testing the soil and according to use the required fertilizers which is suitable for my farm.

4. Where you not aware of the technique to get the soil tested? Since when you are into this practice?
 - A. No, earlier we were not aware of this. This is recently included into our cultivation practice and the suggestion from the information centre officer. I first adopted then later others too started this practice. When the preparation of composite fertilizers within once own house is been told and trained us to adapt, which would bring down the cultivation cost and increase the profit.
5. How fast could you acquire the technique of implementation?
 - A. We had gone repeated to the centre to collect at various stages to get the information in order to avoid the failure.
6. Generally we make a note, meetings, discussions and some of the spills are also supplied to us as help materials. But the clarity of information dissimilated by word of mouth decreases for different level of people. They attend n number of times to our queries. They suggest not get trapped and to avoid the failure. They have even provided us the contact numbers to call up and ask if there is anything emergency to call.
7. How do you get into the information dissimilation to different outer layers of colleagues of the information?[...]
 - A. Yes there will not be 100% knowledge transfer, but this is what we are into practice. [...] Sometimes the spills provided like the audio cassettes, books, TV programs alerts and CDs will be useful to analyse and to adopt the practice. [...]. Yes once a TV program had broadcasted the subsidiary info with regard to obtaining certain fertilizer that resulted in the more profit.
8. You mean the subsidiary had resulted into more profit and the information?
 - A. Information and the added subsidiary margin and helped us to maximise our profit.
9. So subsidiary is means to maximise the profit?
 - A. Yes the subsidiary is one of means to maximise the profit. But only subsidiary without back information of it is of no use. So information has its own role to play in profit maximisation.[...]. Yes we get enough profit without subsidiary, but subsidiary maximise the profit. But subsidiary added to the useful information had resulted into satisfactory profit margin.
10. What kind of information you get with regard to the breeding and diary?
 - A. In accordance to suggestion, now I own a mixed portfolio of breeds like one desi cow, one jersey cow and one goat. This had result into increase comfort lively living status due to this. This had given a means to make the daily income, instead of once at one harvest.[...] we are provided with information with regard to the breeding and mentainence of the jersey cow. This cow is really gives lot of milk and income had tripled in this regard.[...]Traditionally we are farmers we have some tacit knowledge of the cultivation which is being passed from generation to generation. [...] without subsidy it will threshold

or breakeven for the cultivation effort. We still need more subsidies to get more new practice so that the substance comes at our practice. [...] The labour cost had increased a lot which had result in decreasing the profit level. [...] Nowadays it is better relative to the 10 years past situation. These days the prices we get are relatively satisfactory. [...] Yes the information is playing the role to maximise the profit. Even the technology adoption is also very helpful to us.[...]. Thanks....

4.1 Case II:

The small farmer from village Karkapalli, taluka Humnabad, district Bidar, state Karnataka of India by name ... [...]

- 1.I use labours for the cultivation. I am into cultivation for the past 10 years. [...].
- The information required for you with regard to the agriculture practice, from where do you get?
- A.I generally goes to the KVK information centre. There they provide the information and we farmers exchange the information among us and share the knowledge among us too, which is traditionally very useful for me.
- How effect is the word of mouth information system for the customised information need of yours?

Yes, this due customised there are instance of the failure of the practices.

- Well in that case the scientific oriented information from a source of expert will that be better?

If once the attacked by insects it would be impossible for the recovery in my practice. No scientific means will come to rescue. Even at the information centre the officers are politically motivated and are corrupt in their practice to provide information. These kind of centre are barriers for the small farmers but they wok to some extent for the wealthy (big/marginal farmers). Since they can afford to pay and obtain the information. [...] They don't take required interest to customise in specific to my need, since we are small farmers and the risk of loss is less and above all we can't afford to pay and obtain the information.

- Have ever approached the NGO for the information help?

Yes, they too took to KVK (information centre) and shown the required practices and information through the 18-07-2022computer (internet). Since we have this facility in the KVK but we are not allowed to handle it. We are mad to relay on the helper to extract the information from the computer and then he passes it on to us. To do self we always face some or the other obstacle for self-use, like infrastructure needs, time coincidence, usage help needs. This is not handy for us yet. Computer can't solve our problems like that rain shortage and labour requirement, all these other resources are costly and money oriented for us to obtain. Even information is also at cost for us due to politics and corrupt intention of officer/helper.

- Don't you get and use the weather information forecasted for the entire season? So that you can plan according for the nature of cultivation of crops to undertake?

The information is not that precise enough to relay upon. Since we obtained the information through the middle man, there is no statutory guarantee for the information obtained. [...] In case if we are provided with direct access of the information then may try to get better information through training. Since we not trained to use the system how can we do that? The helper is trained so he is allowed to use. But how much correctly he gets the

information is known to his consciousness, hence we are manipulated in this regard.

- How about the price you get for the output products?

Yes relatively we get better price compared to 10 years before. But according the labour cost had increased a lot. So relatively not much change had happened but better. In term of technology the usage of mobile had bought some speed into the life. We use it for the enquiry of the price related information before disposal in that sense it had help us make better decision. When it comes to usage computer based information system we are far away from it. [...] Thanks.

4.2 Phenomenology and Science

The accounts were considered as the source of practical experience input for the analysis the adaptation patterns in which they feel comfortable to get into the usage of the availability of information repository. They don't suggest any suggestions nor do they recommend the pattern that suits them. They the practical real world situation under which they perform and behave to obtain the information. During the experience sharing process they even express the constrains under which they behaviour is influenced with. Now let us at the experience data from the subject point to analyse reality from the experience context.

From the narration one can see the poor economic status under which the small farmers wherein they have very limited resources at their disposal. Small farmers are ignorant with regards to some of the technology viability that is available for the usage. This can be viewed from the context of their low education level. In both the cases they express their moderate satisfaction with the kind of price they are getting for their final products. Its moderate from the prospect that the price they are getting now is far better

relative to the unexpected price they used get ten years before that is post liberalization. So the impact of globalisation and liberalization can be realized in the narration.

Though the small farmer from the behavioural perspective they are willing to take the risk associated with regards to the professional practice to improve the productivity. The will is not converted into action due the information constraint. They possess desire to pay for the valuable information that can realized through commercial viability. Though some the initiatives taken up the various agencies to make small farmer informed are paying the result but still not in its full form. They are aware of the information system available for their on the internet but on the contrary they ignorant to handle the system to extract it. They express that are willing to learn and practice the means to become self-reliant and be informed.

Though they are happy with price they get for the agri-products still they are dependent on the subsidiary for the agriculture. Narration reveals the impact of the corruption at the grass root level that becomes barrier for the small farmers to be aggressive in adaptation

4.3 Methodological Issues

The narrative analysis of the phenomenological study is not in sync with the modern trends of research since it not empirical and objective oriented. This methodology is not quantitative hence

impact of significance of any kind of expertise is less. But the accounts above represent the actual facts of the small farmers with regards to their intention with real-world situation. Thus this data which obtained for the real-world experience serves as the pre-limner pre-test for any quantitative research to be undertaken in this regard. The observation listed here serves the purpose to formulate the hypothesis.

The data and the analysis of it would be helpful to formulate the theoretical hypotheses to carry forward the study to quantitative research to give scientific proofing to the subject of study. Thus, both the type research practices of qualitative and quantitative research methodologies are of equal importance in their way.

Here in our study to add verification the raw data is been analysed by another researcher to reduce the bias towards the subject. The initiate the validity in the study prospective the process and the procedure is been audited by the one the subject expert. Thus all the required necessary steps are taken to make study unbiased.

III. Conclusion

Information is vital to everyone these days; to update the knowledge with regards to practices and the technology in whatever profession they are in. In this regard agriculture is not the exception. Small farmers have lot of constraints to keep in sync with changing information on daily basis. The living conditions of the small farmers have improved in the context of globalisation and liberalization policy adoption by the government. There are several application softwares are helpful in performing work to reduce man power energy. Technology Still there is lot of knowledge class difference when compared with other big and marginal farmers for the small farmers to be self-reliant. Though there are initiatives to create infrastructure and information systems development and deployment. The adequate efforts are not being made by not allowing the small farmers to experiment with systems for their usage. Small farmers must be trained to use the information system by himself without the assistance of the helper which pins a means for exploitation and corruption. So the small farmers need to be trained to accept that in principle that knowledge is power, so in order to acquire knowledge they need to come forward.

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