Towards a Strategy for e-Governance in Agriculture Sector - Exploring the Continuity and Change Forces

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ABSTRACT

Governments all over the world are trying to implement e-Governance for strengthening interfaces with citizens. The complexities involved in the implementation of e-Governance projects and low success rates of such projects suggest that e-Governance is more of a managerial issue than the technological one. This paper focuses on management of continuity and change forces for better implementation of e-Governance in the agriculture sector in India. The continuity forces operating in the agriculture sector are identified as agrarian base, resource poor farmers, federal constitution, culture, institutional framework, centralized planning and investment in technology. The change forces are identified as growing emphasis on decentralized planning, liberalization, globalization, agricultural reforms and ICT induced opportunities. Principles of flowing stream strategy have been used to illustrate how the momentum of continuity in agriculture sector can be steered using levers of change forces for the benefit of farming community while implementing e-Governance.

Key words: e-Governance, agriculture, continuity forces, change forces, flowing stream strategy

1. Introduction

Continuity and change have drawn the attention of strategic thinkers all along. In the past when business environment was relatively *stable*, organizations preferred to formulate growth strategies by maintaining continuity in their business domain. Quinn (1980) suggested the strategy of continuity with an incremental change for stable business environments. In the last two decades, the turbulence created in the business environment especially due to globalization has shifted the focus to management of 'change'. New theories such as crafting strategy (Mintzberg, 1994), strategic flexibility (Volberda 1998, Sushil 2000), strategic change and transformation (Kotter, 1995) have taken the centre stage to tackle the dynamics of fast changing business environment.

In the post-globalization era, application of Information and Communication Technology (ICT) is increasingly becoming an integral part of the corporate business strategy. Drawing inspiration from the corporate sector, governments all over the world are trying to adopt ICT for improving the governance systems. The benefits of the phenomenon, popularly termed as e-Governance, are yet to be realized to the desired extent particularly in the case of developing countries (Heeks, 2003). Though Indian initiatives like the Information Technology Act - 2000, the Right to Information Act – 2005 and the setting up of the

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Administrative Reforms Commission in 2005 are steps in the right direction, there are several challenges that need to be overcome before the full potential of e-Governance can be realized. Analyzing in terms of continuity and change, it is observed that government organizations have fixed responsibilities as defined in the Allocation of Business Rules and are thus mandated to maintain business continuity. These organizations, however, operate in silos. The synergetic relationships among them are generally missing. On the other hand, re-engineering of government processes and their integration across the departments is a pre-requisite for effective and efficient e-Governance. There are several issues related to technology and management which need meticulous handling while implementing e-Governance. For example, while mega projects like State Wide Area Networks (SWANs), Common Service Centres(CSS), National Portal etc. under the National e-Governance Plan(NeGP) are already under implementation, issues like standardization, interoperability among legacy systems, re-engineering of government processes, good governance are still wide open. Considering government as a large enterprise, the complexities involved seem to suggest that implementation of e-Governance demands simultaneous handling of maintaining business continuity and bringing about changes in government functioning.

Sushil(2005) has conducted an analysis of continuity and change forces operating in the corporate sector. Based on the insights developed from this analysis and practical experience of handling e-Governance projects, this paper attempts to discuss continuity and change forces in the context of agriculture sector in India. It also tries to suggest some strategic measures for effective and efficient implementation of e-Governance through the application of the principles of flowing stream strategy as discussed by Sushil(2007).

2. Continuity and Change Forces in Agriculture Sector

Agriculture and allied activities contribute over 23 per cent of country's gross domestic product. The sector is country's biggest employer accounting for around 60 per cent of aggregate employment. Growth performance of agriculture has important implications for overall growth of the Indian economy and alleviation of poverty among the rural poor (NCAER, 2005). The increasing economic integration of the Indian economy with global processes has brought considerable challenges to the agriculture sector. In the first place, a number of major crops have been witnessing a decline in productivity growth. Secondly, Indian agriculture faces unfair competition from cheap imports, which pose an enormous threat to the livelihoods of the Indian farming community (Dhar and Kallummal, 2004) Realizing this, the Government of India has initiated a series of measures for ensuring competitiveness of Indian agricultural produce in the world market besides re-orienting agricultural production and marketing strategies with emphasis on enhancing the income levels of farmers.

In addition to having an enabling environment, the Indian farmers need to be empowered with knowledge and sensitized to keep adapting to the changing situation. The National Agricultural Policy (NAP) envisions leveraging ICT in a big way for enhancing the competence level of farming community. Farmers need to be equipped with knowledge about pre- and post-harvest aspects of agriculture as per the requirements of emerging market driven economy. E-Governance in agriculture has been included as a mission mode project under the National e-Governance Plan (NeGP). Despite the proven catalytic potential of the ICT, the continued large proportion of resource-poor small and marginal farmers in our country, their low literacy levels, lack of required skills of the government functionaries operating at grassroots etc. are some of the indicators of the complexities involved in achieving the ambitious goal. E-Governance strategy for the agriculture sector has to keep into view the interplay of continuity and change forces for intended benefits to reach the masses. The following discussion dwells upon some of the continuity and change forces in the context of e-Governance for agriculture. The forces contributing to continuity are considered as agrarian base, resource poor farmers, federal constitution, culture, institutional framework, centralized planning and investment in technology. The change forces are: growing emphasis on decentralized planning, liberalization, globalization, agricultural reforms, and ICT induced opportunities.

3. Continuity Forces

Agrarian Base

Indian economy, though now shifting towards service-based fast growing areas, is still pre-dominantly agriculture based. India is world's third largest producer of agricultural commodities after China and the USA. It produces 16 per cent of world's milk, 41 per cent of mangoes, 30 per cent of cauliflowers, 28 per cent of tea, 23 per cent of bananas, 24 per cent of cashew nuts, 36 per cent of green peas and 10 per cent of onions. This strong agricultural base is a large and varied source for the food processing industry. Further, India has the largest livestock population (cattle/buffalo: 283 mn; sheep/goat: 183 mn), reflecting the huge potential for India in the dairy and meat segments. This agricultural base can not only feed India's growing population, but also become a key supplier of food to the world (Singh, 2007). Although, India's current share of world agriculture and food exports is about 1.6 per cent, there is a potential for multifold increase (Rai, 2006). India's economic security continues to be dependent upon the agriculture sector and the situation is likely to remain unchanged in the foreseeable future (Planning Commission, 2007a).

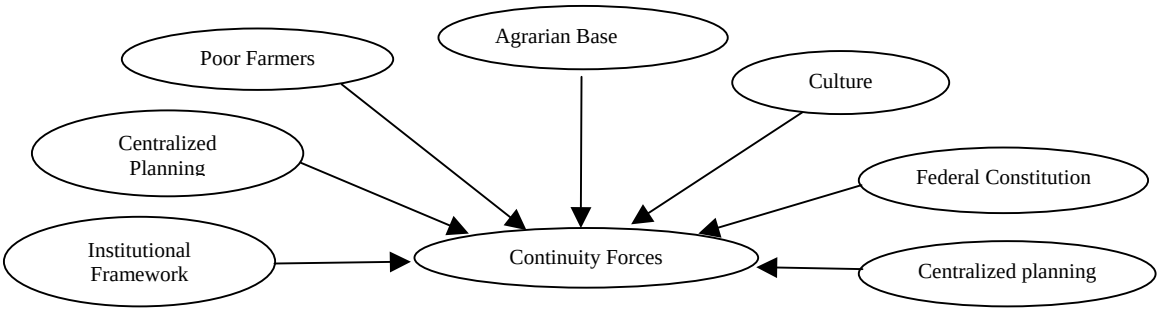

Figure 1: E-Governance in Agriculture: Continuity Forces

Large Pool of Resource Poor Farmers

India has 17 per cent of world's population in less than 2.5 per cent land area. Of this, 74 per cent of population resides in rural areas and their major occupation is agriculture. India has over 160 million farmers. Indian agriculture is predominantly a smallholder's occupation with more than 70 per cent of the farmers categorized as small and marginal farmers with farms of size less than two hectares. Many of them are subsistence farmers and the production capacity of the land for many of them has reached the limit. Most of the farmers are illiterate (60 per cent) and the willingness or ability to organize themselves is missing among them. Mobilization and active participation in increasing the efficiency of the value chain is a big challenge in their case (Asian Development Bank, 2004). Farming is increasingly becoming an unviable activity because of this nature of landholdings. By and large, it is only the progressive farmers, having large landholdings, who are able to take advantage of various schemes launched by the government. Small and marginal farmers are not able to derive benefits from such schemes due to lack of knowledge, besides there being risks in experimentation. Farmers are generally not aware of consequences of the unbalanced use of fertilizers, over use of pesticides or for that matter benefits of soil testing and application of micro-nutrients. Several studies indicate that the major bottlenecks faced by the small and marginal farmers are: lack of access to credit, poor marketing channels for inputs, less developed markets for agricultural outputs, weak extension services, etc. (Singh and Asokan 2005, Planning Commission 2006b). The large pool of resource-poor farmers is considered as a continuity force owing to the inability of successive governments in transforming their status from that of subsistence farmers to agri-entrepreneurs. Therefore, it becomes a challenge for the e-Governance strategy for the agriculture sector to align with the core issue of making farming commercially viable for the large segment of the farming community.

Federal Constitution

The Constitution of India is regarded as a federal constitution. Unlike a unitary state, which has only the national government, India has two governments functioning at two different levels - the national government and the state governments. The states are further sub-divided into districts, which have their own local authorities. The governance subjects are categorized into three lists depending upon their nature. The subjects of national importance requiring uniform legislation for the country as a whole are inducted in the Union List. The State List includes subjects of local importance where variation in laws in response to local situations may be necessary. The Concurrent List includes subjects which at times require legislation by Parliament and at others by a state legislature. The powers of centre and state governments are distributed so as to give due importance to both local requirements and national priorities. For example, agriculture as a subject falls under the purview of state governments. However, keeping into the view the significance of agriculture in Indian economy, the Union Ministry of Agriculture (MoA) is responsible for policy formulation and related issues besides augmenting the developmental efforts of the state governments. The State Governments are expected to put efforts to meet national aspirations while ensuring welfare of the local community. The federal natural of our constitution sometimes comes in the way of smooth implementation of national priorities at desired pace. However, keeping into view the vast size of our country, large population and a desire for unity despite having diversities in culture, language, race and religion, the federal framework of government is expected to continue in our country and, therefore, considered as a continuity force. Large scale citizens centric initiatives need to keep the peculiarities of a federal government structure into view while formulating strategy for e-Governance.

Culture

Culture of an organization is a major unifying force which maintains continuity. It may be defined in terms of shared values and beliefs passed from generation to generation. Culture poses the biggest challenge while attempting a strategic change at organizational or national level. Good work culture is always considered to be a major contributor to organizational performance, but it also acts as a stabilizing force inhibiting major change efforts and usually creates a resistance to change. It is advocated that instead of directly focusing on culture for a cultural change, it would be effective to focus on the components shaping it, such as changing people, incentives, controls and organizational structure (Herbiniak, 2005). In the context of government, India inherited a vast countrywide administrative system which was developed and expanded over the years by the British Government. In the absence of any viable alternative, the system was continued to carry out government functions despite apprehensions raised about its adaptability to changed agenda of the new government which was committed to welfare of the people unlike the previous regime which was of the nature of 'Police State'. (Varma, 1978). The system is often criticized for having been deteriorated over the years in terms of efficiency, commitment to serve citizens, etc. Realizing that good governance is a pre-requisite for effective e-Governance, the Government of India has set up Administrative Reforms Commission-2005 to suggest changes required in the conventional governance system. However, the deep-rooted conventional system is difficult to be dismantled abruptly and thus considered as a continuity force.

Institutional Framework

Ever since independence, a number of development programmes have been launched in the country to uplift the society. Most of these programmes belong to the areas of health, education, rural development, agriculture, etc. Over the years, a large number of organizations have been set up to support implementation of these programmes. For example, to support agricultural development, the central Department of Agriculture 172 offices spread across the country. Most of the state level departments of agriculture have organizational spread up to the block level. To promote agricultural research and education, the Indian Council of Agriculture Research (ICAR) has the support of 52 Research Institutes/Bureaus, 89 National Research Centres, 10 Project Directorates, 38 Agricultural Universities at State/UT levels and 550 Krishi Vigyan Kendras (KVKs). Establishment of new organizations/institutions is

an essential part of the development process and thus considered as a continuity force. Government organizations are, however, characterized by operating in silos. Instances of synergetic relationships across such organizations are rare. With limited resources, individual organizations are finding it difficult to cope up with the growing expectations from them.

Centralized Planning

India has chosen a centralized planning system to facilitate the development process. The Planning Commission, established in the year 1950, continues to be the agency responsible for formulating national plans. In general, the planning process can be termed as a central level exercise due to lack of adequate institutional support for carrying out this process in a comprehensive manner at the State and district levels. The planning system is often criticized for the tendency of recommending uniform policies for all the States without keeping into view the differences in their local conditions (Sovani, 1994). However, even though the plans appear to be imposed from centre, the Planning Commission enjoys the trust of State Governments as it continues to be a major source of development related funds. As such, there has been no conflict between the Union Government and the State Governments in so far as the functioning of the Planning Commission is concerned. The dominance of centralized planning is thus likely to continue in our country despite the emphasis being laid from time to time on decentralization of the planning process.

Investment in Technology

India has made significant investment in agricultural research and extension services for development of improved crop technology. Improved agricultural technology, embodied in new crop varieties, fertilizers, controlled irrigation with better use and management of these inputs, contributed significantly to total factor productivity growth in the past. The country has been able to achieve self-sufficiency in cereals based on new technology use. However, the noteworthy gains of the green revolution were confined to wheat and paddy in the irrigated areas. With less than 38 per cent of the land under assured irrigation, major cultivable area remains rainfed. The dry land areas have not yet benefited from the technological breakthrough as witnessed through the green revolution technology. A near exhaustion of land for agricultural purposes and a shift from area under food grains production to non-food grains indicates that the increase in productivity would be crucial to expanding food grains output in the future (NCAER 2005, Planning Commission 2007a). Growth in the agricultural productivity can be sustained only through a continuous technological progress. In the post green revolution era, the changing economic scenario demands that technology has to respond to emerging issues like food and nutritional security, poverty alleviation, diversifying market demands, export opportunities and environmental concerns (Tripathi and Sadamate 2002, Singh 2007). Agricultural research and extension, therefore, face a greater challenge for enhancing the competitiveness of resource poor farmers operating with fragmented small holdings under difficult environmental situations. Continued investment in technology generation, technology dissemination and technology utilization is imperative to meet these challenges (NCAER 2005, Planning Commission 2006b). Investment in Technology is, therefore, considered as a continuity force.

4. Change Forces

Growing Emphasis on Decentralized Planning

Agriculture being a state subject, the need for decentralized planning has been emphasized by Planning Commission from time to time. The Commission believes that a plan prepared at district level can address the local issues in a much better way. With the provision of constitutional status to the Panchayti Raj Institutions (PRIs) through the passage of Constitution (73rd Amendment) Act -1992, there is now mandated procedure for developing district level plans working from the village/municipal levels upwards. States are now constitutionally required to set up District Planning Committees (DPCs). The village/municipal level plans are to be consolidated by the DPC into a district level plan which takes into

account the availability of funds from devolution of state plan resources and funds earmarked by various central schemes. The success of this approach is, however, dependent on the willingness of the respective State Governments. The approach paper to XI Plan points out that even though the PRIs have been politically empowered and elections take place regularly in most of the states, there has been much less action in devolving funds and functionaries. Many of the States have not yet constituted the DPCs. On the other hand, Government firmly believes that in sectors like agriculture, only the decentralization of planning process can enable convergence of various resource flows and ensure realization of the goals holistic planning. Government's seriousness on this aspect is reflected in the explicit instructions issued to various state governments subsequent to the special National Development Council (NDC) meeting convened for the agriculture sector and the emphasis laid on district level plans in the recently launched National Agricultural Development Programme and National Food Security Mission. Decentralized planning is, therefore, considered as a change force.

Liberalization

The Indian agricultural sector has fluctuated between liberalized policies and controls over the years. Agriculture was virtually free from government interventions till the early 1940s. But the shortage of food availability during the Second World War and the subsequent Bengal famine, led to the formulation of a comprehensive food policy. The food grain policy committee 1943 recommended the creation of a central food grains reserve to manage food supply in the country. Domestic procurement was low until the 1960s and government operations consisted largely of procurement and distribution of imported food grains. During the 1970s and 1980s, Indian agricultural policy was driven by the objectives of achieving self-sufficiency in production and food security. The growth in the sector was based on extensive government intervention in product as well as input markets and domestic as well as international trade. The government policies included provision of price support, procurement and public distribution at subsidized prices, input subsidies including subsidized fertilizers, irrigation, electricity and credit. However, the policy environment pertaining to the agricultural sector witnessed changes along with the rest of the economy during the 1990s. The process of economic liberalization launched in July 1991 introduced structural changes in the overall economy including agriculture. Although no major reforms were specifically targeted for the agriculture sector in the initial period, agriculture benefited from the reduction in the protection levels accorded to manufacturing and from the devaluation of the Indian Rupee. The liberalization process was further influenced with the Uruguay Round Agreement on Agriculture. Several initiatives were taken to liberalize trade in agricultural products. The liberalization process has forced the government to put in place the requisite policy framework and initiate actions for strengthening of the pre- and post- harvest infrastructure to tap the vast export potential of Indian agricultural and agro-based products (NCAER, 2005), FICCI 2007). The growing number of domestic and international agribusiness firms in the country indicates the buoyancy generated in the sector in the recent past. Liberalization is, therefore, considered as another force contributing to changes in the agriculture sector.

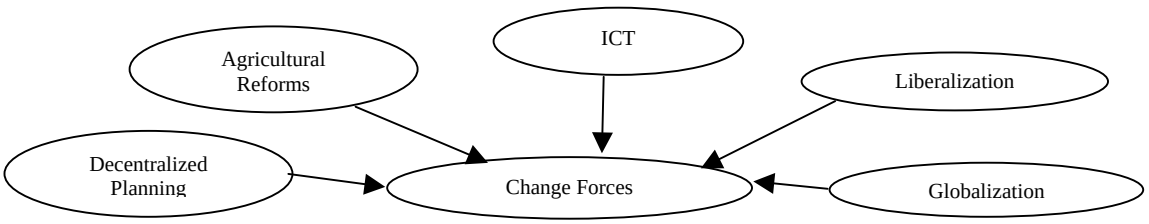

Figure 2: E-Governance in Agriculture: Change Forces

Globalization

With the progressive opening-up of the world economy in the last two decades, the process of globalization has pervaded almost all the spheres. The forces of globalization are becoming stronger day by day due to liberalization of trade and investments, multilateral agreements such as World Trade Organization (WTO), increased economies of scale, homogenization of customer needs, reduced cost of co-ordination due to telecommunication and IT developments. The process of globalization has given birth to global business systems. Global companies are making huge investments to create global value chains and develop global capabilities through alliances and acquisitions (Lasserre, 2003). Developing countries like India view this phenomenon a fast track route for achieving higher levels of growth. They are striving hard to bring changes in their conventional governance systems and gear up themselves to meet the emerging challenges. For example, sanitary and phyto-sanitary measures are becoming major stumbling blocks in exports of fresh fruits and vegetables from India to European Union (EU) countries. During the year 2003, the EU was considering a ban on import of grapes from India due to presence of pesticides residues beyond the prescribed limits. However, the situation was saved with the timely introduction of ICT based Pesticides Residue Monitoring Plan by Agricultural and Processed Foods Export Development Authority (APEDA) by integrating. all the stakeholders in the supply chain of grapes export including concerned central and state government departments. Thus, globalization can be seen as a major change driver that is influencing the government functioning either directly or indirectly.

Agricultural Reforms

Globalization and liberalization are likely to have the greatest impact on the farming community through their influence on the agricultural sector, terms of trade, availability and cost of inputs, and new investments in the agribusiness sector (Singh, 2007). In order to safeguard the interests of the farming community, large scale structural changes have been initiated in the agricultural production and marketing systems. On the production side, government is creating an environment which could encourage farmers to adopt demand-driven production strategies instead of sticking to traditional cropping systems. On the marketing front, developmental schemes have been launched aiming at strengthening of marketing infrastructure, grading and standardization facilities besides creating storage facilities for perishable and non-perishable agricultural produce. Necessary legal amendments to de-regulate agricultural commodities trade flows, encourage contract farming and promote direct marketing of agricultural produce are being taken up in a vigorous manner. Steps like formulation of a model Agricultural Produce Marketing Committee (APMC) Act, for adoption by all the States, permitting alternate marketing channels, passing of the 'National Warehouse Receipt System' by Parliament, ongoing attempts to harmonize the national AGMARK standards with Codex Alimentarious standards, and permitting future trading of agricultural produce, etc. reflect the expected re-orientation of the conventional agribusiness supply chains in near future (NCAER, 2006). Agricultural research and extension systems are also being geared up to address new challenges. Ongoing reforms in agriculture are, therefore, perceived as a change force.

ICT Induced Opportunities

ICT has brought about revolutionary changes in the conduct of business in several organizations. In the corporate sector particularly, the creativity with which a company leverages ICT holds tremendous potential for reconfiguring its value chain and affecting its competitiveness. Recognizing the integrative and service delivery potential of the ICT, the Government of India is implementing a National e-Governance Plan through its Department of Information Technology. The strategic objective of NeGP is to enable the government services to reach the common man. NeGP aims to achieve this through two of its Mission Mode Projects: establishment of the State Wide Area Networks (SWANs) and setting up of one lakh internet enabled Common Service Centres (CSCs) at strategic locations throughout the country. The necessary content backbone, for creating digital opportunities at grassroots, is being built under ambitious AGRISNET and AGMARKNET mission mode projects by the Ministry of Agriculture. These initiatives, together with reforms in agricultural marketing which include amendment of APMC Act to permit e-

marketing, promotion of direct marketing, National Warehousing Receipt System, Grading and standardization facilities at the grassroots level, setting up of rural godowns and strengthening of marketing infrastructure are paving the way for the ICT enabled direct marketing of agricultural produce. It is expected that the ICT enabled commodity trade flows will be a reality in India in near future. The opportunities likely to be created with the large scale application of the ICT in the Indian agriculture sector have the potential of bringing unprecedented changes and is thus considered as another major change force. The above discussion tried to throw light on some of the major continuity and change forces operating in the agriculture sector in India. Based on the learning, the linkage between 'Simultaneous Management of Change and Continuity Forces' and 'e-Governance in Agriculture' would be explored further in the following sections.

5. Strategy for e-Governance in Agriculture based on the Simultaneous Management of Continuity and Change Forces

Strategies for confluence of continuity and change could be generated by understanding the balance of continuity and change forces. Sushil(2005) has developed a Continuity-Change(C-C) matrix to map the position of an enterprise with respect to these forces. The author has categorized corporate sector enterprises into four groups: (a) 'Stabilizers' typified as 'Tree' which experience High continuity force and low change force. Such enterprises are usually more stable like a tree and slowly evolve over time; (b) 'Quick Encashers' typified as 'Mushroom' which experience low continuity force and low change force. Such enterprises can quickly encash the opportunities and can shift to new ones due to low continuity forces; (c) 'Change Masters' typified as 'Wind' which experience low continuity force and high change force. Such enterprises need to be changed radically due to new opportunities or innovative technological change and (d) 'Synthesizers' metaphorically called 'Flowing Streams' which experience high continuity force and high change force. The concern of simultaneous management of continuity and change is maximum under the enterprises falling in this category.

The above discussion reflects that the Indian agriculture sector is influenced by the high continuity forces as well as high change forces. The strategy proposed for this category is most challenging and comprise of the 'Strategic Flexibility for Integrating Opposites'. It is metaphorically termed as the flowing stream strategy. The e-Governance strategy for the agriculture sector is, therefore, supposed to exhibit strategic flexibility to integrate the opposing forces operating simultaneously. A flowing stream is continuously changing its course, at times radically, while maintaining its continuity at the same time. The challenge is to find a right balance and synthesis of opposing forces so as to divert their inertia of continuity to new frontiers without losing the benefits of continuity.

The framework of flowing stream strategy envisages four key strategic channels: *divert, shift, partition and integrate.* These are ordered in terms of strategic flexibility and complexity of strategy implementation. An organization can use these strategic channels with growing strategic maturity in the flow; at the highest level of maturity, the organization might implement all the four channels. The most widely used strategic channel is *divert* followed by *shift* and then *partition;* the channel *integrate* is used rarely and needs richer strategic insight.

6. Strategic Options based on Principles of Flowing Stream Strategy

The flowing Stream Strategy is based on strategic thinking of creating meaningful strategic change by leveraging the benefits of the continuity of an enterprise. The following discussion attempts to use some of the principles of flowing stream strategy (Sushil, 2007) to illustrate few strategic options which may be useful for implementing e-Governance in agriculture sector in India.

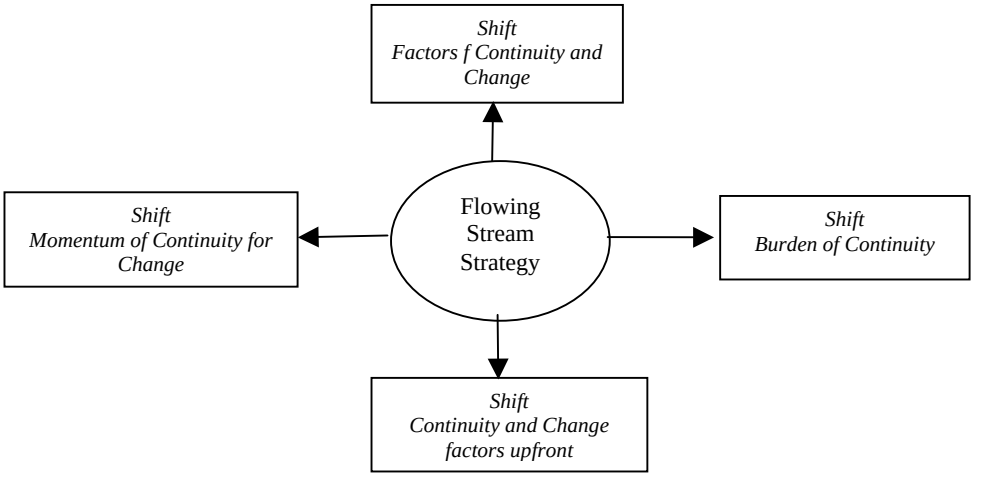

Figure 3: Key Channels Framework (Source: Sushil, 2007)

Principle : Divert the Continuity Momentum

Bigger the flywheel of continuity, larger would be the continuity momentum. It is extremely difficult to first stop such a moving flywheel and then change its course. According to this principle, the strong and desirable continuity and change forces need to be identified and the strategy can be developed by relating the change forces that would leverage the momentum of a particular continuity force. One of the major challenges involved in implementing the e-Governance in agriculture sector is service delivery at grassroots. In e-Governance context, the traditional institutional set up at the grassroots can be thought of as a continuity force and emphasis on using ICT for service delivery can be considered as a change force. Gowda(2002) points out that rural and agricultural agencies are working in isolation leading to inefficient use of scarce resource. The challenge of diffusing ICT for service delivery in agriculture sector can be met by rejuvenating the traditional set up for example, 1.40 lakh Primary Agricultural Cooperatives, 550 KVKs, about 2.32 lakh PRIs etc. by converging with the CSS scheme of Government under which 1 lakh IT kiosks are being established for serving the citizens at grassroots.

Principle: Have Creative Discontent to Reach Beyond Existing Performance

The essence of this principle is the incessant urge for improving the performance howsoever strong and positive the continuity momentum may be. This may require either leveraging the continuity momentum or strengthening it or discarding it for higher performance. The major change programmes such as Total Quality Management (TQM) and Business Process Re-engineering (BPR) are rooted into the philosophy of creative discontent with the present situation. One leads to continuous improvement of the existing processes whereas the other advocates for a clean slate approach discarding the existing processes completely for radical redesigns.

This principle creates the key channel *partition* in the flowing stream strategy framework. The principle advocates for partitioning the performance into factors, focusing for gradual or radical change in the priority factors for improving the performance and keeping others as it is temporarily for future strategic changes. For example the Directorate of Marketing and Inspection (DMI) has established an Agricultural Marketing Information Network System (AGMARKNET) (http://agmarknet.nic.in) with the technical support of the National Informatics Centre, linking about 2800 agricultural produce wholesale markets in India. The capability built in the form of this unique network can be transformed into a sustainable competitive advantage for the country by re-engineering marketing information related processes across concerned Government Departments (Suri and Sushil, 2006).

Principle: Focus on Customer Requirements Rather than Product/Service

The third key principle of flowing stream strategy guides the third key channel of its framework that is *Integrate*. The key reference points for strategy development should be customer requirements rather than individual products or services. The customer requirements are integrative in nature and possess a combination of continuity and change characteristics. Thus, the customer requirements, if properly understood would develop a sound guiding framework to identify the areas of continuity and change and help them integrate upfront rather than taking multiple uncoordinated directions for strategy formulation. The e-Governance services should have provision for obtaining regular feedback from various stakeholders and enhancing the service levels as per their changing requirements. For example, farmers may be interested in all aspects related to a particular crop life cycle rather than just knowing about the prevailing market prices from the AGMARKNET service. This suggests that an integrated solution in the form of an interactive Farmers' Advisory Service would certainly be a better solution than the multiple ICT based services independently addressing different aspects of agriculture.

Principle: Have a Flexible Synthesis of Multiple Options

This principle also guides the key channel *integrate* and is the central principle of flowing stream strategy. It means multiple options, change mechanisms and freedom of choice to participating actors. If we have only one option, the system is bound to be rigid. However, freedom of choice to participating actors need to be meticulously controlled to maintain entropy of a system within the acceptable norms. In the e-Governance context, it needs to be ensured that systems are interoperable and that there is minimum or no vendor lock-in. For example, the ambitious AGRISNET e-Governance project is aiming at offering services like agricultural resource improvement, inputs supply, agricultural production monitoring, agricultural produce, marketing and sales management, knowledge management, agro-advisory and extension services, etc. Agriculture being a state subject in a federal government structure, the states enjoy the freedom of executing the project independently. However, effective and efficient implementation of this NeGP mission mode project can be achieved only through adoption of a flexible and holistic approach by building common and sharable repositories on different aspects of agriculture. Further, the offering of any e-Governance service targeting farming community should not be restricted to internet mode only. The penetration of internet being poor in rural India, multiple delivery channels like Television, Radio, Newspapers, mobile phones, etc. need to be integrated with web based services for making the information reach the grassroots.

Principle: Follow Multiple Routes and Create a Web

This principle of flowing stream strategy is linked with the key channel *shift* in its framework. A flowing stream usually flows through a web of tributaries and distributaries. It may shift its path multiple times which demonstrates its amenability to change by shifting the burden of continuity through tributaries and distributaries. Similarly a growth oriented enterprise should follow multiple routes such as outsourcing, partnerships, consortia and so on to create a web of relationships. This web facilitates effective diffusion of change pressures and creates a type of continuity that act as a change enabler rather than change inhibitor. In contrast to the situation where an enterprise struggles to handle the change pressures alone, the principle advocates creating a flexible enterprise where the organizational continuity is extended beyond its physical boundaries. However, such a web based flexible enterprise needs to be managed carefully to avoid the risk of losing the basic identity. For example, AGMARKNET project has been launched with the strategic intent of enhancing the competitiveness of farming community by empowering them with agricultural marketing related information. This ambitious goal cannot be achieved solely with the limited Government resources. The project has to cross the physical boundaries of the collaborating Government organizations, viz. DMI, NIC and State Marketing Boards. This demands creation of a web of strategic alliances around AGMARKNET with related government and corporate sector organizations. In general, the subsystems in the agricultural development like technology generation, technology dissemination and technology

utilization also need to be integrated through strategic alliances (Gowda 2002, Anantharaman et. al. 2002) for generating better opportunities for the farming community through the application of ICT.

6. Concluding Remarks

Different enterprises experience different levels of continuity and change forces. Strategies for confluence of continuity and change could be generated by understanding the balance of continuity and change forces. The National Agriculture Policy as well as National e-Governance Plan have laid emphasis on use of ICT for rapid growth of agriculture and generating value at the grassroots. Considering government as a large enterprise, it is observed that there are high continuity and change forces operating in the agriculture sector. As suggested by the flowing stream strategy recommended for enterprises under the influence of high continuity and change forces, it is possible to divert the inertia of continuity to new frontiers through the right balance and synthesis of opposing forces. The e-Governance strategy for the agriculture sector should, therefore, be capable of exhibiting strategic flexibility to simultaneously integrate the opposing forces. It is required to leverage the momentum generated by continuity forces and opportunities created by change forces to meet the challenge of implementing effective and efficient e-Governance in the agriculture sector as illustrated through examples based on the principles of flowing stream strategy.

** The views expressed in the paper are the personal views of the authors.*

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