IT Diffusion & Socio Economic Change In Egypt

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Although new information handling technologies have recently been widely disseminated as tools for socio-economic development, they cannot be used in the same ways as in the industrialized countries for which they were designed. Three things at least distinguish the experience of developing countries. The first is the context of their bureaucratic, administrative, managerial and political systems and the differing expectations of users. The second is attitude towards information technology and the resources which must be used to implement ambitious systems. The third is the content of information analysis and use in developing countries, where both application areas and interpretive assumptions are likely to be radically different from the experiences of managers and administrators in industrialized countries.

This paper describes and analyses the experience of the Egyptian government in spreading the awareness of information technology and its use in managing development planning for socio-economic change. The experience has been one of building multiple information handling and decision support systems in very messy, turbulent and changing environments. The successes over the past eight years by the Cabinet in implementing and sustaining state of the art decision support systems in Egypt’s governorates [local administrations] as well as for central governmental decision making holds many lessons for the implementation of sophisticated systems under conditions of extreme difficulty.

The analysis of these experiences offers insight into a variety of problems for designers, implementors and users of information and decision support systems for managing socio-economic change. This paper concludes with analytical methods and guidelines for the future implementation of similar projects in developing countries which may with to benefit from the successes of Egypt’s Cabinet Information and Decision Support Center.

Egypt’s history dates back to around 5000 years BC. It is the largest country in the middle east with 60 million inhabitants sharing Arabic as the common language. The population of Egypt is growing at a rate of about 2.8 percent annually. The majority of the population is concentrated in 6 percent of the land which has a total of 1 million km2. Most of the population reside on the two banks of the river Nile which extends from the south of the country in the borders with Sudan to the north on the Mediterranean representing a length of over 1000 km. The urbanization is about 45 percent with only three large cities of over 2 million population which are Giza, Alexandria in addition to Cairo which has a total population of about 12 million.

Egypt is considered one of the developing countries. Its gross domestic product has been 35 billion US dollars in 1992. The gross domestic product has been growing for the last decade at a rate of 2-3 percent. The GDP is divided mainly among industry and agriculture where the first account for about 40 percent and the later accounts for 15 percent. Egypt has a rather low per capita income on the international scale due to the ever increasing population rate which accounts for around US$ 610. The major sources of finance of the Egyptian economy reside in four main aspects. They include: the remittances of the Egyptians working abroad mainly in the Arab countries, the tourism sector, earnings from the Suez Canal and Oil. However, Egypt faces a number of economic problems that could be characterized by a wide trade deficit that is currently estimated to be around US$ 4 billion. Moreover, Egypt has a large international debt totalling around US$ 33 billion.

The decision making process at the strategic level addresses a variety of socio-economic development issues. It is characterized by ill-structured and messy issues, interdependent, complex, multi-sectoral, and operates within
a turbulent and dynamic environment (El Sherif and El Sawy 1988). Moreover, it involves conflict resolution (Gray 1988), crisis management (Mason and Mitroff 1981) and fast response. Therefore, the level of information needs for the design and development of information systems and/or decision support systems at that strategic level represents a challenge since the nature of information needs is mostly qualitative, lacks documentation, and gathered from an unlimited number of sources. This usually leads to an information overload to different decision makers (Zmud 1986). Hence, the information collected needs to be well integrated across multiple sources and should be well defined in terms of format and quality requirements that should be determined and related to the decision-making process (Mintzberg and Waters 1985).

Decision support systems, since their inception in the 1970s, were differently defined and conceptualized by vendors, researchers as well as academicians (Bonczek, Holsapple and Whinston 1981). However, there were general guidelines and interpretations defining them as computer-based systems that help decision makers confront ill-structured problems through direct interaction with data and analysis models. The literature show that the focus of research and applications of decision support systems is to a large extent on studying the individual and organizational decision processes. Decision support systems represent a set of opportunities directed towards improving the effectiveness and productivity of managers and professionals, boosting the competitive edge, and rationalizing the decision-making process within an organizational context. They aim at realizing the desire for accurate, timely and relevant information to help support various organizations to deal with an increasingly turbulent economic environment and stronger competition pressures. The focus during the last two decades at both the research and application levels was on the effect of decision support systems on the management’s role of various profit-oriented organizations. These systems were mostly related to issues such as organizational planning, organizational competitive advantage and administering client’s portfolios. In that respect, most of the literature on decision support systems developed during the last two decades were focusing on their uses in organizational contexts (King 1981). However, much less emphasis was given to their use in socio-economic development planning issues and introducing change into the society.

A literature review has shown that increasing demands have been placed on public administration in developing countries (Conyers and Hills 1984). The need for socio-economic and development planning have been behind the administrative reform programs implemented in these countries aiming at providing more accurate, timely and relevant information about the local needs and conditions (Rondinelli and Cheema 1983). This has also contributed to the rising demand for decentralization for development planning in developing countries. However, most of the attempts of decentralization for development planning were faced by lack of coordination, lack of financial resources, lack of technical infrastructure and trained human resources. Others were affected by the social and political structure prevailing both at the country level as well as at the local level.

In that respect, a number of developing countries have engaged in large information technology and computerization programs to promote administrative reform and to realize development planning at the local level. However, most of these attempts were using a top-down approach to understand the dynamics, functioning and causes of inefficiencies at the local level (Waema and Walsham 1990). The paper in this area tackled a number of issues such as the lack of human resources, financial resources, technical infrastructure with a focus on the socio-political factors involved. In the mid 1980’s, the government of India started a computerized rural information systems project known as CRISP, to promote decentralized rural development in the state of Gujarat (Odedra and Madon 1993). Here the paper builds on the findings of the CRISP project and explores more issues related to decentralization, administrative reform and development planning through the diffusion of information technology at the local level in Egypt.

There were a number of similarities between the CRISP and the GIDSCs project that relate to the availability of the technological infrastructure build-up, the information infrastructure development, the problems faced in data collection, compilation and processing. However, there was also a number of differences that will be highlighted more in the paper and that relate to the continuous participation of both the governorate authorities and the federal government, the full coordination and the important role played by the Cabinet IDSC and the continuous upgrading of the training and human resources development programs and the development of different incentives schemes to improve organizational performance and staff satisfaction. To sum up, the CRISP project was very influential in setting guidelines for information systems practitioners in developing countries in how to effectively mobilize the available resources for socio-economic development.

The study of the GIDSC as a new form of information-based organization considers the impacts of the implementation of information technology at the local level (Robey 1987). Unlike many researchers who claim that the impacts of information systems sought universal patterns of change (Leavitt and Whisler 1958), this paper shows that the introduction of information technology at the local level in Egypt has had varying impacts that relates to centralization and decentralization of authority, job responsibilities, and development planning (Markus and Robey 1986).

The use of information technology and their impacts on the organization are often affected by social and political constraints (Straub and Wetherbe 1989). The conditions in local administration in Egypt, the power over information and the distribution of authority and responsibilities between the federal government and the local authorities reflected political differences between participants of the decision making process and advocated bargaining and negotiation in conflict resolution. The paper defines information systems as having an effect on the distribution of power by virtue of their impact on information: a vital political source (Waema and Walsham 1990). Information systems increase the power and influence