# E-GOVERNMENT IN DEVELOPING COUNTRIES: EXPERIENCES FROM SUB-SAHARA AFRICA

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Abstract: This article addresses the different institutional and cultural contexts which must be considered when implementing e-government in sub-Saharan-Africa. Although e-government is a global phenomenon, simply transferring ICT solutions and related organizational concepts from developed to developing countries seems inappropriate. Undoubtedly, e-government has the potential to reduce administrative and development problems. However, it is obvious that compared to developed countries, additional effort is necessary when implementing e-government. Especially compared to developed countries, the different initial institutional, cultural and wider administrative context must be considered to avoid unintended effects. It is therefore oversimplifying the issue to merely state that e-government projects fail in developing countries and in specifically in Africa. Although e-government in developing or, more specifically, in African countries lags far behind developed countries, this should be considered more as a state failure or lack of capacity in general. In particular, the different administrative contexts and rationalities must be taken into an account when implementing e-government projects and strategies. Therefore, especially for African countries, a more context-oriented approach seems to be a more promising route to successfully implement e-government. The result of this approach may not seem ambitious from a western perspective but could contribute to the resolution of real-life and development problems in African societies.

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## I.  INTRODUCTION

E-government has become a global phenomenon. Not only industrialized countries but also developing countries have been initiating e-government strategies and projects, typically with support from donor organizations such as the World Bank or bilateral donor organizations. Under the label "Information and Communication Technologies for Development" (ICT4D), these organizations are stressing the relevance of Information and Communication Technology (ICT) in general and e-government in particular as a way to promote development and reduce poverty. Expectations are high: e-government in general is seen as improving and strengthening the performance of government and public administration – and an efficient and effective state administration is indisputably a necessary prerequisite for economic and social development.

This issue is especially relevant for the countries in sub-Sahara Africa, where public administration is particularly characterized by inefficiency, limited capacity and poorly trained personnel. Doubtlessly, one could say that e-government can, in general, contribute to solving administrative problems. But because e-government and its related organizational concepts were developed in industrialized countries, it should not be assumed that this concept is easily appropriate for developing countries. Thus, when introducing e-government in sub-Saharan Africa, it is expected that different and more far-reaching efforts and considerations will be necessary than in developed countries. This article will therefore examine the opportunities, but also the risks, for e-government in a developing-country context, using the example of sub-Saharan Africa. The questions which will be addressed are: what the specific potentials of e-government in developing countries and which conditions must be taken into consideration when implementing it there?

Until now, these questions, as they apply to developing countries in general and Africa in particular, have hardly been discussed in the academic debate. Only a few academic articles addressing e-government in developing countries exist; these were referenced for this article. One of the authors working in this field is Richard Heeks, who has published a working paper specifically addressing Africa (see Heeks, 2002). Instead, this subject is discussed more in the policy and strategy papers of various donor organizations, such in the framework of the 2000 UN Millennium Development Goals (United Nations - General Assembly, 2000). However, their perspective is often rather unreasonably optimistic (see for example: UN, 2005). In general, the discussion about the effectiveness of and prerequisites for e-government in developing countries is still in its infancy. Therefore the purpose of this article is not to test hypotheses but to explore, clarify and analyze the implications of e-government in developing countries. Because of the limited academic debate, in addition to existing literature, approximately twenty interviews with employees of development organizations and representatives of the scientific community were conducted. Furthermore project reports; strategy, status and working papers; and the internet sites of development agencies and African government and administrative organizations were analyzed. In addition, knowledge gained from workshops attended by development experts and practitioners, conducted by the author at the Sadat-Academy in Egypt and Cairo University in June 2006, in November 2005 in Bogota, Colombia, and in December 2006 in Dubai, is included in this article, especially in chapter III.

This article is structured as follows: to begin, e-government with and its associated organizational concepts will shortly be outlined, then the current situation of its implementation in sub-Saharan Africa will be discussed or illustrated and the need for a contextual and cultural approach when implementing e-government in developing countries will be highlighted. Next, the impact of e-government in the context of a developing country will be discussed, so that potentials, the risk of non-intended effects, and broader conditions

can be addressed. Innovative cases from sub-Saharan-African countries will then be outlined in some detail, so as to provide specific examples of the potential and implementation requirements of e-government projects in a developing-country context. In the conclusion, consequences will be drawn and policy recommendations relevant for development cooperation will be made.


## II.  E-GOVERNMENT IN THE DEVELOPING COUNTRIES CONTEXT


### 1.  Elements and Characteristics of E-Government

Governments worldwide are working on implementing E-Government. These efforts are not only focused on the question of digitalization in itself, but also on the reorganization of public services and participation processes based upon new ICT. The term "ICT" is understood primarily as internet technologies and internet-based applications, but importantly also includes network technologies, data bases and electronic workflow systems. Through these technologies it is possible to achieve temporal and spatial independence and flexibility, because data, software functions and processes are ubiquitously available. This means that work processes as well as public participation processes can be improved or redesigned. Thus, e-government relates not only to the provision of public services (eAdministration), but also directly to questions of democracy, because it makes new participation forms possible.  This can include new information, consultation or communication possibilities (for example, in regard to proposed legislation) or participation in planning processes.

However, the main focus of e-government is the reorganization of service processes and citizen services. Correspondingly, the separation between front and back offices has become the most favored e-government service structure (see in detail: Lenk, 2004, Lenk, 2002). The front office handles specific office processes or service components, with a focus on certain target groups (Lenk & Traunmüller, 2001, pp. 64). The back office, which can spatially be separated from the front office, is the place where decisions are made, as well as where IT functions such as data bases, applications, signature infrastructure are located or take place. The institutional separation between the front and back offices not only requires a readjustment of working processes, but leads to or requires numerous institutional changes (see: Schuppan, 2007). Especially important is the fact that this makes it possible to reduce or eliminate the institutional fragmentation of public administration, because citizens can have access to public services from one location. As a result, through the separation between front and back office, it is possible to simultaneously realize efficiency and individualization or customer orientation which wasn't possible without new ICT.

One of the most popular examples of the comprehensive implementation of an e-government service architecture is the Australian Centrelink Agency, through which citizens can choose between different access points such as a call centre, a web site or physical government office in their local area to gain access to public services. (see: http://www.centrelink.gov.au). This means that citizens no longer need to travel to different public offices, but can handle all contacts with a public administration at one access point – in whatever form they wish. Examples of business-oriented services which implement new service architecture also exist, such as the US government's portal for small and middle enterprises (http://www.sba.gov). Structured around stages of a business' life cycle (e.g., starting the business, export/import or closing the business), it is possible to access appropriate public and private services. This includes among other things, the on-line registration of businesses and the participation in online business courses.

In summary, the basic organizational principles which are related to e-government are: multi channel distribution, the separation between front and back offices; and processes reorganization which avoid media discontinuity. These principles are relevant to new participation forms as well as to the provision of public services. It is not only a question of providing services via the internet independently of space and time, but of changing the underlying processes, decision-making structures and procedures using ICT to raise the overall efficiency, effectiveness and legitimization of administrative structures and decisions. The extent to which e-government is implemented in sub-Sahara Africa is examined in the following chapter.

## 2. Stages of Implementation in Sub-Saharan-Africa

An exact ranking of the Sub-Saharan African Countries with regard to the implementation of e-government is difficult, because the countries of this region are rarely mentioned – with the exception of South Africa – in relevant studies. This is in no small part due to the fact that, to date, Sub-Saharan Africa has barely registered on the e-government radar screen and thus hardly any measurable e-government data is available. Relevant e-government studies have been conducted especially by large consulting firms (see: e.g. Accenture, 2006, Capgemini, 2006), by international organisations (see: e.g. UNDESA, 2005) and also by some universities (see: e.g. West, 2005).

In any case, not only do these studies provide little information about the state of e-government implementation in developing countries in general or in sub-Saharan Africa in particular, but they often show also considerable methodical shortcomings (see: Bannister, 2007, Janssen, Rotthier, & Snijkers, 2004). Thus, e-government is reduced, for example, to the extent to which public service processes are conducted online. Actual usage levels or the impact of electronic services are hardly measured. Organizational changes relevant to e-government, such as the reorganization of procedures and processes, are barely addressed as a central theme or are only illustrated using randomly selected "best practice cases".

In spite of the mentioned methodical shortcomings, the studies provide some information concerning the general state of development of e-government in sub-Saharan Africa. It can be stated without a doubt that, from a global perspective, the countries of sub-Saharan Africa are particularly underdeveloped in the implementation of e-government, with the exception of South Africa. In general, in these countries is internet access not only scarce, but e-government services are also rare, although some advanced individual cases can be found (see: chapter IV).

To estimate the extent of the implementation of e-government in sub-Saharan African countries is likewise exceedingly difficult, as only a few benchmarks exist and these are exclusively focused on internet services. According to the so-called web measure index from the UN's worldwide E-government Readiness Report, countries such as Mauritius, South Africa, Uganda or Ghana are in the upper third, while countries such as Zambia, or Central African Republic generally do not statistically register on the scale (UNDESA, 2005, p. 76). These statements were also confirmed by the number of projects mentioned on the web page of the Institute for e-government (www.ifg.cc), which provides news about e-government projects worldwide.

Detailed Internet searches which were carried out in January, 2007 also confirm the insufficient state of e-government implementation in sub-Saharan Africa. Although, e-government strategies exist in many countries (see: e.g. The Republic of Ghana, 2003, Republic of Kenya - Cabinet Office - Office of the President, 2004, Republic of Uganda, 2004); they nevertheless often repeat general e-government rhetoric and say little about the

actual state of implementation. Other web analyses show that only ministries and some central authorities have web sites – in Ghana for example the presidential office, the harbor authority (http://www.ghanaports.gov.gh/) and the tax authority (http://www.irs.gov.gh). The provinces and the districts do not offer their own web sites. In Ghana there is only one central "district portal" (http://www.ghanadistricts.com/home/).

In considering of the present level of development of e-government in sub-Sahara Africa, the question of which factors influence the spread and implementation of e-government becomes even more relevant – meaning that existing administrative preconditions and environmental factors play an important role.


## 3.  Initial and Environment Conditions of Development Administrations

Because e-government is a concept which originated within the context of the administrative problems of industrial countries, it is especially necessary to address the question of different administrative situations and their environment. Otherwise the potentials, effects and requirements of e-government can not be sufficiently considered (see: chapter III).

A low-performance public administration with correspondingly low resources is a typical problem in African countries – and in many other developing countries. It is characterized by an often rigid centralism with neo-patrimonial leadership style, a weakly developed local administration, corruption, high levels of over-staffing with low pay scales as well as unmotivated and unqualified staff (see for example: Wescott, 1999, p. 146). Therefore, all-in-all, public administration in Africa is believed to be inefficient and ineffective, so that the implementation of political will is hardly possible.

No consensus exists in respect to the causes of these administrative deficits. To some extent, they are believed to be a result of exogenous factors (e.g., colonial legacy, restrictions imposed by of international donor organizations) and partially of endogenous factors (e.g., securing of power by political leaders, cultural factors) (Reichard, 2004). A different administrative culture is also always citied as an important cause of these deficits, which expresses itself in the form of other values and orientation patterns and which especially complicates administrative change (see: Illy & Kaiser, 1985, p. 24). In particular, the neo-patrimonial administrative culture is typical of Africa, under which personalized power structures based upon of patron-client-relationships exist. Positions in the state apparatus are not filled based upon performance, but on mutual relationships between patrons and clients (Haynes, 1996, p. 29). Rent-seeking behavior is also common among bureaucratic elites (see: Elsenhans, 1987, pp. 73), which, in view of widespread traditional ethnic ties and associations and tribal loyalties is seen as a firm component of African culture (see: Haynes, 1996, p. 113). The concept of administrative culture is therefore problematic as it is difficult to operationalize (see: Pitschas, 1992), so that many considerations can only be based upon on plausibility. Nevertheless, is certain that the different administrative culture in Africa must be taken into consideration.

The literature and development experts point out that, in addition to pre-existing administrative conditions, including the administrative culture, other environmental factors influencing public administration play a special role for reforms (see: Turner & Hulme, 1997, p. 17). This was already pointed out in the 1950s/the 1960s, as administrative cooperation became increasingly important within the context of the development assistance. A prominent scholar who advocated the special consideration of the administrative environment in the 1960's was the American Frederick Riggs. He developed the so-called "Prismatic Society" model to grasp the different degrees of functional differentiation among institutions in developing societies. He also explicitly argues that environmental factors need to be taken

into consideration, especially when transferring administrative technologies (Riggs, 1960, p. 6): "... administrative activities [are] strongly influenced by non-administrative criteria. If we seek understanding of administration in a prismatic society, in other words, we need to study many non-administrative matters." Even if Riggs' model is often criticized because of its deterministic view of the relationship between the environment and administrative organization (see: e.g. König, 1986, p. 40), today a consensus exists in academic and among practitioners in the field of development cooperation that economic, political-administrative and cultural conditions must be taken into consideration as much as possible when transferring or implementing new administrative techniques (see already in detail: Riggs, 1970, p. 78, Adamolekun, 1976, pp. 257).

Experience in the transfer of public management instruments also confirms the importance of specifically taking environmental factors extensively into account (see in detail: Schick, 1998). For instance, it is clear that the contracting out of public tasks – one of the central elements of new public management (NPM) – is hardly possible. Because many developing countries only have weakly formalized and functioning market systems, economic systems and judicial systems, suitable public services cannot be cannot be bought.

Experiences based upon the cooperation between different public administrations have already shown that, also in the area of e-government, a simple transfer of concepts is not sufficient. This is especially believed to be the case when organizational changes, in addition to the mere implementation of IT support for existing structures, are attempted. Certainly, when examining the question of to what extent e-government is suitable in the context of the problems of African administration, the institutional starting situation, specific administrative-culture and other environmental factors such as economic, social or political-administrative aspects must be taken into consideration – and can help explain the success or failure of e-government reforms.

## III. EFFECTS OF E-GOVERNMENT IN THE DEVELOPMENT CONTEXT

## 1.  The Potential of E-Government for Developing Countries

Without a doubt e-government offers numerous opportunities to improve administrative problems. In view of the present administrative problems in many African countries e-government offers improvement potential in the following areas: the general provision of public services, statistical and information processes, finance management systems and tax systems, public participation and formalization. These areas will be explained and further elaborated below.

In the area of public service provision in the African context, it is first a matter of providing and setting up the processes and services necessary for state activities under the rule of law. Nevertheless, the necessary data are often non-existent or completely outdated – for example land registers, residential data or geographic data –, so that services cannot be provided at all. As a result, permit processes – such as building permits or property acquisition – can frequently last for several years and often no services can be received without "acceleration money". In addition, citizens, especially those living in slum areas, often have no birth certificate at all (see for example: Akther, Onishi, & Kidokoro, 2007, p. 41). All of these problems have immediate consequences for development objectives: Because such permission processes last very long or access to public services is non-existent, slum areas or informal settlements sometimes expand rapidly – with considerable consequences for the environment, public safety and for the public budget. Access to public

services can be facilitated, for example by kiosk systems with voice recognition – a system which has spread quickly in rural regions of India (see for example: Sharma, 2004).

Not only citizens' services, but also statistics processes and information processes not directed at individual citizens have a fundamental importance to the state's effectiveness. Therefore, it is a matter of obtaining information about different fields of activity, such as data about economic activities, medical data or information about processes in public administration. A state collects such data and evaluates and interprets them so it can develop policies. Consistent and most importantly, up-to-date data are a key requirement for suitable developing planning. In most sub-Saharan African countries, data relevant to development are hardly available in the quality required. IT applications make it possible to electronically and often automatically generate statistical reports, considerably reducing the effort for the party obligated to produce the reports. In sub-Saharan Africa, for example, the UN is especially supporting the establishment of such statistics through its own projects (www.devinfo.org). However, often there is simply not also enough current information available – for example market prices, public service indices and so on – which individually would have a considerable developmental impact.

The use of ICT also offers particular potential to improve financial and taxation systems, especially because governments in sub-Saharan Africa often lack a well functioning tax administration and finance administration system (see chapter IV.2). The introduction of integrated financial systems with appropriate databases offers the possibility to better control financial flows within the state. Thus, for instance, the spending behavior of decentralized or (partly) autonomous administrative units (agencies) can be also supervised better, which simultaneously reduces the possibilities for manipulation and corruption. The introduction of integrated tax systems makes it is not only possible to control expenditures, but also to better supervise taxpayers, increasing internal revenues. This is significant, because sub-Saharan African countries in particular often generate little Inland Revenue because authorities are unable to enforce existing tax laws, meaning that basic state functions can only be insufficiently carried out or not at all. Because of weak income tax systems, revenues are often generated from (exorbitant) export duties or other tax sources, often constraining economic development and increasing poverty.

Beyond service delivery, ICT can use make public administrations more democratic and responsive through new participation forms (e.g., via the internet), also contributing to legitimization. In many countries it is already possible to participate in processes such as the development of land-use plans or budgetary decisions. Good starting points for such efforts often exist at the local level in particular, which is responsible for such planning decisions. Also drafts of legislation are also available on-line in many countries, sometimes including the ability for citizens to discuss them. Such participation processes represent the chance for more outward responsiveness and transparency. Decision-making processes become easier to trace and understand through digitalization (so-called track and tracing function) which, considering the very low trust of the African population in their public institutions would be particularly valuable.

Last but not least, when implementing e-government it is important not to overlook the fact that the digitization of service processes also requires a minimum of formalization, which may also serve as a mechanism to impose a certain level in order to formalize administrative work. Informal, incomprehensible administrative behavior which are not subject to controls are one of the essential problems of African administrations, because this contributes to unequal treatment and corruption. In this context a certain potential can be also expected from electronic procurement. In such instances, it is not only about combining purchases within an administration and thereby reducing expenditures, but also of reducing the possibility for manipulation in the whole tendering process through standardized procedures.

To summarize, it appears that e-government offers a variety of possibilities to contribute not merely to more efficient and more effective administration but can have also concrete development impacts. Especially those projects should stress and executed through donor organizations. Assuming that many processes, registers and data do not exist at all or only to a limited extent, these can be built up to be conducive to e-government solutions from the beginning. Nevertheless it should be taken into consideration that realization of the potentials indicated is especially risky in the context of pre-modern African administrative institutions, not least because of the special administrative culture which exists there.

## 2.  The Risk of Unintended Effects

Because the use of IT is determined by the interests in power and takes place in the context of pre-modern as well as authoritarian administrative cultures and state structures, risks are unavoidable when implementing e-government; in such a setting, unintended consequences are to be expected. This is due to the fact that ICT as such has much less of a direct impact upon the organization, but instead its effect is utilized and transmitted by political actors whose rationalities reflect power interests. Thereby, the IT also has an effect as an "attractor" on decision makers (see: Van de Donk & Snellen, 1998, pp. 9 ), so that e-government potentials are also truly implemented in new service structures. Solutions are implemented because the technology enables it. The Egyptian government, for example, now provides extensive information about cabinet meetings online, as well as extensive online public services (http://www.egypt.gov.eg/english/) – something which was still inconceivable at the end of the 1990s, in light of Egypt's authoritarian and quite-inward oriented administrative culture (Schuppan, 2003).

E-government can promote decentralization through the use of new forms of networked collaboration between different bureaucracies and authorities, – something which is closely compatible with the goals of contemporary development policy.  However – networking different government organizations can not only be used to implement more efficient and effective forms of work, but also to exercise *more* control of decentralized units. This would mean that new e-government solutions could reverse the decentralization efforts of the last years, leading to the centralization of decision-making and increased concentration of power. The implementation of policy would be increasingly shifted to decentralized units, but political and administrative decision-making would remain centralized. Aggravating this problem is the fact that African bureaucracies tend to be highly insulated. Clientelism and neo-patrimonialism in particular promote vertical and hierarchical communication structures, hindering the formation of new networked processes as well as decentralization. As a result a more centralized, but not necessarily a more effective or more democratic administrative structure could emerge.

E-government could also lead to more corruption rather than reducing it. Although process transparency and reducing the autonomy of offices which deal directly with citizens could reduce corruption, new sources and channels of corruption could also arise, in particular through the delegation of front office functions to third parties, so-called intermediaries. If such intermediaries offer bundled public and private services, this would also create additional vulnerabilities for corruption. At the same time, geographically distant back offices could develop their own bureaucratic culture, to the extent that competent decision-making is reduced and the responsibility for decision-making is increasingly blurred. New corruption risks also could arise due to the fact that e-government increases closeness to the private sector. Cooperation with the private sector in the area of IT and process outsourcing

especially poses a high risk of corruption and also has an anti-competitive effect in the market for IT services, contributing to increased costs.

Another risk when transferring e-government organization principles to African administrations is to associate this transfer with an oversimplified view of efficiency. The personnel expenditures of African administrations amount only to one tenth of those in western industrial countries. Substituting staff with IT could lead to a less efficient administration. Indeed, African administrations have an overall efficiency problem, but just as important are the problems of effectiveness and legitimization which could easily be overlooked. Therefore, when implementing e-government in the African context, it is especially important to find the right ratio of costs to benefit. It may be that guaranteeing basic state functions and stability is preferable to a narrow focus on cost reduction. In other words, African administrations must expand their service spectrum using the personnel available while improving the quality of their services, thereby achieving an improved cost-benefit ratio.

In summary, it is apparent that due to the differing administrative characteristic and culture in Africa, a simple transfer of e-government concepts would be neither sensible nor successful; it is therefore necessary to take additional factors into account. Otherwise there is an inherent danger that IT solutions may be merely implemented in existing organizational structures and abused by the bureaucratic elites for their own interests. The result could mean then that e-government leads to more corruption, centralism and hierarchy and less efficiency.

## 3. Relevant Environmental Factors

As indicated in chapter II.3, in addition to existing administrative factors, non-administrative basic factors are also important. Political-administrative, infrastructural, demographic and social as well as economic factors are especially relevant (see: Banerjee & Chau, 2004, pp. 36), in encouraging or hindering e-government. In the following, these basic factors are outlined in depth and their relevance for the implementation of e-government in Sub-Sahara Africa is explained.

*Political-administrative system*

The political-administrative category includes the general functional deficits of political-administrative systems as a whole, for example the low level of democratization. In many African countries military coups and civil wars make administrative reforms very difficult, if not impossible.

Another important factor is the experience which a state has made with administrative reforms. Observations of e-government reforms have shown that especially those countries, such as Australia, New Zealand or UK, which have undergone organizational changes in the direction of public management-oriented reform are better prepared to implement e-government than countries which do not have such experience. This is especially relevant for African countries because administrative capacities are weakly developed in general and management deficits cannot be compensated for by the use of technology. Some countries in sub-Sahara Africa such as Ghana or Uganda have already had some experience with public management-oriented reforms. For example, a main focus of the Ghanaian reform efforts was the creation of semi-autonomous agencies (Agencyfication): for example, a water authority was created which is now considered to be a prime example of efficient water management in the region (Mutahaba & Kiragu, 2002, p. 63). Nevertheless, these management reforms have

not reduced staff with lasting effect, decentralized the administration or to changed the administrative culture.

In addition, the values, attitudes and rationalities of the population in respect to the political-administrative system also play a role when implementing e-government, particularly as patterns of administrative action can feedback into the behavior and attitudes of the population: Thus, for example, the danger exists that online services will not be accepted by the population, because they will lose the ability to negotiate with government officials. This was illustrated by a participant of an e-government workshop in Cairo using the following example: „If I have to pay a speeding fine or for wrong parking, I do not pay via internet, but go personally to the administration, because I am able to argue my position and reduce the punishment by at least half." This example shows that deficiencies in law enforcement may also result in corresponding behavior by citizens, hindering the acceptance of e-government services.

*Infrastructures/Connectivity*

This factor includes internet access and the existence of other basic infrastructure. Not only are internet access rates in many African countries below five percent, but especially in many rural areas electricity is not available or is only available for a few hours a day (see: Jensen, 2003). For example, the number of internet users and available PCs per 100 inhabitants in Ghana equals 1.72 and 0.52 respectively. It is not uncommon that the costs of internet access may be equivalent to 80 to 90 percent of income. For example, the monthly subscription fee for unlimited access and one email account in Ghana is about US $30 (Frempong, Esselaar, & Stork, 2005, p. 101).

To mitigate these access problems, for example, with the support of the Indian government the Ghanaian government has developed a concept for so-called Community information Centers (CIC) (see here and in the following: Ministry of Communication Ghana, 2004). The CICs are equipped with PCs connected to the Internet, printers, fax machines, photocopiers, phones, televisions and radios. In addition, the CICs also serve as libraries and provide other information, for example, for farmers (e.g., information about prices of agricultural products), potential entrepreneurs (e.g., micro loans) and students (e.g., information about scholarships).

Even for those who have internet access, high levels of inequality exist: Studies show that, especially in Africa, the younger educated classes and men use the internet for frequently, so that in the result could be a one-sided concentration, leading to the (further) systematic exclusion of the lower social classes and in women in particular from online services (see for example: Nakafeero, 2005). However, mobile phone penetration has increased by double-digit amounts in many countries of sub-Sahara Africa (see e.g., to the use of mobile phones and Internet in Ghana: Slater & Kwami, 2005; or to Kenya Kirui & Muhatia, 2005; Sudan, 2005, p. 94) something which should be taken into consideration when selecting access channels for e-government services.

Nevertheless, the present e-government discussion is still often limited to the advantages of providing on-line services. Due to the problem of internet access, such a perspective is especially poorly suited to the less developed countries in sub-Sahara Africa (see: Heeks, 2001a, p. 24). Therefore so-called intermediaries are especially worth consideration in the developing country-context (see: Heeks, 2001b, p. 9).

*Demographic and social factors*

Demographic and social factors are relevant because they are decisive in respect to the acceptance of online services. Age, gender, education, income distribution, language diversity and the percentage of the population living in the rural areas are decisive factors in user behavior and the acceptance of online services.

Therefore, the percentage of the population living in rural areas is especially relevant, because poverty and illiteracy in rural areas is higher. Thus additional considerations are necessary when providing access to e-government services. Different authors have pointed to the fact, when compared to urban areas, in rural areas additional training is necessary to overcome access problems (Sorj & Guedes, 2005), because poverty in rural areas is higher than that in urban areas and infrastructure is less developed. In 1977 Michael Lipton developed the concept of "urban bias" between urban and rural areas. (see: Lipton, 1977). Lipton indicates that the main divide in peripheral countries is in particular between the cities and rural areas. The corrupt state class (see: Elsenhans, 1987, p. 78) prefers to expend scarce resources on urban infrastructures and prestige objects instead of ensuring basic services for the rural population.

To gain a maximum developmental effect from e-government, it is especially important to offer services to poor population groups (so-called „pro-poor-services") – something which requires additional effort. First, specific target groups within the poor population must be identified. For example, poor farmers require other services and information than the poor urban population. Typologies must then be developed for these target groups and services are offered which fit these typologies, thereby making it possible to address the specific problems of these groups. Thus, for example, the poor rural population lacks information about the sales and distribution of their agricultural products, therefore a significant benefit is to be expected merely by the provision of relevant information.

It is also important to consider the language diversity which exists in Africa when setting up services. Especially in rural regions of Africa, tribal languages are widespread, whereas English largely cannot be read or understood (see: moreover in particular: Kaaya, 2004; Omosa & McCormick, 2004). Although English is the official language of Ghana for example, 70% of the population speaks one of the tribal languages which are also used in neighboring countries. Nevertheless, the websites of the Ghanaian government are only available in English, meaning that a large share of the population is not reached. Thus in e-government projects, special considerations must be made in respect to the language which is to be used when offering services to specific target groups.


*Economic development*

The level of economic development as a whole is also relevant, because establishing e-government structures is usually associated with high costs. For example, at present approximately one third of the Ghanaian budget is financed by foreign donors (BayernLB, 2005). Furthermore, the per-capita income is so low in most African countries that the population cannot afford internet access. This trend is aggravated by often insufficiently liberalized telecommunications markets (see: Osiakwan, 2004; GHP, 2004) which barely allow for competition, so that access costs are many times higher than in industrial countries.

Also there are only a few private IT service providers, an important requirement when outsourcing and implementing e-government services. For example, are suitable providers for application software available, or do capacities to develop services and software have to be built up within government organizations themselves? The existence of external service

providers and general economic liberalization are essential preconditions for e-government, especially in regards to technical implementation.

In summary, basic conditions in sub-Sahara Africa differ fundamentally from those in industrial countries. The argument is that e-government in developed countries is better able to produce the intended results, because of more favorable environmental administrative conditions. Therefore, particularly in developing countries, in addition to the different administrative situation,  wider societal conditions must be considered. Thus, the argument that e-government projects generally fail in Africa is oversimplified and to some degree points to the neglect of these different environmental factors. Nevertheless, just because all conditions are met does not in itself ensure successful implementation. For example, if there is not enough political will and/or technical expertise, even good environment circumstances can not prevent project failure, as experiences in many industrial countries have shown.

## IV. EMPIRICAL FINDINGS

In this chapter three cases of noteworthy e-government projects in African countries are illustrated: Ghana, Uganda and Kenya. As an orientation aid for the case understanding, the environmental conditions, the institutional and cultural administrative situation as well as the potentials and risk of e-government have been summarized in the following figure.
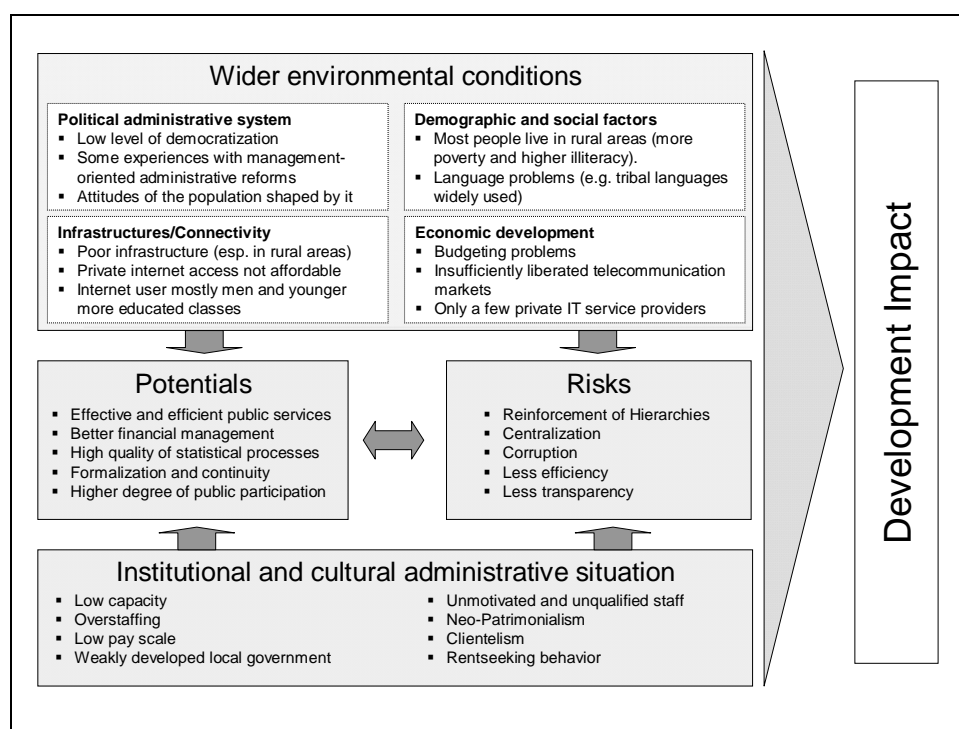


The selected cases serve to tangibly illustrate the development potential of e-government under the above outlined conditions which exist in sub-Saharan Africa. At the end of this chapter, these cases will be analyzed in a comparative perspective. In all cases, the objectives, the solutions, the method of implementation and the results of each project are described.

Data for the cases were collected through semi-structured in-depth interviews with development experts conducted over a two-month period in 2006. Data were also collected

from secondary sources such as websites, government reports, newspaper articles and government policy documents.

## 1. Ghana Community Network – GCNet

Since end of the 1990s, it has been a goal of the Ghanaian government to develop the country as an important transit country for the landlocked countries of West Africa. To do so, the current bureaucratic system of duty collection, which had considerably delayed goods traffic, had to be modernized (see here and in the following: De Wulf, 2004, 2005). Previously, bureaucratic procedures meant that importing and exporting commodities could take up to four weeks. For example, exporting a shipment required making thirteen copies of ship papers which the exporter had to distribute personally to authorities (often 25-32 different offices) to get the required permissions. This procedure was not only extremely ineffective, but contributed considerably to corruption, because many of the offices involved also expected "acceleration money", which was usually paid.

With the introduction of a new IT system – the GCNet – all customs affairs which are necessary for the import and export of goods can, to a very large extent, be performed electronically. The GCNet was first used in October 2002 at the Kotoka international airport and was later also implemented in Ghana's ports. GCN has two central components: the so-called TradeNet and the customs management system. The TradeNet is a data exchange platform for sending messages and information concerning trade to organizations involved in the transaction. The customs management system automates the issuance of custom declarations as well as the management of import and export licenses.

Ministries such as the Ministry of Trade and Industry (MoTI), as well as the Bank of Ghana and the Customs and Excise Preventive Service (CEPS) are integrated into the system. From the private sector, the Ghanaian shipping council, the shipping companies, cargo enterprises and banks are involved. For the data exchange and communication between the GCNet and the CEPS, a broadband network especially created for the system is used. (see: http://www.ghanatradenet.com/aboutus/organisation.asp).

Originally the introduction of the system was planned for November 2000. Elections in December 2000 delayed the project when the opposition won the elections and the new Minister from the MoTI was not as supportive of the project as his predecessor. The CEPS management implemented the necessary procedural changes with great hesitation; CEPS employees opposed the changes because it was clear that the new system would increase process transparency and formalization, reducing the possibilities for them to generate "additional income". Other project delays were caused by delays in the implementing legislation. By July 2006 the system was implemented in six locations – among them the most important port in Ghana, Tema. A gradual implementation at all border crossing points is planned. Despite the difficulties implementing the system, acceptance of the project was supported by the fact that the system was based upon a similar system in Mauritius, making it a successful example of a south-south cooperation. Furthermore, implementation of the project had been personally and actively accelerated by the Minister, ensuring political support for the project.

Implementation and operation of the project is through a Public Private Partnership (PPP) founded in 2000, consisting of a Swiss investor (60%), the Ghanaian CEPS (20%), the Ghanaian Shippers' Council (10%) and two local banks (5%). A total of 7 million US dollars were invested for the implementation and the operation of the system. The PPP has concluded a 10-year service contract with the MoTI to contract for the following services, among other things: installation and operation of the system, construction of the infrastructure in the CEPS,

and the training of employees and users. For every customs declaration executed via the system the PPP receives a fixed sum from the commercial ministry.

As a result of the project, the import and export of goods could be substantially accelerated by the system, not just because the interactions between different government offices and contact points for importers were computerized, but also because they were reduced in number. For example, importers no longer need to personally visit the different permitting institutions and authorities because most processes can be executed fully electronically. In the CEPS, the verification of documentation was reduced to fifteen minutes and the payment of the duties as well and their confirmation by the bank occurs within ten minutes. Goods at the airport are dispatched within one day and in the harbor within three days. The idle time of the ships and demurrage have been reduced substantially. Since the introduction of the system, tax and duty revenues have increased by up to fifty percent (see: Sudan, 2005).

## 2.  Integrated Tax Administration System in Tanzania – ITAX

ITAX is an integrated tax management system which the Tanzanian tax authority, the Tanzanian Revenue Agency (TRA), has introduced with the support of the German Agency for Technical Cooperation (GTZ). The project was initiated in 1998 and the implementation should be complete in 2007. The reasoning behind the introduction of the system was that despite the organizational restructuring of the Tanzanian tax authority in the 1990s, neither the tax income nor efficiency increased. Therefore, the objective of the project was to build up a comprehensive electronic tax system and to make an integrated data exchange between citizens and public administration possible, so that processes are supported entirely electronically.

The realization of the project occurred in three phases: In the first phase, from July 1998 to June 2001, the administration was equipped with computers, project employees were trained, processes for income and business taxes were analyzed, and the software was developed. In the second phase, from July 2001 to June 2004, software was primarily programmed. In parallel, beginning in February 2002, the system was introduced in all tax regions of Tanzania. Because implementation was delayed, a third project phase followed in which it was planned to introduce the system in all regions of the country by June 2007.

Implementation was managed by a ten-person task force at the tax authority, which included five IT experts and five further employees responsible for the management and user training. Four permanent working groups were created to provide support and maintenance of the system and if necessary, to modify it.

Over a nine-year period the costs for the project, including software development, totaled nearly six million Euros. As a result of the introduction of ITAX, transparency and tax revenue have increased while processing time and the possibility of fraud have been reduced. Therefore, the citizens and businesses can be also be more quickly held liable if they provide incorrect information to the tax authority.

In addition, the tax project has also contributed to lower corruption, because citizens no longer have to directly contact the responsible back-office employee, but instead can go to one-stop tax offices which were also created as part of the project. Another contribution in the fight against corruption is that tax audits and returns are carried out by two or three employees of the TRA, instead of only being performed by one employee (http://www.u4.no/projects/project.cfm?id=421).

## 3.  Anonymous Online Corruption Reporting in Kenya

In Kenya a new system for the on-line reporting of incidents of corruption was introduced in mid of October 2006. The so called Business Keeper Monitoring system (BKMS™) should make it possible for every citizen to anonymously report incidents of corruption cases, which can then be efficiently investigated. The objective of the introduction of the BKMS™ was to increase the number and quality of reports of  corruption offences.

The rationale behind the project is the active fight against corruption throughout the country which was announced by President Kibaki upon his assumption to office. In addition, a corruption representative was created in the Ministry of Justice with the rank of Assistant Secretary. He resigned in 2005 due to numerous threats upon his life. In 2004 the Kenya Anti-Corruption Commission (KACC) was founded, which is an independent authority responsible only to parliament. The KACC examines cases of corruption upon its own initiative and on the basis of reports from the population, as well as from authorities. In 2005 the KACC received nearly 6000 reports, about 1000 of which were treated as corruption cases. 1500 reports were complaints about the behavior of public employees; the KACC is recommending the appointment of an ombudsman to address such cases.

Previously, corruption cases could be reported personally in the office of the KACC, by mail, phone or fax – without the protection of anonymity, however.  Additionally, an online report could be filed either via the portal of the Kenyan government (www.kenya.go.ke) or directly via the KACC portal (www.kacc.go.ke). Confirmed reports of corruption are published on the portal, including the government office involved.

To make anonymous reporting of corruption cases possible, the new Business Keeper Monitoring System (BKMS™) has created a specially secured space on the Internet. This also makes it possible for a whistleblower to communicate with the corruption investigators of private businesses or the police without revealing his identity. The process of the corruption report and corruption investigation is as follows: To make an announcement, the whistleblower registers on the system. He or she can choose any login name and password. Once the whistleblower makes the report, the corruption investigator is informed so that he can log in the system. The corruption investigator can read the report, but it cannot be traced back to the whistleblower. If the corruption investigator needs further information to pursue the case, he can send the whistleblower messages via the system. That means that all communication, including further inquiries, occurs only via the BKMS™, protecting the anonymity of the whistle blower during the whole process.

The implementation of the system was carried out by the GTZ, within the context of the project "Support of Good Governance", which is being implemented in Kenya with the main focuses "Fight against corruption" and "legal access". The GTZ implemented the new feature in cooperation with the KACC, and contracted with a German Software company. The introduction of the system was carried out very straight-forwardly without the involvement of any other organization or permission from government ministers. The project period therefore only lasted a couple of months. In short, all potentially critical actors were bypassed – something which may be considered a factor in successful and fast implementation. The KACC now pays the license fees for the BKMS™ software out of its own budget, something which is seen as an indicator of the serious will of the involved actors and sustainability of the system.

As the result of the introduction of the BKMS™, the quality of corruption reports has increased, with 67% of all whistleblowers using the new system to anonymise their reports (here and in the following: Business Keeper AG, 2007). Whereas before the introduction of the BKMS™, nearly 80% of the reports were not related to the KACC`s responsibility, after the introduction 44% of the reports fall under the responsibility of the organization. Also, it

can be observed that the reports submitted via the BKMS™ tend to be more serious cases of corruption (high level corruption) than those submitted via other channels, e.g. via telephone.

In the future it is planned to transfer the BKMS™ tool to other African countries. It is also planned to provide the websites in Kiswahili so that a greater share of the population people can use the service in Kenya.

## 4. Analysis

In the following table, all cases are summarized so that concrete administrative problems, specific e-government solutions, the method of implementation and direct project outputs and wider development impacts can be seen in a comparative perspective.

| | GCNet in Ghana | Tax Administration in Tanzania | Corruption Reporting in Kenya |
|---|---|---|---|
| **Problem** | ▪ Delay of goods traffic<br>▪ High bureaucratic procedures | ▪ Inefficient tax collection system | ▪ No possibility to anonymously report corruption |
| **eGovernment Solution** | ▪ Electronic customs declaration system<br>▪ Reduction of interfaces to the customer | ▪ Online tax collection system<br>▪ Reorganization of tax processes | ▪ Introduction of a Business Keeper Monitoring System for anonymous reporting |
| **Implementation** | ▪ 6 years with delay because of elections<br>▪ support through a public private partnership | ▪ Long implementation phase (9 years) with many delays<br>▪ Low capacity in the tax office | ▪ Few problems because institutional change had already been realized through the creation of KACC |
| **Results** | ▪ Faster customs declaration<br>▪ Reducing the dispatching time<br>▪ Less corruption | ▪ More efficient tax administration<br>▪ Less corruption | ▪ Reporting of more corruption cases<br>▪ Increase of transparency |
| **Wider Development Impact** | ▪ Facilitating of trade<br>▪ Increased inland revenue<br>▪ Increased economic development | ▪ Increased inland revenue | ▪ More legitimacy<br>▪ Less corruption in society |

All of these e-government cases represent different solutions which go beyond just the online provision of services. In particular, the GCN and the Tax Administration project aim to establish basic services which are relevant for every state. Both projects did not just focus on the pure usage of ICT but also on changing working processes with institutional implications.

However, the Kenyan project concentrated on the introduction of a new ICT application to anonymize the corruption reporting.

Because the GCN and Tax Administration project were aiming, to a large extent, for organizational change, in particular the reduction in the number of contact persons (via front office integration) to reduce possibility for these persons to earn "extra income", implementation was especially difficult. Due to the fact that most employees lost informal income, resistance from employees were especially strong. In respect to implementation it is clear that there were considerable delays and problems in both projects, which is to be expected. Often, the initial state of the institutions involved and basic administrative factors were underestimated. Much evidence also suggests that the actors involved and the approaches followed were rather technically centered, meaning that specific initial factors and basic circumstances were insufficiently considered. Also of note in the GCNet project was the fact that delays were caused by elections and resistance from public employees. Nevertheless, the considerable benefits for external actors and the state meant that, in general, broad support for the project existed.

As a result, all cases have shown direct improvement for the public administration. Interfaces were reduced, processes were streamlined, and all of these projects have contributed to or have the potential to contribute to good governance. In addition, improvements were achieved which have an impact upon wider development goals. The project GCNet serves to reduce trade barriers and to efficiently collect fees. Not only does it contribute to economic development by facilitating goods traffic, but it also raises public revenue. The tax management system in Tanzania makes the tax authority more efficient and makes it easier to reach tax payers, also making it possible to raise public revenue. The anonymous on-line corruption reporting system in Kenya contributes to the fight against corruption and increases transparency, bringing with it increased legitimization of the political-administrative system. All of these projects have implications for wider development goals – although their long-term effect has yet to be determined.

In a nutshell: All projects have shown that e-government solutions can make a concrete contribution to development efforts, even though the time required to implement the project was sometimes long.


## V.  CONCLUSIONS

The case studies have also made it clear that, when implementing e-government in sub-Saharan Africa, first foremost, basic processes and services need to be thoroughly established for the long term and that the optimization of existing projects is less important. Nevertheless, because technology has a wide impact spectrum, the danger insists that e-government in the special context of the situation which exists in many African public administrations today may run contrary to economic and political development goals. As a result, a negative scenario which leads to more hierarchy, corruption and centralism could arise if initial political and administrative factors are not sufficiently considered when implementing e-government.

In any event, the development potential of e-government can only be realized if certain minimum preconditions exist in the country in question or if they are taken into consideration during implementation. Often, from the beginning, there is a lack of basic infrastructure which needs to be addressed. Considering that it seems unrealistic to quickly change these broader administrative environmental factors, e-government strategies and projects need to be adapted to these factors, such as illiteracy, rural area problems and weak infrastructure,

through the development of adequate access methods. In general, a simple transfer of e-government concepts from industrial countries is not promising. Although the e-government rhetoric commonly mentioned in developing country strategies and in sub-Saharan-Africa is often quite similar to that in industrialized countries, the problems which need to be solved by e-government are not.

Due to institutional conditions in Africa, longer preparations and project time are to be expected when implementing e-government, compared to developed countries. The argument that e-government projects in Africa generally fail is naive and based on administrative experiences from industrialized countries. For the development cooperation in the area of e-government, it is necessary to focus on "capacity building". The implementation of e-government pilot projects should therefore increasingly be used to build up relevant management competence in these countries, going beyond the simple application of IT systems.

In closing, e-government offers a whole array of development policy potential, the implementation of which is very ambitious. Nevertheless, discussions in the region suggest that the political elite of these countries seem to have a very high affinity towards e-government. This may also have to do with the general – not unproblematic – affinity for technology which can so often be found in developing countries. However, if this contributes good governance and poverty reduction, even in a single case, essential development policy objectives will have been achieved.

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