

# Global Media Journal

German Edition

Vol. 4, No.2, Autumn/Winter 2014

URN:nbn:de:gbv:547-201500013

## Graduate Section: The Link between ICT4D and Modernization Theory

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**Abstract:** For some decades western institutions have shared an enormous enthusiasm for Information and Communication Technologies for Development (ICT4D). Nevertheless, despite the field's ever-increasing importance, research on it remains fragmented and lacks a theoretical foundation. By establishing a link between ICT4D and Modernization theory as one of the major development models, this paper aims to add some theoretical reflections to the body of existing research. Initially, a literature review of the most significant authors of Modernization theory serves as a theoretical base. Subsequently, empirical findings are systematized and embedded in the theoretical framework. The leading question is, whether ICT4D is connected to Modernization theory's main lines of thought, both in theory and in the field. Modernization theory was chosen as a reference point, as even though it has frequently been marked as outdated, some argue that ICT4D has brought about its revival: Led by a technocratic mindset, actors in the field have indeed assumed ICTs to be context-free tools, which is one of the reasons why ICT4D has so far not been an unmitigated success. As there is a lack of systematic research on ICT4D, this paper is explorative in nature. It is certainly beyond the author's scope to make any definite statements on how development cooperation has hitherto handled ICT4D, as the field is too complex. Instead, light will be shed on some trends that can be identified in the field of ICT4D to date.

**Keywords:** ICT4D, Development Theory, Modernization Theory, E-Governance, E-Education, E-Health

### Introduction

During the last few decades, new information and communication technologies (ICTs)<sup>1</sup> have changed the world we live in profoundly. First and foremost in the Global North, computerized systems have increased the efficiency of both the private and public sector. The internet has given people access to a world far beyond their countries' borders, while the various applications of mobile phones have invaded all spheres of our life. These are only a few examples of how

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<sup>1</sup> In this paper, ICTs mainly include computerized systems, the internet and mobile telephony.

digitalization has altered the economy, public administration and private activities. Essentially, western development institutions have understood ICTs as powerful tools capable of changing the world for the better (Avgerou 2003; Nag 2011). However, despite this widespread optimism, it has also been acknowledged, that the so called “Information Superhighway” has not yet reached all of the world’s rural and poor areas (for more information on the global dissemination of ICT see e.g. United Nations 2013, World Bank 2014, International Telecommunication Union 2014). Therefore bridging the digital divide has been an important issue on the agenda of international development institutions since the mid-to-late 1990s (Warschauer 2003, p.11). Since up until now a large part of the world’s population has not been able to actively partake in the digital global community, many scholars argue that so far ICT for development (ICT4D) has not been an unmitigated success (see e.g. Heeks 2005; Kleine and Unwin 2009; Leye 2007; Unwin 2008a).

Development theory offers a valuable insight into how development practitioners believe they can achieve their aims and what concepts their aims are based on. Therefore, development theory is also the most natural starting point when analyzing the actions taken in the field of ICT4D. Nonetheless, even though hitherto many studies on ICT4D exist, only a few of them discuss the *meaning* of development by drawing on development theory (Avgerou 2010, p.9; see also Walsham and Sahay 2006). Consequently, this paper aims to contribute to existing literature by thoroughly analyzing the link between ICT4D and Modernization theory. Modernization theory was chosen as a reference point not least as it is one of the major development theories. Moreover, even though the Modernization paradigm is assumed to be outdated, several authors argue that in the 1990s ICT4D brought about its revival (Berger 2005, p.5; see also Groshek 2009; Unwin 2008b). For instance, Groshek (2009) claims that in regard to communication technologies and especially the Internet, a “type of Lerner-esque forecasting continues prominently to the present day” (p.116).

It is necessary to mention that there are several restrictions to researching this paper’s ambiguous topic. First of all, the literature is fragmented since most empirical studies are concerned with isolated ICT4D projects. This is unsurprising, as due to the vast number of projects that would need to be included, ICT4D is difficult to grasp, at a macro level. Second, finding empirical evidence for the impact of ICT4D is complicated, since the complexity of the environment makes it difficult to assign changes of human behaviour to the use of ICT. Third, ICTs are relatively new phenomena – therefore, analyses of their potential in developing regions are somewhat speculative. Fourth, developing countries are no homogenous group, but are responding very differently to ICTs. And lastly, beyond the traditional development agencies, private actors are heavily involved in ICT4D – either single-handed or as Public-Private-Partnerships (PPPs). This conglomerate of mindsets and intentions increases the complexity of ICT4D as a research field. Due to the reasons mentioned, this paper cannot make any resolute

statements, but will only identify some trends of ICT4D. Thereby the leading question will be which features can be identified as being linked to the Modernization school of thought. In order to lay the groundwork for such an analysis, the following chapter will start off by introducing the theory.

## Modernization Theory

Western development efforts after World War II were predominantly focused on how to promote economic growth, material well-being and economic development, for the people in the poorer regions of the world (Bull 2006, p.30; see also Nederveen Pieterse 2010). Even though the proponents of the then dominant school of thought called Modernization theory diverged in matters of detail, they shared three main assumptions (Bull 2006, p.30-32, see also Nederveen Pieterse 2010). First, development was equated with economic growth, mainly measured in income per capita (Bull 2006, p.30). Second, development was seen as a linear process, in which underdeveloped countries just needed to get some initial help to climb the ladder (Bull 2006, p.31). And last, development was understood to be a universal process that would unfold in the same way regardless of the conditions in the specific countries (Bull 2006, p.31). Particularly industrialization – so Modernization theory implied – would bring along the same results in underdeveloped countries as it had already done in industrialized states many decades earlier (Kevenhörster and Boom 2009, p.19; see also Bull 2006; Nederveen Pieterse 2010). In essence, Modernization theorists believed that when indigenous cultures finally adapted to the “modernity” of the industrialized countries, and left their cultural peculiarities and traditions behind, economic progress would be sparked off (Waisbord 2008, unpagged). Such social change in developing countries was believed to be intensified through transferring western knowledge and values via communication channels (Sparks 2007, p.23). This idea was most prominently illustrated by Everett Rogers’ (1962) *diffusion of innovations model*.<sup>2</sup> In general, according to Grugel (2002), in Modernization theory

“modernity is equated with the processes of change which had occurred in the nineteenth century in the Atlantic societies of Britain and the US and, to a lesser extent, within Western Europe generally” (p.47).

Thus, Modernization in the eyes of western actors implied that people in poor countries had to adjust their culture to western values, economic systems and political institutions in order to achieve an allegedly desirable western way of life (Nederveen Pieterse 2010, p.21-26). In this context, Modernization theorists were

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<sup>2</sup> In the 1970s, Rogers did however ‘admit’ the flaws of his technocratic model and among others emphasized the importance of involving people at the grassroots in designing development projects according to their own needs (Melkote 2006, cited by Singhal 2008, unpagged). By later on rejecting the techno-deterministic principles of the Modernization approach and turning towards alternative development, he adapted to the *Zeitgeist* of the late 1970s and the following decades.

eagerly pointing out the advantages of the western system over communism (see e.g. Rostow 1960). Since the west was set as a benchmark for modernization, Modernization theory has, since then, frequently been accused of being ethnocentric (Nederveen Pieterse 2010, p.33-34, see also Bull 2006).

As Seymour Lipset is one of the most well-known proponents of Modernization theory, his reasoning will serve to demonstrate how Modernization theory is embedded in a web of “western” values. In essence, Lipset (1959) assumes that economic development contributes to the emergence and longevity of a western-style democracy (p.71). Thus, even though Lipset’s academic remarks are focused on economic progress, the author does not see economic growth as an *end* of development but rather as a *means* to achieve the non-material value of democracy. In this context, democracy can be regarded as a synonym for a western system of values and ethics. Nevertheless, Lipset has often been mistakenly interpreted as defining development from a limited economic point of view (Wucherpfennig and Deutsch 2009, p.1). For a start, this criticism must be put into perspective due to the above mentioned reason: Lipset regards economic development predominantly as a means to activate a modernization process, which is expected to arrive at democracy.<sup>3</sup> Beyond that, Lipset’s understanding of economic development is broader than his critics acknowledge, as it does not only include the Gross National Product (GNP) of a country, but also wealth (measured in per capita income, number of persons per motor vehicle and per physicians, number of radio, telephones and newspapers per person), industrialization (measured in the percentage of people still employed in agriculture), urbanization (measured in the percentage of people living in urban areas) and education (p.75). To Lipset, education is the factor of capital importance for the public’s belief in democratic values (p.79). As Lipset (1959) argues

“Education presumably broadens men’s outlooks, enables them to understand the need for norms of tolerance, restrains them from adhering to extremist and monistic doctrines, and increases their capacity to make rational electoral choices” (p.79).

Thus, especially literacy – the most basic form of education – is closely correlated with democracy (Lipset 1959, p.78-79). Lipset argues that all these dimensions – wealth, industrialization, urbanization and education – are so closely interrelated that they can be understood as one common factor, which he chose to refer to as *economic development*.

In regard to economic systems, Lipset believes that capitalism is the most suitable system to boost economic development (p.73). As Grugel (2002) trenchantly outlines:

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<sup>3</sup> Strictly speaking, Lipset cannot be criticized for a blind faith in the link between economic development and democracy. Lipset (1959) cautiously underlines that other factors than economic growth, such as unique events in a state, might have an impact on democratization as well (p.72). Hereby, he refers to Max Weber, who argued that democratization in North-America, Australasia and northwest Europe was a consequence of a unique accumulation of factors, in which among others Protestantism played a major role (Lipset 1959, p.85).

“According to Lipset, capitalism is the heart of democracy because it produced wealth (which he unproblematically assumed would trickle down and lead to higher levels of mass consumption), led to an educated middle class and produced a number of cultural changes favorable to democracy, such as increased secularism” (p.47).

Also the influential Modernization theorist Rostow (1960) believed that capitalism was the most desirable system for developing countries. In his theory on stages of economic growth, he argues that developing countries need to go through different stages in order to reach the age of high mass consumption – in other words capitalism (p.3). Crucial with regard to the later analysis of ICTs is the fact that Rostow (1960) emphasized the importance of transferring technologies from the industrialized to the developing world in order to support this progress.

Notably, the Modernization paradigm initially assumed the state to be an “agent of change”, thereby following the principles of Keynesianism according to which an active and interventionist state is necessary to prevent or moderate market failures in a capitalist system (Bull 2006, p.32; see also Keynes 1989). However, with the rise of neo-liberalism in the 1980s, scholars and practitioners increasingly started to question the beneficial effects of a strong state and turned towards classic economists, such as Adam Smith and David Ricardo (Bull 2006, p.38). Pushing forward free-market policies also became the leading ideology of major international institutions headquartered in D.C., such as the WB and the IMF, and is known as the ‘Washington Consensus’ (Fukuda-Parr 2011, p.124; see also Bull 2006, Nederveen Pieterse 2010, Friedmann 1993). With initiatives such as the so-called Structural Adjustment Programs (SAPs) of the World Bank, the institutions urged developing states to fulfil conditions such as the privatization of state-owned enterprises, the deregulation of the market or the reduction of public expenses, in order to fulfil the criteria for loans (Bull 2006, p.40). Thus, between 1980 and 2000 many developing countries experienced a marginalization of the state, which was among others supported by SAPs (Friedmann 1993, p.5). Even though this form of free-market capitalism was not originally intended by Modernization scholars, the liberalization approach can be situated within this paradigm as it was an energetic attempt to export the economic system of neo-liberal capitalism from the west to developing countries. This attempt was based on the belief that it would trigger the same results.

However, to Lipset (1959) it is not only the growth of economic wealth which is crucial for sustaining democracy, but also its distribution (p.83). Thereby, Lipset expects that due to its trickle-down effect, capitalism would generate a larger middle class (‘burgher class’) which would work in favor of democracy, since its members would mostly be proponents of moderate, democratic parties (ibid.). This moderate mindset, Lipset claims, is a result of urbanization and industrialization, as people of the emerging middle class are mostly employed in much more heterogeneous environments than their peer group working in traditional agriculture (1959, p.95-97). The diversification of society that comes along with industrialization, exposes citizens to various world views and cross-pressures as

people increasingly become members of various societal groups (Lipset 1959, p.97). Additionally, according to Lipset people moving to cities get increasingly “cosmopolitan” as they are exposed to cross pressures, consume media and possess more wealth. The mentioned conditions make people more likely to adopt democratic, moderate and tolerant values (Lipset 1959, p.96). The correlation between a large middle class and democracy has been prominently confirmed by Boix (2003), Inglehart & Welzel (2005) and Acemoglu & Robinson (2001), although they offer different explanations.

To conclude, this section offered a literature review of the most significant authors of Modernization theory. It gave an introduction to the main lines of thoughts, which can be summed up as follows: The western way of life is a universal desire of mankind and should therefore be the aim of development assistance. The prerequisite for such a lifestyle is economic development as defined by Lipset (1959). Thereby, a western form of capitalism is the most suitable system for economic development and will eventually lead to democratization, as it provides people with an increased mental capacity. Due to the trickle-down effect of a capitalist system, the middle class will allegedly grow (diamond-shaped society) and be capable of responsible democratic participation.

### **ICT4D – a Revival of Modernization Theory?**

Due to the significant digital gap between the developed and the underdeveloped world, international institutions such as the World Bank or the UN have been concerned with ‘digitalizing’ the Global South. In essence, the institutions share the belief that if poorer regions of the world are not integrated into the information society, they will face further obstacles to their development. For example, in the UN Millennium Development Goals (MDGs), ICTs are promoted as tools to impel economic development and thereby to fight extreme poverty (Kleine and Unwin 2009, p.1049). Correspondingly, on its web site the WB does not hold back in its firm belief in the potential of ICT’s for economic progress:

“When done right, ICT infrastructure investment and policy reform can be a key enabler of poverty reduction and shared prosperity. A 10 percent increase in high-speed internet connections is associated on average with a 1.4 percent increase in economic growth in developing countries.” (World Bank 2014, unpagged)

By evidently assuming that ICT will drive the economic progress of poor states in a deterministic way, the WB’s techno-deterministic conjecture certainly shows through.

Initially, it was criticized that the debate on the digital divide was merely focused on technical access to ICTs, without taking into consideration the various socio-economic factors that shape the use of technologies (Mansell 2002, p.4; see also Shade 2003; Unwin 2008a; Warschauer 2003). Thus, western aid institutions originally assumed the new technologies to be *neutral tools* which only needed to



be delivered in order to impel economic progress (Avgerou 2003, p.1; Thompson 2008).

### ***Liberalizing the telecommunication structure***

Based on widespread trust in the positive impact that ICT access would have, western agencies, such as the UN, World Bank or the ITU, put much effort into shaping developing countries' ICT market conditions according to what they believed to be most adequate to provide people with well-functioning infrastructure and good technical access. Dedicated to the Washington Consensus, the mentioned international organizations participated actively in the liberalization of the developing countries' telecommunication markets (Unwin 2008b, p.11; see also Adem 2007, Bull 2006, Friedmann 1993). Whereas in the first decades of development assistance the telecommunication structure was seen as a public good, the free market spirit eventually caught the imagination of western donor institutions (Leye 2007, p.972). Initially, a report by the International Telecommunication Union (ITU) in 1982, known as the 'Maitland Report', advanced the idea of market competition, openness to foreign investments and cost-reductions through market forces (Unwin 2008c, p.128).

However, many African states resisted the request to liberalize their telecommunication markets as they wanted to hold on to their state monopolies (Adem 2007). As a consequence, international organizations such as the WB, the ITU and USAID, tied some of their financial aid to market reforms (Adem 2007). For instance, the WB and the IMF demanded the privatization of telecommunication operators as a pre-requisite for obtaining credit (Adem 2007). It must, however, be noted, that despite pushing for liberalization, the western institutions did not entirely ignore the fact that a free market might not provide ICT infrastructure for rural and poor areas. Accordingly, the Maitland Report underlined that some market regulation by the state would be necessary (Unwin 2008c, p.128).<sup>4</sup> To what extent regulations have, however, been successful, has also been dependent on each developing countries' particular commitment and on whether their prevailing institutions were supportive of regulatory arrangements (Levy and Spiller 1994, p.242).

Eventually, by 2000, almost 40 percent of African states had fulfilled the privatization condition of their national telecommunication operators (Adem 2007). However, due to a lack of transparency, insufficiently rigorous legal systems and unsuccessful regulation, in many countries only a minority of the population has benefitted from these structural changes (Unwin 2008c, p.165). Rural and poor areas have been neglected by the private sector, as the peasantry does not constitute a sufficiently lucrative consumer group for generating revenue (Alzouma 2005, p.343-344; see also Ott and Rosser 2000; Unwin 2008a). Thus, since most of the people in developing countries live in rural areas, the liberalization strategy

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<sup>4</sup> Regulation can in this regard be understood as "a means of ensuring a well-functioning competitive market that will maximize benefits from private-sector participation in a liberalized market" (Unwin 2008c, p.164).

all too often exacerbated the marginalization of the majority (Akpan 2003, p.272). However – in order to illustrate the complexity of the case – liberalizing the telecommunication systems has had positive impacts as well. As Unwin (2008c) argues, the speedy expansion of mobile phones among *all* social strata in Africa is one result (among others) of lower costs due to the closure of state monopolies (p.165).

As mentioned above, Modernization scholars did not originally promote a free market ideology coupled with a weak state. Instead, initially a capitalist system regulated by a strong state was expected to be the optimum system. Nonetheless, the free market approach of the western aid institutions must be situated in the context of Modernization, as it has driven the transfer of western systems – in terms of liberal market policies *and* ICTs – in the context of development and it thereby expected similar results as in the west. As Unwin (2008b) puts it:

“If the economic difficulties of the 1970ies in Europe and north America had been ‘solved’ by deregulating the markets, by reducing state intervention, and by selling off inefficient public-sector enterprises, why should these policies not also work in poorer countries of the world?” (p.11).

Applying such a western economic approach, however, is a risky undertaking, since the economic theory of liberalism is drawn from the experiences of a few wealthy states, whereas little is known about its effects on developing markets (Avgerou 2003, p.8). As has been illustrated, the major problem of free market policies in developing countries has been the telecommunication businesses’ neglect of poor people living in rural areas due to their unattractiveness as a consumer group. Up until today, the target group of ICT enterprises has been the richer minority living in the urban areas of developing countries (e.g. Alzouma 2005; Ott and Rosser 2000; Unwin 2008a). To counteract such consequences of liberalization, scholars have suggested, for example, that developing country governments would need to be urged to take more regulatory actions (Hosman and Fife 2008, p.3) or to launch mechanisms, such as the introduction of special funds to finance infrastructure in rural areas (Unwin 2008c, p.165).

Moreover, the establishment of telecenters in rural areas has hitherto probably been the main attempt of ICT4D to counter inequalities created through market mechanisms. Telecenters are much discussed initiatives of development agencies, as they were regarded as the ‘archetype’ of ICT4D in the period from mid/late-1990s to the mid/late-2000s (Heeks 2009, p.4). Initially launched by development agencies to give people in poor and rural areas access to information and communication tools such as computers, internet and fax machines, telecenters have so far not been characterized by success (Heeks 2005, p.3) – even though some examples exist, where they did actually contribute to social empowerment (Surman 2008, p.146). On the whole, however, poor people, who were supposed to be the target groups, have not only been unable to pay for the services, but have also not seen the benefits that were promised them (Madon et al. 2007, p.8, see also Wade 2002). Studies done by Madon (2009) in India could not find any



evidence that the establishment of telecenters in rural areas had actually improved the living conditions of the poor. In more general terms, Alzouma (2005) pointed out that the number of computers within a country should not be understood as an indicator for ICT development (p.344, see also Warschauer 2003). Thus, rather than merely focusing on access to ICT, the skills and competences of people to actually apply the equipment for their benefit is vital (Alzouma 2005, p.344). However, the frequent establishment of telecenters without considering socio-economic factors mirrors Modernization theory: By expecting ICT access through telecenters to be a short-cut solution to the exclusion of the poor, ICT4D donors have been clearly led by a technocratic mindset.

### ***The role of private actors***

Due to the marginalization of the state in liberalized telecommunication markets, private – frequently foreign – actors have become important players (Heeks 2009, p.17). Hence, ICT companies such as Cisco and Microsoft – and more recently Google and Facebook – have been engaged in advancing the infrastructure and providing technical equipment to developing regions, as for instance Microsoft in Kenya (Wade 2002, p.452, 456; see also Handelsblatt 2014; Kuhn 2014; Microsoft 2013). In this context, businesses have frequently been acting outside of the development sector's realm. For instance, both Google and Facebook have lately hit the headlines with their plans to buy unpiloted drones, which are supposed to bring wireless internet to the most rural, underdeveloped corners of the world (Handelsblatt 2014, unpagged). Although Google has officially stated that it believes in the power of ICT to change the world for the better, it is plain to see that internet enterprises are also attracted by the chance to expand their markets (Kuhn 2014, unpagged). Besides these solo actions by companies, international institutions such as the WB and UNESCO have – due to a lack of money if nothing else – welcomed cooperation with private industry (Leye 2007, p.973). For instance, in 2004 Microsoft “joined the coalition of major private sector partners supporting UNESCO’s global strategy to draw on information and communication technologies to improve education, social and economic development worldwide” (UNESCO, cited by Leye 2007, p.975). Although Microsoft claims that its cooperation with UNESCO aims to benefit the society and communities of developing countries and would therefore need to be situated within ICT4D, Leye (2007) argues that the company’s intention is rather to profit from UNESCO’s good reputation and to enter a new market (p.977). Specifically, according to Leye (2007), Microsoft first of all wants to “secure its grip on the software market” and strive against the open source software movement which would be more beneficial for the country’s development purposes (p.977, see also Heeks 2009).

Public-Private-Partnerships within ICT4D have been criticized for favoring projects that offer attractive investment opportunities for the private sector and for disregarding projects that are more urgent but not attractive to business (Bull, Bøås and McNeill 2004, p.486). Beyond that, private foreign actors have

frequently displayed a 'best practices' attitude, by aiming to 'export' their know-how of management, marketing and strategic planning into the non-profit sector. As Thompson (2008) worries:

“With the call of such movements for the use of 'hard' (read western) management approaches and techniques, there is a fresh need to ensure that such approaches do not result in any 'new technocratic' resurgence within developmental ICT” (p.4).

The perception underlying Thompson's remark is that development agencies may have learned their lessons, due to the many failed projects conducted in a technocratic Modernization spirit. However, collaboration with private actors, who lack the experience of development agencies, may cause a back-lash, as private industry enforces its western standards instead of applying a cultural- and context-sensitive approach. Moreover, due to strong private involvement, the focus of ICT4D will naturally be economics-centered and hence correspond to Modernization theory. Kleine and Unwin (2009) note that “on practical grounds it is striking how few partnerships with the private sector have actually delivered effective and sustainable benefits for the neediest of the world's people” (p.1057).

To conclude, as has been illustrated in this section, the liberalization approach of international institutions accompanied by increased involvement of foreign private actors has led to major shortcomings regarding ICT infrastructure and universal service. The 'export' of western free market policies has neither led to ICT access for the majority, nor to a type of economic development that generates a larger middle class. Moreover, the involvement of private foreign actors in a free market has aroused some suspicion that these actors may benefit more from market liberalization than the developing countries themselves.

The previous two chapters offered an overview on how international institutions have been engaged in liberalizing the telecommunication markets of the Global South. The next chapters will go into detail on how ICT4D has been applied on a micro-level and whether these approaches can be embedded within Modernization theory.

### **Economic growth, efficiency enhancement and change of values**

Development institutions have been the most enthusiastic about the economic promise ICT bears. This enthusiasm has produced the view that developing countries could “leapfrog” some of the stages of development which the industrialized countries went through (Kao 2013, p.364; see also Kleine and Unwin 2009).<sup>5</sup> When approaching ICT4D from this economic angle, ICTs are naturally seen as tools to enhance the efficiency of business. Additionally, ICT is regarded as

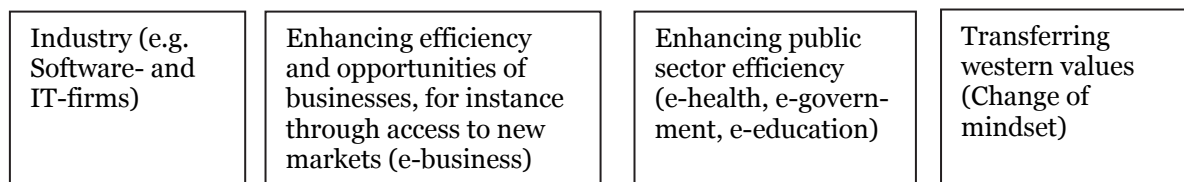
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<sup>5</sup> This is certainly an interesting spin to Modernization theory, as it apparently reflects an even stronger faith in technologies. Long before the digital era, Modernization scholar Rostow argued that countries inevitably had to go through a certain set of stages on their path to development.

an industry in itself, which could potentially boost the economy, not least by creating jobs. Following the logic of Modernization theory, a vital IT-industry would be to the benefit of all due to an automatic trickle-down effect.

Figure 1 illustrates how ICT can contribute to development from the perspective of Modernization theory. Beyond the economic impact, the model implies that ICTs also enhance the public sector and transfer western values.

**Figure 1: ICT within the Modernization paradigm**



ICT's potential to enhance developing countries' public sector is not only included in the model because it is one of the major fields in which ICT has been applied, but also because these activities have been heavily promoted by Modernization thinking in practice. The attempt to adjust the public sector to western standards (Russill 2008, p.399) can be understood as a typical aim of Modernization theory, since it reflects the values connected to the paradigm: Recalling section 2, the benchmark of Modernization is the west, including its democratic system and values.

Last but not least, Modernization scholars believe that economic growth is not only an end in itself, but will also lead to a change of people's values and a demand for westernization and democratization (see Inglehart and Welzel 2010). To take this train of thought to its logical conclusion, by enhancing economic productivity and thereby fighting poverty, ICTs will also contribute to a change of mindset. However, beyond the economic aspects, ICTs – in particular the internet – are also capable of giving people access to an abundance of information. Consequently, their impact on people's attitudes is not necessarily just *indirect* via economic growth, but can rather proceed *directly* by giving people information they did not have before. In fact, since the beginning of Modernization theory, media have been seen as a helpful tool to accelerate the modernization or westernization of people's state of mind, and have therefore figured prominently in influential Modernization literature.<sup>6</sup>

As will be demonstrated later on, figure 1 does not only reflect the aspirations that are connected to ICT4D according to the logical consistency of Modernization theory, but is furthermore backed by reality. Within the scope of each of the model's elements, the following chapters will illustrate that there have been tensions between aspirations and reality.

<sup>6</sup> Such as *The Passing of Traditional Society* by Daniel Lerner, *The Stages of Economic Growth: A Non-Communist Manifesto* by Walter Rostow, *Diffusion of Innovation* by Everett Rogers as well as publications by Wilbur Schramm (*Mass Media and National Development; Mass Media and National Development: The Role of Information in Developing Countries; Communication and Change*).

## ***ICT as an industry***

Even though the IT-sector in developing countries has certainly generated some employment and revenue, it has so far rarely been a crucial booster for overall economic growth (Akpan 2003, p.265; see also Leye 2007; Wade 2002). However, studies illustrate that internet access has in some cases contributed to the emergence of new businesses in development country's villages and communities (see Best et al. 2007). On a larger scale, ICT has contributed to national economic development through major IT-hubs – most prominently in California but also in Bangalore (Best and Kenny 2008, p.197). Yet, the formation of such clusters is due to “the uneven distribution of high-skilled labor, sources of venture capital, research capacity in local universities and an economic and political climate that allows for innovation” (Best and Kenny 2008, p.197). Thus, clusters have only emerged in the few countries with the most favorable conditions, whereas overall, attempts to create such clusters have seen little success (Best and Kenny 2008, p.197).

Moreover the hope that widespread economic benefits can flow from ICT hubs such as that of India has, unfortunately, been dashed. Even in India, the paramount example, no proof of trickle-down effects can be found (Warschauer 2003, p.23). Instead, the industry has created a few multimillionaires and a small middle class (of network and software engineers, computer programmers, computer-assisted design specialist), whereas the majority of the population still lives in poverty (Warschauer 2003, p.23). Thus, the expectation that economic growth through vital ICT-industries would generate a diamond-shaped society has not so far been met. Despite this disappointing fact, when analyzing the potential of ICT from a Modernization perspective, its theoretical potential to generate a prosperous industry cannot be ignored. It is, however, difficult to tell to what extent ICT4D has actually contributed to the emergence of an IT-industry. In the end, supporting ICT hubs may be too large a project for ICT4D, but agencies could support middle- to large-sized IT-firms (Heeks 2002, unpagged) or provide smaller funds for small start-ups to emerge (Kalathil 2008, p.13). It must also be acknowledged that in order to support the emergence of a vital IT-industry, it will not be sufficient to provide financial support to IT-firms. As Best and Kenny (2008) argue, a broader economic environment conducive to the exploitation of ICT is necessary:

“ICT industries and ICT-enabled business need an investment climate that includes an educated workforce with appropriate technical skills, access to entrepreneurial finance and business talent, reliable infrastructure, a robust but reasonable regulatory environment, and so on” (p.201).

Currently, despite the IT-industry in some emerging countries, ICT production is still mainly concentrated in the western world. Developing countries have so far only produced 0.3 percent of global high-technology exports (Kenny 2006, cited in Best and Kenny 2008, p.184). This imbalance has generated a new dependency relationship, as development countries have frequently been forced to buy western

products in order to “keep up” with the industrialized country’s digitalisation process (Wade 2002, p.452; Leye 2007). Moreover, Unwin (2008b) refers to the tension that exists between the industrialized world’s willingness to utilize ICTs to promote their own countries’ competitive advantage on the one hand, and their official commitment to promote ICTs for the empowerment of poorer countries’ economies on the other (p.25).

### ***E-Business***

From an economic perspective, ICT is not only an industry in itself, but can also constitute a helpful tool for non-IT-firms. Generally, businesses have always referred to the media for news in order to assess investment opportunities or the market conditions for a new product launch (Kumar 2006, p.6). Naturally, ICTs are able to increase the transparency of the market by providing consumers and suppliers with an abundance of investment information. However, ICT’s potential goes beyond that, as it can also enhance labor productivity. It has, nonetheless, been challenging for enterprises in developing countries to actually derive these benefits. Whereas many companies might be connected to the internet, the advanced use of it (for instance through webpage development and e-commerce) is rare (Best and Kenny 2008, p.186-187; see also UNCTAD 2003; UNCTAD 2006). Overall, there is presently only scarce evidence that it has been beneficial for enterprises in developing countries to incorporate the internet into their businesses (Best and Kenny 2008, p.189). Voice mobile phones on the other hand seem to have been frequently applied to businesses’ advantage (Best and Kenny 2008, p.189). In the end, however, measuring the impact of ICT on businesses is an almost impossible task, as its effects frequently stay hidden (Hedley 1999, p.79). Not much research has been conducted on whether and how e-business has been a strategic part of ICT4D so far. Nonetheless, western institution’s commitment to ICTs as one of the keys for countries to take part in the global economy of competitive advantage (Selinger 2008, p.214), must be associated with Modernization theory.

### ***Enhancing the efficiency of the public sector***

The promises attached to ICT and Modernization endeavors are, however, not only restricted to the economic sector. Instead, enthusiasm has also been expressed as to ICT’s potential for enhancing the efficiency of the public sector. Prominent catchwords have emerged such as e-health, e-governance and e-education. In the end, as the field is too complex and lacks research at the macro level that goes beyond isolated case studies, it is not possible to assess how ICT4D has been implemented within the public sector generally. Instead, some examples of e-health, e-governance and e-education will demonstrate how Modernization approaches within ICT4D have been the reason for many projects’ failures.



Starting with e-health, ICTs can among others be an information source for both professionals and lay persons, increase the productivity of health staff by giving them structured information about patients and enable clinicians to consult with other geographically distant clinicians (Kwankam, Pablos-Mendez, and Kay 2008, p.251). Other approaches have been used to remind patients to take their medicine via SMS or to provide health-staff with computer devices that for instance inform them about drug availability in the local region (Hosman and Fife 2008, p.4). The potential of ICT in e-health is certainly great, but its success depends on the details of implementation, as the strategy to simply transfer best-practice from the west to developing countries is likely to fail. For instance, Zheng and Walsham (2008) refer to the case of two rural hospitals in South Africa where computers were supposed to increase the efficiency and the quality of the medical work (p.228). However, the hospital staff would not adopt the new technology, due to what Zheng and Walsham (2008) refer to as “low information literacy”: The health workers, who belonged to the oral culture of the Xhosa, did not understand the benefits of the ICT application and were thus unmotivated to step into new digital territories (p.229). Thus, in order to allow people to benefit from ICT for health, computerized systems cannot be exported to a developing country context without consulting and cooperating with the people which will be affected by the programs. Moreover, the programs would have to be modified and adapted to the local environment – in this case, the fact that people belong to an oral culture and have a lack of (western type) education needs to be taken into account when implementing e-health systems. In general, as Kwankam et al. (2008) point out, so far e-health has been driven by a “technology pull” rather than being based on the particular needs of the population (p.276). This ignorance of individual contexts when introducing western technology paradigmatically reflects Modernization theory.

In essence, e-governance has been supposed to increase the efficiency of public services and to empower communities by providing information needed for the management of their own affairs (Alzouma 2005, p.349). Particularly in regard to civil society, e-governance aims to provide people with more information about governmental activities, services and available choices, so that the information can be transformed into active citizen participation (Backus 2001, p.3). Thus, the basic idea of e-governance is to empower people (e.g. Alzouma 2005; Backus 2001; Madon 2004). However, authors have criticized e-governance for having contributed to an increased dependency of the Global South on the Global North (Wade 2002, p.446-447; see also Leye 2007) and for having been implemented with a technocratic one-to-one approach (Ciborra 2006, p.270). Specifically, Wade (2002) points out problems such as the fact that governments of developing countries have to draw on the rapidly changing software-programs of industrialized countries for implementing e-governance (this criticism could naturally also be applied to e-health and e-education) (p.446-447). Thus, as aid organizations link their donations to good governance and good governance is itself linked to e-governance, the dependency of developing countries on the western software industry increases (Wade 2002, p.444).

Moreover, Ciborra (2006) argues that the current systems and applications of e-governance are attached to a model of state, “which resembles closely the state form in advanced western economies” (p.270). This author adds that it is doubtful if this form of e-governance will actually contribute to development and he even worries that such inappropriate systems could result in “more cynicism and disillusion, and investments in ICT could turn into some form of growth-reducing rents” (p.270). With similar skepticism, aid-organizations have been criticized for not having made sufficient effort to evaluate of e-governance projects (Wade 2002, p.447; see also Madon 2004). Wade (2002) specifically accuses the WB of promoting the success of their e-governance projects without assessing them properly (p.447). Specifically, referring to a WB e-governance project in the Indian state of Andhra Pradesh, Wade (2002) claims that the institution has not honestly addressed the project’s performance (p.447). In Andhra Pradesh governmental institutions were equipped with computers which were, among other things, supposed to provide personalized services and lead to a more responsive and responsible government (Wade 2002, p.447). However, the author states that there were no beneficial effects for the citizens, despite easier registration of property transaction and easier communication between government employees (Wade 2002, p.447). Thus, even though much money had been invested in infrastructure and expensive computers, the project only had a minor impact. This example shows once again that technologies will not bring along advantages unless the computerized systems are adjusted to the needs of the people and unless there is an enabling environment. For instance, without e-literacy people will not be enabled to take advantage of e-governance’s new opportunities for government-citizens interactions (Prasad 2012, p.201). These circumstances have apparently to some extent been ignored by the e-governance approaches within ICT4D.

Last but not least, ICT has without doubt raised the hope that it could enhance education. For instance, through online networks, researchers can now have access to numerous publications, which will not only improve their searches, but also economize time and money (Alzouma 2005, p.341; see also Hosman and Fife 2008). Moreover, ICT can for instance facilitate the collaboration between scholars throughout the world and thereby increase the overall quality of research (Alzouma 2005, p.341). Many more opportunities could be mentioned. However, again, unsuccessful projects show how important it is to adapt e-education projects to the specific circumstances of a country. In this regard, Hatakka and De’ (2011) refer to a project in Bangladesh, which from a technological point of view appeared positive (p.9). Applying TV for education is not a new phenomenon, but in the digital era of today, projects such as the one in Bangladesh also include modern ICTs, for instance the application of mobile phones. The project *Bangladesh Virtual Classroom* applied ICT for the purposes of interactive distance education: TV lessons were broadcast on national TV and students were called on to send SMS to teachers for an interactive exchange (Hatakka and De’ 2011, p.9). However, the Bangladeshis did not adopt the new learning opportunities, since due to their pedagogical culture neither students nor teachers were used to interactivity and

the application of technology. Local circumstances, such as many students working on Saturday mornings when the TV-lessons were broadcast, constituted further obstacles (Hatakka and De' 2011, p.8-9).

Another well-known e-education initiative is *One laptop per child (OLPC)*, a US-based NGO which aims “to provide each child with a rugged, low-cost, low-power connected laptop with designed hardware, content and software for collaborative, joyful, and self-empowered learning” (OLPC, n.y., unpagged). The so-called XO laptop was introduced with regard to the extreme weather conditions in some developing countries and enables easy field repair by children and local language support – thus, the laptops were to some extent modified in regard to the environment (OLPC, n.y., unpagged). Governments of developing countries, such as Rwanda or Peru have purchased these laptops (and recently also tablets) and have distributed them in schools (OLPC, n.y., unpagged). Convinced of his project’s efficacy, the founder Nickolas Negroponte, a professor at Massachusetts Institute of Technology (MIT), has apparently witnessed how illiterate children in a rural village of Ethiopia started to write down words in the sand after having used the laptop (Ehlers 2012, unpagged). To Modernization scholars, this observation must have sounded like final confirmation that despite all the criticism they were right about techno-determinism all along. However – ignoring the question of whether children are actually capable of self-education through computers – according to Kraemer, Dedrick, and Sharma (2009) the vision and reality of OLPC are poles apart. In particular, OLPC is criticized for having neglected the social and cultural environment of developing countries (see Kraemer, Dedrick, and Sharma 2009). As the OLPC failed to directly address teacher unions and only focused on the education ministries, the NGO did not address the skepticism of the teachers who feared being replaced by the new technology (Kraemer, Dedrick, and Sharma 2009, p.71). Moreover, infrastructure, financial resources, technical skills, and waning political support constituted obstacles which were underestimated by OLPC (Kraemer, Dedrick, and Sharma 2009, p.70). OLPC also did not have the resources to train teachers, create software and digital content, deliver maintenance and support, and thereby sustain a long-term commitment (Kraemer, Dedrick, and Sharma 2009, p.70). To conclude, even though the intention was certainly good and despite some arguable success in the case of OLPC, neither the project in Bangladesh nor OLPC paid sufficient attention to the local conditions and thus acted (at least partially) in the techno-deterministic spirit of Modernization.

### ***Exporting values and cultural imperialism***

When promoting ICT access in developing countries and advocating for its positive impact, it must be recognized that slightly more than 55 per cent of the world-wide-web content is in the English language (W<sup>3</sup> Techs 2014, unpagged, see also Mansell 2002). The vast majority of the remaining per cent are in the languages of other industrialized states, such as Germany, or of transition states, such as Russia

or China (W<sup>3</sup> Techs 2014, unpagged). African languages on the other hand, such as Swahili or Somali, are used on less than 0.1 per cent of all websites (W<sup>3</sup> Techs 2014, unpagged). Beyond the language of most internet webpages, the style of writing constitutes a problem to the people living in developing countries, as “most of its content is being written in (...) academic or business style and thus is not directly applicable at the grassroots level” (Gigler 2004, p.11). The consequence is that people in developing countries must either revert to information produced in richer countries or be excluded from the so-called promise of the global information society.

By being exposed to an abundance of western content in the digital world, it might be feared that developing countries would experience a form of cultural imperialism. In regard to the logical consistency of Modernization theory, it could, however, be argued that this is exactly what Modernization scholars aim to achieve. More specifically, Lerner (1958) argued that by consuming media, people would develop the ability to imagine themselves in another situation (he refers to it as *empathy*), which again would motivate people to make changes towards westernization (p.50-51). Similarly, Schramm (1967) argues, that through communication technologies, the west will raise the aspiration of people in developing countries to “want a larger economy and a modernized society” – thus to westernize their culture (p.18). To Hedley (1999), the spread of internet access around the world could in the future indeed “increase western cultural and economic dominance on a scale never before imagined” (p.82).

Despite the fact that ICT may have the theoretical potential to “modernize” people’s mindset (at least when assuming that recipients are passive and easily impressionable), it must be acknowledged that Lerner’s *empathy* could potentially only apply to people in the developing world who actually have internet access, technological skills, language ability and e-literacy – thus, given the current circumstances, it would only affect a few. As Alzouma (2005) argues, in regard to Africa the internet community mainly consists of a young and educated elite which have “their feet on the African soil and their heads in the virtual world of interconnectivity” (p.351). Nonetheless, in the specific case of this elite-group, a value-transfer from the Global North to the South could theoretically take place. One could first argue that the fact that only a small elite may become westernized whereas the majority of the population would remain untouched, makes the fear of cultural imperialism ungrounded. At second glance, however, one could reason that the current situation somehow complies with the elite-centrism of Modernization theory: more specifically, Modernization scholars never assumed that traditional media would reach all citizens alike – instead they believed in convincing opinion leaders of western ideas in order to reach the masses, since the masses rather believe opinion leaders than the media (‘two-step flow of information’) (Sparks 2007, p.25, see also Kleine and Unwin 2009). However, at that time, the targeted elite groups were not as able to ‘modernize’ the public by spreading western values as was initially hoped (Sparks 2007, p.30). Many of them had studied abroad and due to their very different backgrounds they lacked the

trust of the average citizens who mostly lived in the countryside (Sparks 2007, p.30). In the digital era of today, there is no reason to assume that these social structures have changed tremendously.

## Conclusion

To conclude, this paper has demonstrated through a literature review that the dissemination of ICT has frequently been led by the mindset of Modernization: Western agencies have tried to ‘export’ their economic system, their ‘best practice’ and, furthermore, believed that once developing countries have access to ICT, economic development would be sparked off. In the end, liberalization did not lead to anything close to universal service, and access to ICT did not automatically result in beneficial economic impacts. Even in the rare cases of countries such as India, where ICT is a vital part of the country’s economy, no trickle-down effect has ensured that economic progress will be to the benefit of all. Thus, ICT has so far neither considerably boosted economies nor has it significantly contributed to the current emergence of a larger middle class in the Global South. It is, however, too early to tell, what the future might bring.

In general, many scholars see the reason for the failure of numerous ICT4D projects, for instance in public services, in the “excessively top-down” strategy of the initiators, and the failure to consult local communities about their needs (Unwin 2008a, p.365; Mansell and Wehn 1998). This kind of attitude once again resembles Modernization theory in regard to two main aspects. First, because it implies a strong belief in western technologies as necessary tools for development, and second, because it is based on the belief that developing countries’ economic and public systems need to be aligned to the standards of the west. However, as the examples in this article have demonstrated, ICTs are not ‘neutral’, context-free instruments. The main lesson that must be drawn is that providing infrastructure and equipment will not automatically enable the countries of the Global South to establish themselves as self-confident players in the digital era (Day and Greenwood 2008, p.328). Context-sensitive approaches are required, which do not set western countries as a benchmark, but support poorer countries to develop on their own terms.

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