

Digital Business Ecosystems in Developing Countries

An Introduction

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Like individual plants or animals, individual businesses cannot thrive alone—they must develop in clusters or economic ecosystems. Agriculture requires not only farms, but an infrastructure of roads and ports on which transport companies can move the goods, supporting a network of storage facilities, distributor, and finally consumer markets. In total, these complementary activities make up what might be termed an “agricultural business ecosystem.” Academically, the study of economic ecosystems has traditionally been the province of economic geographers—themselves a complementary combination of economists, urban and regional planners and development experts, and geographers. In the past few years this field has become quite lively, as its insights have proven helpful in promoting economic development.

Digital business ecosystems require a number of specialized complementary contributions, in addition to depending on many of the same supporting capabilities of other types of enterprises. The specialized digitally-relevant capabilities are often described in layers, corresponding roughly to the progression from underlying network infrastructure, through hardware devices, to software, and finally to services of direct use to consumers and businesses. Internet services depend upon telecommunications companies to provide basic connectivity, on Internet Service Providers to set up, maintain, and charge for Internet service accounts, and—especially in the case of businesses—Internet applications require technical services ranging from systems integration to software development and installation, and education and user support.

In biological systems some capabilities cannot emerge prior to others. In the mountains, aspen trees and other nitrogen-fixing plants convert atmospheric nitrogen into ammonia in the soil, which in turn makes possible the emergence of subsequent stands of hardwoods dependent on such soil conditions. Predators such as eagles and owls depend on large populations of small mammals, such as field mice—and cannot thrive in an area without them. Within particular ecosystems, one can describe these dependencies with great accuracy. In the case of succession phenomena—such as the reemergence of life after a volcanic eruption or other life-scourging event—one can see how these dependencies determine which species establish themselves first—which are the pioneering species—and which can only come later, as the ecosystem becomes richer and more complex. Biologists sometimes call the rules governing such relationships “assembly rules,” that is, the rules affecting the assembly, in sequence and over time, of ecosystems.

This notion of assembly rules has just begun to be applied to economic development, but it holds great promise. In the case of digital business ecosystems in developing countries, the approach suggests that it is not enough just to count computers, or look for applications, or

recommend investments in education or in promoting entrepreneurship. Rather, one must study the situation “closer to the ground” and explore in detail the relationships of sequence and dependence out of which an economic community rises. In our study in Ghana, the ground of the digital business ecosystem was fertile with well-educated entrepreneurs—most of whom had studied and lived abroad for some time—who were willing to return to Ghana after the establishment of a democratic government—the first in more than two decades—in 2001. Once in Ghana they were able to connect to a highly competent dial-up ISP, which in turn was connected to the worldwide Internet by a reasonably high-speed satellite service, funded in part by the US government development assistance. Working with this base, and in a legal climate that allowed for the introduction of a variety of digital businesses—most without specific licensing hurdles—a small but thriving digital business community established itself. The excitement and vitality of this community attracted international notice.

This community, however, is only the pioneering phase of what could be a much larger and richer digital ecosystem in Ghana. However, the next phase in succession requires a number of capabilities that are not now present—ranging from reliable electric power, to affordable high bandwidth interconnection both within Ghana and across the seas. In addition, Ghana has limited expertise in financing and coaching the leadership of digital businesses—with just two small venture capital firms in the country. The banking culture oriented to lending based on physical assets—and little experience with equity investments in knowledge-based businesses.

Finally, the government has dabbled in digital policy making and telecommunications reform, but has not made either clear strategies nor appointed leaders who have the respect of the digital business or investor community. The result is a high level of uncertainty about the policy and legal environment. All of the above limitations were tolerable by pioneering businesses—but they make it difficult for those enterprises and others like them to scale up, expand, and diversify. As we will see in the following pages, one of the most important classes of capabilities required is an effective legal system and ethos.

Digital business ecosystems as threats to established elites

Under-development is often understood as the absence of a variety of capabilities—and indeed that is the thrust of the ecological argument made above. But it is also important to understand that developing countries are not usually open fields waiting for planting. Rather, they have their own longstanding economic ecosystems. In Africa, the established ecosystems are for the most part based on natural resources—oil, gold and platinum, diamonds, and in some cases timber—or on aid from richer nations. The poorest nations in Africa, such as Mozambique, derive most of their sustenance from outside assistance. Even Ghana, which has gold, hydroelectric power, and palm oil agriculture, has received in recent years about \$ US 300 million of its \$ US 500 million national government budget from the World Bank and similar organizations.

Elite members of developing nation societies are often linked closely to either natural resources or foreign aid, and often perceive that their positions in society depend to a great extent on the continuation of these links. In the case of the most authoritarian nations, wealth produced from natural resources—and sometimes aid—is funneled into maintaining military and social dominance over the people of the nation. This was the case in Ghana until quite recently.

Digital entrepreneurs represent a potential threat to the establishment in developing countries. As a group, digital entrepreneurs tend to favor democracy, they tend to be egalitarian, and in digital businesses knowledge is how one advances. Digital entrepreneurs are able to communicate with each other, and if necessary are able to route their communications around government blockages or surveillance. Finally, digital entrepreneurs are very connected with the outside world, the currency of entrepreneurs is new ideas, and thus they pose a challenge to societies that try to close themselves off to outside influence.

More practically, one of the major monopoly businesses in most developing countries, after resources, is telecom. Most telecom providers in developing countries are either state owned or only partially privatized. Digital entrepreneurs are technologically and organizationally capable of working around these monopolies—setting up their own satellite links to the outside world, routing voice calls over the Internet, and setting up local radio networks to bypass local connections. These developments are a direct threat to telecom revenues, and thus to government and telecom investors.

In developing countries without strong rule of law, digital entrepreneurs can be oppressed. Licenses can be withheld, spurious charge lodged, interconnection with the monopoly telco disrupted. In Ghana, under the prior regime, a business leader was jailed and had his equipment destroyed, ostensibly because of immigration violations but—it is widely believed—because he provided too much potential competition to a rival better connected to the government. Thus, as we will see, in order for digital business ecosystems to thrive and grow to their potential, such businesses must be assured due process, the entrepreneurs their civil and economic rights, and they must have protection against abuses of monopoly power—including by state-controlled monopolies.