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Abstract

Sub-Saharan Africa (SSA) experienced a process of marginalization in the global economy in the 1980s and 1990s. Some now assert this is being reversed by an information technology revolution on the sub-continent. SSA now has the fastest growing mobile phone penetration rates in the world and most people there now live under the “footprint” of mobile phones. However, while many claims are made for the poverty reduction potential of new ICTs, very little research has been done on how access affects firm strategies, and innovation and consequently may contribute to broader economic transformation; vital to sustainable poverty reduction. This paper contextualises the adoption of new ICTs and then examines evidence of the uses and impacts of new ICTs in the wood products industry in Durban, South Africa and its surrounding region. It finds that while ICT usage is being routinised in the sector, their impacts are incremental than

¹ This research was funded by the National Science Foundation (USA), award number #0925151 with Professor James Murphy of Clark University, USA and a Senior Research Fellowship from the Irish Research Council for the Humanities and Social Sciences. The findings do not reflect the opinions of the NSF or the IRCHSS. Thanks to Dr. Ralph Borland for his research assistance. Thanks to Mark Graham and Jim Murphy for their comments on an earlier draft of this paper.
transformative. Consequently while these technologies are being absorbed into the socio-technical regime, their overall economic impact is limited.

**Introduction**

Much has been written about the impacts of mobile phones, and other new information and communication technologies (ICTs) on Africa. Some claim that they are having a transformative effect on the continent’s economies and societies (e.g. Okpaku 2006). However, much of this literature does not explore the precise channels through which new ICTs might contribute to economic transformation (Carmody 2011). There tends to be a focus on the spread of the technology, rather than its production and concrete impacts on other sectors of the economy.

According to the World Bank (2006 quoted in Mouelhi, 2009, p. 961) “firms that use ICT grow faster, invest more, and are more productive and profitable than those that do not”. There are a variety of channels through which ICTs might contribute to economic transformation including research, design, development and production, and capturing value in the marketing, transport, retailing and credit sale aspects of the value chain. As has been explored elsewhere however, Africa is primarily an importer of these technologies (Ya'u 2005), so what is most important is the indirect impacts of new ICTs on other sectors of the economy in terms of productivity (Carmody 2011). In this context the critical issue is the extent to which ICTs help with market creation and deepening, rather than simply putting some firms at a competitive advantage.
relative to others; which could be considered a fallacy of composition where the overall benefit to economy is more limited. Partly the answer to that question in-turn depends on the extent to which ICTs put African-based firms at a competitive advantage relative to their overseas competitors in particular, both in their ability to raise productivity and (thereby) enable the insertion of African firms into global value chains. The key is whether new ICTs enable socio-technical regime transitions to higher, more innovative growth pathes².

In general, Carbonara (2005) notes that ICTs can have a significant impact on three value creating processes – a) logistics and networking; b) marketing and customer relations; and c) innovation development, but there are few detailed studies of these relationships in the African context. According to another study:

“judging from the evidence... the main observed benefits of ICT use are twofold: (a) a reduction in information search and transactions cost for those involved in enterprise; and (b) improved communications within supply chains leading to benefits for individual enterprises and overall improvements in market efficiency. ICTs can also strengthen internal information systems for those (predominantly growth-oriented) enterprises that own a PC [personal computer] and are able to make effective use of computer-based applications. There is furthermore evidence that ICTs can provide other benefits around the strengthening of social and human capital (enhancement of skills, increased self-confidence, participation of women, empowerment, and security against income loss)” (UNCTAD 2010, p. 82).

ICTs are an important aspect of global innovation and are also vital in the creation of the “economies of time” (Best 1990) and to the coordination of global value chains (GVCs). Productive insertion of African firms into these GVCs is considered by many to be central to Africa’s long-term economic transformation (Best, 1990; Gibbon and Ponte, 2005; Broadman,

² “Socio-technical regimes are relatively stable configurations of institutions, techniques and artefacts, as well as rules, practices and networks that determine the ‘normal’ development and use of technologies” (Rip, and Kemp 1998 quoted in Smith et al. (2005, p. 1493).
and ICTs do offer important opportunities in this regard. “However, in order for developing country firms to participate in such [global] value chains, they need to have the capacity to handle large-scale production for exports and to conform with strict product process and environmental quality standards, which is not always the case. This often in turn requires a far higher degree of formalization of information systems (including use of ICTs) than is needed to serve domestic markets (Parikh, et al. 2007” quoted in UNCTAD 2010, p. 66), in addition to a wide variety of other capabilities and economies of scale. Particularly important are “critical success factors” relating to quality, price, delivery, and standards in particular (Kaplinsky et al. 2003). The UNCTAD (2010) report also notes that firms that are unable to leverage ICT will find themselves at a competitive disadvantage, forming part of what we might think of as a non or even dis-informationalised economy.

With respect to the role of ICTs in small and medium-sized enterprise (SME) development, there are few studies in Africa and most focus on basic productivity and performance indicators that can be to linked production function analyses (Chowdhury, 2006; Qiang et al., 2006; Research Africa ICT!, 2006). “The IT-productivity connection remains elusive, with contradictory results from study to study” (Lefebvre, 1996 quoted in Mouelhi, 2009, p. 961). Drawing on qualitative interview data this paper explores this issue through an examination of the uses and impacts of

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3 In Durban one of United Nations Conference on Trade and Development’s Trade Point companies had an opportunity to export 10,000 bathroom cabinets per month to China “at this price” – there was no negotiation on price possible. They had to be in Guanzhou at a particular time. They couldn’t meet scale but Trade Point went through with them what they would need to do to meet the order. They gave them the names of the three porcelain basin manufacturers in South Africa. They are now linked with these so that if they were to get an order like that in the future they would be able to subcontract to them to meet the scale (Interview with Monique Labat, General Manager, Trade Point, Durban South Africa, 28/7/10). In this case then it was not lack of connection but scale and production issues which presented the barrier to entry in this market.

4 In part this relates to the effects of the so-called “productivity paradox of ICTs” as workers surf the internet for example.
new ICTs in the wood products industry in Durban, South Africa and its surrounding region. In particular the survey sought to explore the relationship between innovation, both technical and social, global production networks and ICT usage.

**ICTs and Global Production Networks**

Over the last decade economic geographers in particular have developed the concept of global production networks (GPN) (Coe, Hess et al. 2004; Bridge 2008; Coe, Dicken et al. 2008; Glassman 2011). The GPN approach builds on the global commodity chain and global value chain approaches, but explores the influence of a wider range of actors on the geography of production than simply firms. For example it explores the influence of trade unions and state policy regimes on the geography and structure of production.

Economic geographers have explored the nature, construction, impacts and governance of these networks. For Coe et al. (2004) regional development arises from the contingent strategic coupling of GPNs with regional assets, such as pools of skilled labour, although some might argue that regional assets are constitutive of these networks. Under conditions of globalization these authors largely discount the possibilities of endogenous development. On the other hand much of the literature on the impact of new ICTs on industry assumes the centrality of endogenous development, where SMEs are able to upgrade their products and processes to become more competitive (James, 2002).
Coe et al. (2004) may be correct in their assessment, under current conditions, about the importance of insertion into GPNs for firm growth. “The small average size of African firms is a problem from the perspective of long-run growth since the size of firms is correlated with export activity and productivity (Rankin et al. 2006). In particular small firms tend to be less productive than large firms” (United Nations Industrial Development Organization and United Nations Conference on Trade and Development 2011, p. 23) and it furthermore appears “that informal firms do not become formal as they grow” (p. 25). This is particularly problematic because the majority of the world’s poor work in the small medium and micro enterprise sector (SMME) sector (Lourenço-Lindell 2010), including subsistence agriculture. The fact that informal firms do not pay tax also prevents the emergence of a social contract vital to effective governance.

Through an empirical investigation this paper seeks to address key questions about the role of ICTs in economic development in Africa. In particular:

- Do new ICTs enable process, product, functional or chain upgrading, and the development and deepening of regional assets, thereby increasing productivity5.
- And relatedly do new ICTs substantially facilitate connection to global markets and/or GPNs.

There are also subsidiary questions about the role which ICTs play in marketing etc, but the argument of this paper is that these are the central questions in terms of determining the impact

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5 According to Morris and Dunne (2004, p. 252) “four main types of upgrading have been identified (Gereffi 1999; Kaplinsky et al. 2002): process upgrading involving adoption of world class manufacturing operations, product upgrading involving the ability to bring new or simply customised variants of products to market, functional upgrading involving shifting to more rent yielding links within a chain such as design or logistics, chain upgrading involving moving to an entirely different more rent yielding value chain”.

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of new ICTs on economic development. The paper follows an inductive methodology drawing on fifty one interviews with firms in the wood products sector and others with key informants in Durban, South Africa and its surrounding region in 2010.

**ICT in the Wood Products Sector in Kwa-Zulu Natal, South Africa**

South Africa is the biggest and arguably the most advanced economy in Africa, although now rivalled by Egypt. It accounts for about 80% of the economy of the Southern African Development Community, with thirteen member countries (Adebajo et al. 2007). With a population of around only fifty million people it is responsible for over a third of Sub-Saharan Africa’s (SSA) economy and fully three quarters of all electricity generation on the sub-continent. Of Africa’s top 500 companies 54% are South African, as are 19 of the top 20 (Africa Report April-May 2008 cited in Daniel and Bhengu 2009).

South Africa is also one of the most advanced countries on the continent in terms of its general and telecommunications infrastructure and has almost a 100% mobile phone penetration rate. This is partly related to the fact that “in South Africa the telecommunications sector has since 2003 been continuously liberalized and privatized” (Fuchs and Horak 2008, p. 109)\(^6\), but also to the relatively high average per capita income of over US $6,000 (World Bank 2011). As argued

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\(^6\) According to one consultancy report the South African ICT sector generated over $24 billion in revenues and accounted for more than 7% of the country’s GDP (Essoungou 2011). However there are substantial gender divisions in relation to new ICT usage in the country, with only 12% of internet users in South Africa being women (Unwin, 2009).
earlier the most important potential economic impacts in Africa of the mobile phone and wider information technology “revolution” are indirect, on firm productivity.

Wood products are especially significant for developing economies because they are traditionally resource and labor-intensive activities undertaken by a diverse group of enterprises; from craft-based micro-enterprises to larger-scale and high-volume producers (Kaplinsky and Readman, 2000). By 2000 wood products was the largest traded low-tech sector worldwide (Kaplinsky et al. 2003) and it encompasses sub-sectors such as furniture, wooden flooring and paper, amongst others.

South Africa’s wood sector is ranked 21st (out of 140) in world and growth has been steady despite increasing competition from Asia (ITC, 2008a). South Africa ran a trade surplus of US $103 million in “wood, articles of wood and charcoal” in 2010, in addition to having exports of almost US $250m in “fuel wood, wood in chips or particles and wood waste” (Calculated from United Nations Comtrade database 2011). Intense international price competition has meant that export margins have been under pressure however. By way of example, UK sterling prices of bunk beds that two South African manufacturers received fell by a third between 1996 and 1999/2000 (Morris and Dunne 2004). “South African producers are only staying in the [international market] by virtue of price competitiveness, since their quality and delivery reliability were poor, they were distant from final markets and showed little capacity to develop related capabilities in other sectors” (Kaplinsky et al. 2003, p. 20).
Although there is increasing market concentration, SMMEs remain predominant in production for the large domestic economy; particularly in the furniture sector (Kaplinsky and Manning, 1998; Kaplinsky et al. 2002; 2003; Moodley, 2003). In the mid 1990s production for the domestic market accounted for 87% of total production in South Africa (Industrial Development Corporation 1998), while production for export is concentrated amongst a number of large-scale firms.

There has been some research done previously on the impacts of ICT on the wood products sector in South Africa. SMEs in South Africa have noted in other studies that they had increased their profitability through placing and receiving remote orders (Esselaar et al. 2007). Moodley’s (2002; 2003) work on the wood products and apparel sectors in South Africa argues that while e-business remained in its infancy there was tremendous potential for manufacturing firms to employ ICTs for international market expansion, knowledge diffusion, and innovation development provided fundamental infrastructure and human capital constraints could be overcome. This paper explores whether or not this has been the case through an empirical investigation.

**The Durban Wood Products Sector**

Durban is South Africa’s second largest city and is the continent’s busiest port. It is traditionally a manufacturing city and region, and the sector is still the largest contributor to regional GDP (Rathiyay 2010), making it more dependent on manufacturing than the other major metropolitan areas (Morris et al. 2001). However according to the Head of Local Economic Development Unit
of eThekwini municipality, which encompasses Durban, “globalisation has challenged us” particularly “Chinese development in terms of manufactured goods” where there had been a “devastating impact on the clothing and textile industry” for a long time (Tulsiram 2010). This was echoed in the interviews in the wood products sub-sector. One company noted that ICT had made it easier to import finished goods from abroad and that this had created competition from cheaper imports. “If a lodge in Africa has enough lead time, they’d rather get furniture made in China. Good quality stuff”.

According to one respondent who had done research on the sub-sector there are about 350 furniture companies in the Durban area so there is a lot of competition (Interview with Glen Robbins, 22/7/2011). A survey was conducted with 51 furniture companies in Durban and the surrounding region in July and August of 2010 around their usage of new ICTs.7

**Usage of ICT amongst survey firms**

The survey revealed a great diversity of usage of new ICTs amongst the firms. All of the firms interviewed had access to, and used, mobile phones and the internet, bar one company which did not use the internet8. However the level of access and usage varied greatly across firms. Some managers noted that they spent several hours a day on email, for example, whereas one of the microenterprises interviewed noted that they went on the internet about twice a month to get

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7 Firms were selected using a convenience sampling method. They were identified through web-searches, phone books, asking other firms for wood products companies producing in the area and physical searching in industrial estates.

8 Although one company which was approached claimed that they did not have access to either and was consequently not interviewed.
ideas from new ranges of furniture. Several firms had a website through which to market their products, although most did not, and one noted that it would not be worthwhile to have one as they did not deal directly with the public.

Some managers also expressed reservations about the unwanted panoptic afforded by new ICTs. For example one manager that they “follow a regime” of not leaving the internet connection on for security reasons; to keep control of their system. Consequently they only check email at four or five intervals during the day.

Issues of cost also came up in the interviews. Often the literature on new information and communication technologies assumes that they create a “borderless world” (Ohmae 1995). However cost impairs participation, although some firms had strategies to offset this. For example, some firms used cost saving techniques such as using a rerouting box with a subscriber identity module (SIM) card which allowed them to make calls from their landlines as if they were from a cellphone, as calls from cellphone to cellphone are much cheaper than from landline to cellphone. This manager estimated that this saved the company around R1500 (roughly US $200) a month. Also boosterism around new ICTs neglects the role of old ICTs. One firm manager noted that “people calling in would prioritise the landline” as they considered the mobile phone too expensive. Furthermore several companies still used fax, although this was probably out of habit, a type of path dependence, rather than related to cost. The World Bank in one study found that the yearly savings to a company which does a lot of overseas business in
Sub-Saharan Africa of using the internet instead of fax were $6,000 (cited in James 2002). Many firms in the survey did use email to communicate with customers and suppliers.

A number of themes emerged from the survey, described below.

**Time and space management**

Based on a close reading of the interview transcripts, the main impact of new ICTs seemed to be time saving. For example firm managers said things like “with the cellphone you get the message quicker” in communicating with customers and suppliers. Another noted that you could “ask ten people for quotations, just sitting on your computer”. Yet another manager expressed the opinion that the “mobile phone is my life” and another that “my phone is my business”. This manager felt it was essential as he spent much of his time travelling inside and outside South Africa. He also noted the space compression effects of ICTs as they “make the world smaller”.

A microentrepreneur noted that “if there were no mobile phones we would be starving” as he used his mobile phone to get in contact with customers, keep appointments etc. “If you’re not networked your going nowhere”. Others expressed the opinion that mobile phones were “almost a necessity” or that they didn’t know how they could do without email and mobile phones.
However the impacts of ICTs were dialectical on time management; a reflection of the so-called “productivity paradox” associated with new ICTs. One manager noted that cell phones were “a nightmare, it never stops”, while another noted that ICTs meant he took work home and that his personal life was interrupted. Another noted that ICT meant people expected “instant gratification” on requests for information, quotes, etc and that friends who had gotten Blackberries were “more agitated, more stressed”. However some of the managers had developed strategies to deflect this, such as switching off their mobile or keeping it in their desk drawer in work.

Another interesting thing to emerge from the survey was that firm managers sometimes used different types of ICT depending on who they were communicating with. For example one company which was both a manufacturer and retailer of furniture noted that they used mobile phones and also communicated by email with suppliers of furniture, but preferred to communicate with raw material suppliers by phone. Perhaps the commodity nature of the raw materials made it less important to see visual images of them.

While speeding up of communication is advantageous to businesses, it does not seem to have had dramatic productivity raising impacts, based on the firm-level interviews. New ICTs then appear to have had an incremental, rather than a transformative impact along this dimension.

**Labour management**
Another theme to emerge from the survey was the way in which new ICTs are used to manage/control labour. For example, absent workers could be phoned on their mobiles to see why they had not reported for work. One firm in a small town in rural Kwa-Zulu Natal noted that while the staff had mobile phones, they often lost or had them stolen and that numbers constantly changed, or they had them switched off. Consequently it was felt that this was not a form of communication that managers could rely on. Rather this manager noted she didn’t use IT to find or manage staff. It was all “face to face”. Another manager noted that often workers suffered from domestic disruption, and that this explained why many of them were absent and that “their problems are probably much bigger than my requirements of them”.

Another company noted that while they had given employees mobile phones and these had sometimes been stolen or were switched off, it nonetheless made management easier. One manager expressed the opinion that mobile phones had “instilled a sense of discipline” in their workforce. Thus there are ICT panoptic chains where customers expect to be able to reach suppliers immediately and firms, in-turn, expect to be able to reach workers⁹. ICTs then are creating a global panoptic which functions to potentially maximise the law of value through a compression of order, turnover and delivery times, although this is socially contested as described earlier. One South African business noted in another study that while it was not possible to vary the amount of capital employed in the short-term it was possible to vary the amount of labour (Green 2008) and ICTs facilitate this. This represents “flexibility” or the leaning of production, which is a global phenomenon (Smith 2000), creating pressure towards

⁹ Other aspects of this panoptic include the practice of “cost-down” pricing where major buyers, such as Walmart, insist on suppliers reducing costs each year of the contract Stiglitz (2006).
achievement of the law of one price, at least for labour, with auto workers in the US now being hired on wages not far above the minimum for example.

Many of the companies in the survey noted that they did not use IT to recruit staff, but did this through referrals from existing staff members, who served as a reference for them. This was in case anything “went wrong”, the people were known to them. Another manager noted that it was important to source staff in this way because you “couldn’t trust anyone”. Trust has been found to have important benefits for economic development, by reducing transaction costs, but ICTs do not necessarily develop this (Storper 1997; Molony 2007).

One factory which was visited also used cameras, computers and smartphones for surveillance of employees on the factory floor; as the manager put it to “keep an eye on the guys”. The cameras could be accessed via the web on the smartphone. According to this manager IT had changed the way in which manufacturing activity is organized, but not the speed at which it took place. Thus new ICT in this instance resulted in a liquification (Ritzer 2010) or partial dis-embedding from place for capital, and a “firming” of place for labour through its use for surveillance. This shows how ICTs may deepen existing power inequalities in value chains. Although again the dialectical impacts came of ICTs into play elsewhere as one manager noted that there was a loss of productivity arising from factory staff being on their cell phones during work hours and there were also reports of staff using business phones for personal usage. One manager recounted a story of a driver who sent 380 texts on a company phone to his girlfriend in a month.
Relations with Customers and Marketing

One company noted that it was going to start using a package from Mweb, which is a South African service provider which sends out bulk emails and text messages. It was felt that this was more effective than email for example because of the firm’s market segment, as many of their elderly customers had mobile phones, but not computers. Firms have also been able to access new customers through placing ads on the South African instant messaging service and social networking site MXit, which has about 20 million subscribers in the country.

Another company recounted how they had sent an email to twenty five clients. One of these clients sent it forty people, who in turn sent it out to hundreds. Consequently “the phone did not stop ringing” and the company was kept busy for eighteen months. Another company noted that there had been a process of disintermediation in the industry as a result of ICTs and that they had put alot of sales representatives out of work. This manager argued that Google Adwords could “bring in ten times more work than a rep for the same price”. Yet another manager noted that they got email enquiries from throughout Africa from countries such as Angola, Rwanda and Ghana and that they would make phone calls and then fly out to meet potential customers in person. Others noted that it was easier to conduct negotiations face-to-face.

There were a range of ICT facilitated services also being offered by companies For example, one company allowed potential customers, such as architects, to download computer aided design (CAD) drawings from their website, while another company used electronic funds transfer from
customers facilitated by the internet. One manager expressed the opinion that the internet was “mindblowing”, whereas another argued it was a “window to the world”.

There were also instances of combined ICT usage. One company noted that customers could talk to them on their mobile phones while looking at their products on the internet. However, as noted earlier another manager in another company noted that customers preferred to call in using their landlines, as mobiles are more expensive to use.

There was very little evidence of firms trying to connect, outside of sourcing of inputs, to GPNs. One manager who noted that they did “way too much” email and internet (2-3 hours per day) said that they had in the past contacted potential overseas customers, without much success. However, they did advertise on Google Adwords, where you pay per click, and did get email queries as a result of that. Another company noted that all of its relationships were within South Africa and that it had no dealings with “external bodies”. However some firms noted that the spatial extensity of suppliers within South Africa had increased, as a result of the internet they were able to find out about suppliers in Johannesburg and Cape Town whereas previously all of their supplies would have come from Durban.

There were a small number of companies in the survey who were engaged in exports. One company exported to the US and noted that they could not have done so without email or internet. However, this company estimated that only about 2% of their production was exported,
versus ten percent the previous year. They attributed this to the impacts of the global recession.

This company exported to Las Vegas, where a distributor had found their website. The initial contact was made by email and then they started shipping containers to them. They only met after a year when the firm manager went to Las Vegas. The fact that the distributor trusted them was very important, as they asked for full payment before they would ship.

**Impacts on sourcing of raw materials, design and production**

Some companies said they used the internet to source new and cheaper raw materials and simpler ways of manufacturing and develop new customer relations outside of the Durban area. As noted earlier many of the firms used new ICTs to conduct search routines (Nelson and Winter 1982) and to look for new designs in particular.

One company noted that ICT enabled them to source cheaper inputs such as handles for their furniture, which might have cost seven South African rand (R7) each previously, but might use R2 handles now. Another noted that they had a greater diversity of suppliers now because of new ICTs. These types of efficiency gains should improve international competitiveness, although as other firms in other countries are also deploying similar techniques, this effect will be limited, although it will contribute to the prices for basic manufactures being driven down worldwide (Kaplinsky 2005).
Others noted that IT had helped them improve quality and better plan production. One company was able to track its containerised inputs from Asia, while another uses Permicell, which is a least cost router for phone calls across networks. Some companies also used asymmetric digital subscriber lines (ADSL), and another noted that the absence of this facility negatively affected all of the businesses in the locale.

One manager interviewed noted that their company did not use ICT in the production process “at all”, while another company noted that they would like to improve productivity but that ICTs “can’t do much towards this; more of a labour-intensive process”. In terms of production another interviewee noted that in terms of production the technology they rely on is “engineering technology” rather than telecommunications technology. On-the-other-hand another firm noted that ICT had changed the speed of manufacturing/production as when the manager was out of the office he could call in and make sure something was made while he was out and it would be ready when he got back. Again, however this is a relatively incremental time-saving benefit.

A bifurcated informationalised economy was also in evidence in the survey. For example one company noted that they needed more internet access, but they were “fine” with the cellphone which was their own responsibility (e.g. the government did not need to further promote this technology). It was noted that some companies “in circulation” have their own computers and this company’s lack of a computer prevented internet access. It was felt that with a computer

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10 This is a technology which allows faster data transmission over copper telephone lines by utilizing frequencies that are not used by in voice telephone calls. Data and voice can be transmitted simultaneously over the same cable using a device called a “splitter”.
they could get more work, and avoid delays in replying to quotations, “which creates a bad impression for customers”. It was also felt that “computers have a lot of programmes that can make work easier – a lot of design”.

One company manager noted that he could do without his cellphone, but not his computer as “everything” was computerised including production lists, planning and schedules. Meanwhile another felt that they could do without the mobile phone as the computer “almost substitutes for it”, particularly with email facilitated by ADSL. This suggests that in terms of the transformation of production structures it may be computers, rather than mobile phones which offer the greatest potential. Another felt that they couldn’t chose one technology as being most important as everything works “hand in hand”.

There were also instances in the survey where there was an intersection of ICT with high engineering technology. One company had also outsourced its cutting to a Computer Numeric Control (CNC) company and would email the drawings to them. They would also order the materials, which would be delivered to the CNC company for cutting.

Survey reflections

There was a very clear hierarchy of use amongst firms, with one firm refusing to do the survey as they claimed not to have any new ICTs and there were others who used only mobile phones, for example. A question which the survey raised is whether there is an enhanced payoff from
integration of the use of multiple new ICTs, rather than just mobile phones for example. As noted earlier some respondents felt computers most important for changes to production.

There was also some interesting findings to emerge in terms of geography and ICT usage. One specialised small business which exported to galleries in the US and to Europe, although most of their work was for the national market, based in a remote rural area had an electronic point of sale device newly installed. This was connected to the cell phone tower, because the landline failed so often because of storm damage. This company did not want to access new markets as the co-owner “can’t physically do anymore work”. He expressed the opinion that he “don’t know how they would do it without email” and used the web to source inputs such as lathes. This company was a high end one which had not had any customer returns in twenty three years of operation and did not have any links with local manufacturers as they did “completely different work”.

This firm was in contrast to another local company which was visited which produced standardised products for the local market, which was shutting down. This firm expressed the opinion that the furniture industry in South Africa was “dying”. This company had a cell phone, but no landline anymore. This suggests that rather than talking about the geography of the information economy, it may be more important, in Africa in particular, to talk about the geography of the (dis)informationalised economy and what the key components of success and failure in this are.
According to Dorothea Kleine (2009, p. 171) in her study in Chile found “some microentrepreneurs struggled to achieve access to ICTs and all had difficulties competing with bigger companies from larger towns in the online market place of the [government] e-procurement system. This failure is linked to the inherent tensions between the Chilean government’s economic policies and its goal to decrease social and regional inequality”. Similar pressures apply in South Africa, where ICTs also facilitate import penetration.

One company in the survey noted that ICT had made it easier to import finished goods into South Africa as it was easier to communicate and make payments. This manager also noted that design had become “more universal” because it was easy to find inspiration by going on the internet.

One microentrepreneur in the survey noted that big business was “more busy” because they used the internet and email. The impacts of this on economic growth are dialectical. While it could be argued that the concentration and centralisation of capital, which ICTs may facilitate, is good for economic growth by enabling the expansion of technically more efficient firms, the reduction of competition implied might also have negative implications for customers and income distribution and consequently the width of the market. However ICTs also seem to allow the entry of SMEs into new markets, increasing competition and potentially facilitating flexible specialisation.

Conclusion
Africa is characterised by a disarticulated and bifurcated information society and the underdevelopment of the knowledge economy. The foreword to a World Bank report entitled “Broadband for Africa” notes that “Africa’s rapid adoption of the mobile phone is quickly closing the digital divide in voice services. But, just as one divide is closing, another one is opening wider” (Khalil in Williams 2010, p. viii) although some note that there are now more than one hundred million internet users in Africa and that internet connections through mobiles in particular is booming (Bunting 2011). Rather than being a developmental _dues ex machina_ it is important to remember that “ICT is socially constructed ‘as an artefact of a particular environment, created by particular stakeholders for particular purposes’” (Heeks 2002, p. 5).

Manuel Castells (2000, p. 2) has argued that new technologies have led to a fundamental restructuring of capitalism where there is “an accentuation of uneven development, this time not only between North and South, but between the dynamic segments and territories of societies everywhere, and those others that risk becoming irrelevant from the perspective of the system’s logic”. This would appear to be the case in South Africa, where ICTs are feeding into the creation of network and wormhole geographies (Sheppard 2002), where the few firms in the survey that were exporting were not seemingly very connected to their locales.

The use of new ICTs is most common in the eThekwini region’s wood products sector in sourcing of raw materials, communicating with clients and marketing. As such its impacts have been incremental, rather than transformational as methods of production remain largely unaffected, except where computer aided design is used. Computers are also used for accounts
and sourcing designs. Consequently there was little evidence of upgrading associated with ICTs in firm value chains or substantially improved connection to global markets or insertion into global production networks. However there was evidence of deepening power inequality.

One respondent noted that in terms of technology, the retail sector was “up-to-date” whereas the manufacturing sector was “in the Dark Ages”. This is reflective of the power in the networks, where the retailers, who are closest to the final customer, have more power. One respondent spoke of a prominent local retail chain who dictated the terms on which manufacturers supplied them, such as having to store the stock themselves (Interview with Glen Robbins). ICTs may then deepen power inequalities in global value chains and reinforce dependence resulting in what the well known economist Raphael Kaplinsky (2005) in reference to South Africa has referred to as “immiserising growth”, rather than leapfrogging.

Coe et al’s (2004) framework is useful in thinking through the impacts of ICTs on economic development. They argue that under conditions of globalization what is important is the connection, or strategic coupling, between global production networks and regional assets. New ICTs can potentially facilitate this strategic coupling, but there have to be regionally specific and competitive assets to articulate with for this potential to be realised. These include economies of scale and rapid response times. According to McCormick and Onjala (2007, p. 6) “in the ultimate analysis, an economy’s ability to harness a new ICT technology for development in a sustained manner depends to a great extent on the national system of innovation”. This requires more
planning and less laisser faire in order to capture the potential gains of ICT for economic
development and poverty reduction (See UNIDO and UNCTAD, 2011).

Another major issue is the differential capabilities of different new ICTs. For example, while
mobile phones may be very suitable for communication with customers, it is the internet and
networking software which enable coordination within GPNs for the most part (Ernst 2001).
SMEs may have particular problems, as noted in the example given earlier in meeting the scale
requirements of GPN’s, putting them at a substantial competitive disadvantage.

The vast majority of mobile phones in Africa are “feature”, rather than multifunctional internet-
enabled “smart” phones and this too has implications for connection and embedding in global
supply chains. While feature phones may be used for marketing and customer relations it is much
more difficult to see how they could be used in coordination of GPNs in Africa, except perhaps
where SMEs might supply lead regional firms or traders on a sub-contracting basis.
Consequently the impacts of new ICTs on the socio-technical regime in the wood products sector
appears to be one of reproduction, along existing trajectories, rather than transformation or
transition to a new one (Smith et al. 2005).

Many studies have shown that the firm-level pay-off of ICTs is dependent on the existence of
complementary investments, skills and factors (e.g. Sypros, 2004). While this is undoubtedy true,
it does not deal with the issue of the limited size of the market and consequently the fallacy of
composition – not all firms can grow through application of ICTs to improve competitiveness. ICTs have a useful role to play in international development as part of an articulated industrial strategy which pursues diversification and sustainability. By themselves they facilitate the further growth of firms and/or regions with established competitive advantages and thereby may reinforce rather than subvert existing development trajectories. In Uganda it was found in a large-scale survey that “the usage of computers and Internet is high in medium and large firms, and especially firms owned by foreigners” (Ssewanyana and Busler, 2007, p. 58). However one of the developmental imperatives in Sub-Saharan Africa is to grow small and micro-enterprises. Consequently informationalization, it not equivalent to transformation.

References


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