

TECHNOLOGY TRANSFER

Fortune Development Centre has been talking about technology transfer since its inception in 2012, but never before has the subject become as crucial as it has been in recent years. Technology transfer has become one of the pillars of innovation and open innovation with the acceleration of the digital economy and the digital industry. We are living a digital life; just think about the wide variety of apps that are used to monitor one's health, manage one's finances that include digital currencies, church sermons, e-learning, student data management systems, e-commerce solutions, supply chain solutions, help desks and customer care or call centres or interact with other people and crowdfunding the list could go on and on. In addition to the tools that are intentionally selected, we are connected to numerous digital systems that we are not even aware of.

Zimbabwe has a population of just under 15 million people with a median age of 18.7 years. In a country with such a low average age, it's no surprise that internet trends are spiking upwards with an increasing number of users coming online as each year passes. Couple this with the fact that remittance payments received from family members in the diaspora totalled US\$657.7 million up a third year on year in 2020 and you start to see a clearer picture of how the sector has enjoyed a welcomed boost. In the business world, everything from operating models to value chains and complete ecosystems has undergone huge and fundamental changes. The effects of the digital transformation have been enormous, as companies and organisations strive to be more data driven, automated, trackable, measurable, real time actionable, self learning; you name it! Even many traditional fields, such as agriculture, mining and transport, are being modernized by sophisticated analysis and prediction technologies. The impact of digitalization has also acted as a catalyst for employment growth in the wider economy. In India, for example, it is estimated that three to four jobs out of five are created for every job within the business process outsourcing and ICT enabled services sectors. According to the Global Systems for Mobile Communication Association, at least 239 million Africans were connected to the internet by 2019. The continent was also projected to grow more than any other region over the next five years, adding 167 million subscribers.

Today, however, the question of whether technology creates or destroys jobs is gaining momentum. We can at least be sure that there will be three types of jobs, categorized by the percentage of codifiable tasks within the role:

- 1) Those that will disappear (losing the race against the machine). For example, clerks and administrative staff, or truck drivers;
- 2) Those that are in collaboration with machines/algorithms (running with the machine). For example, those professions that rely on cognitive and social capabilities, such as doctors/surgeons;
- 3) Those jobs that are completely new or remain largely untouched (running faster than the machine or running a different race). For example, roles in the creative arts are unlikely to be automated, as are new roles that involve managing data and machines.

Within that context, Fortune Development Centre's analysis suggests that digital transformation has the potential to create a significant number of jobs.

Therefore, in that scenario, the skills of the ICT Officer are the most important aspect of the processes of: technology transfer, skills development and job creation. Either as an individual or a team, these are the people who will lead the interactions on both the academic and commercial side. Working "on the coalface" of both academia and

industry, the ICT Officer plays a key facilitating role. As such, there is no single route or qualification into Technology Transfer, as a very broad skillset is required. For this reason, bigger offices can benefit from having a larger team with more diverse skills. A successful ICT Officer needs the ability to quickly gain skills in multiple subject fields. Or it should be understood the other way round. Those in other multiple subject fields must be exposed to information communication technology sufficiently enough to be able to access the available digital systems.

Working with academics, particularly in the science and technology subjects, many of whom are at or near the forefront of their respective fields, requires the ability to “get up to speed” with their topic; an ability to apply such a wide breadth of knowledge is key. In this aspect, previous academic qualifications aid the process but cannot offer insight into every specialization. However, purely understanding a new technology is not sufficient to assess the legal, economic and associated risk aspects of its potential development; additional skills are required to develop a business case. These skills can be developed and should be regularly updated.

There are many courses and workshops offered by both professional organisations and also private companies, and it is prudent for an ICT Officer to keep their knowledge up to date. To be able to perform all these tasks can be challenging, and another skill of the ICT Officer is the ability to assess one’s own limit, and when to bring in additional assistance. In the case of any future collaborations, pre-existing connections remove the need for initial introductions and allow for an optimised route through the transfer process. This can be through fellow ICT Officers at collaborating organisations, like Engineers Without Borders, Sweden in Fortune Development Centre’s present circumstance or contacts within other companies (@cyberladsit) and industries.

Technology Transfer is often seen as a relatively small specialization, for both university and industry, and therefore gaining connections outside as well as inside the field makes the work of the ICT Officer both more accessible and demonstrable. This can take many forms, from activities and workshops within the collaborating institution, working with local or social media to advertise success stories or even just visiting individual researchers or high schools as in Fortune DC’s MoU with Samaringa High and explaining how the ICT Officer can be of benefit to them. It is also of great benefit to be a member of a professional network. This not only connects the ICT Officers with like minded professionals but assistance in their role often via access to a large library of resources in addition to running workshops and training courses.

After having articulated that, technology transfer can be described as application of knowledge to the practical aims of human life or to changing and manipulating the human environment. This covers all those activities that underpin the transition of a range of factors from scientific research to the markets. In other words, it occurs by concerted effort to share skills, knowledge, technologies, methods of manufacturing, samples of manufacturing, and facilities among governments or universities and other institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials, or services. It is closely related to (and may arguably be considered a subset of) knowledge transfer.

Therefore, this process is the result of a partnership between academic and industrial fields, whose main purpose is to make technology accessible to everyone. Here, it’s pertinent to note that technology includes the use of materials, tools, techniques, and sources of power to make life easier or more pleasant and work more productive.

Whereas science is concerned with how and why things happen, technology focuses on making things happen

Today, the technology transfer in our manual involves not only knowledge transfer, but also their transformation into an innovative technology with the active participation as the source of this technology/invention, the receiver/user and the end user of the product manufactured/produced using this innovation. This technology transfer involves at least two key actors in this process, the presence of which is a mandatory condition of its existence the source and the recipient of technology. Put in another way, the application of knowledge, their target usage requires concerted actions of two or more individuals; cooperation and interchange of information between people over a long period; economic relations in the sphere of use of new systematized knowledge. The goal is to use the technology acquired for the benefit of society; exchange of skills, knowledge, technologies, methods and patterns of production between governments and agencies to ensure innovation development and greater accessibility to a wide range of users.

Technical support is a vital element in technology transfer. Such agreement provides participation of the collaborating organisation's experts in project implementation and rendering technical support at each stage of technology transfer. Attaching experts in the process of transferring of the technology ensures closer cooperation between two parties, which promotes the full transfer of knowledge and skills. Thus, a technical support agreement can increase efficiency of transfer.

Finally, Technology Transfer Management is a highly diverse field, and the optimal procedure depends on a multitude of factors. Institutional support and acceptance are critical but at the same time not to create a rigid and overbearing structure. The ICT Officer in consultation with the CEO must be allowed the freedom to select the best route for commercialisation. As discussed above, there is no ideal route into the field, but a successful ICT Officer must be able to quickly pick up and actively work with new skills in fields as diverse as law, finance, manpower, marketing and of course the subject area of the technology to be commercialised.

These technopreneurs are mobilising interests and utilising the Internet to cater for a wide variety of services. The science and technology developed from the pursuit of curiosity can be applied to solve urgent and pressing human problems. The launching of the Samaringa High Internet project is both an instructive inspiration and a profound demonstration of the unbounded nature of technology transfer applications. Zimbabwe's new education curriculum emphasises competencies in information and communication technology, and computer assisted learning.

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