

DEVELOPING SMART ICT IN RURAL COMMUNITIES IN MALAYSIA THROUGH THE ESTABLISHMENT OF TELECENTERS

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ABSTRACT

The adoption of information and communication technology (ICT) is among the primary agendas of the Malaysian government to raise the national economy and to transform its populace to be more technologically oriented. The rapid expansion of ICT in the process of rural development is evident both locally and globally. In line with national aspirations, the government addressed the challenge of ICT through a programme in which telecentres were set up in rural communities. The cyberworld was introduced to the countryside through telecentres which offered online facilities, world exposure and learning to the rural population with the aim of narrowing the digital gap between the rural and the urban folk. Studies have shown that urbanisation of rural areas through the setting up of telecentres produces a positive impact; there is holistic development that nurtures a technology-savvy generation. Hence, this study examines the impact of the telecentre programme on the development of rural areas through the implementation of Smart ICT.

Keywords: Developing; Smart ICT; Rural; Communities; Telecenters

INTRODUCTION

The ‘urbanization of the rural through telecentres’ may be regarded as the development of rural areas and their residents through the adoption of ICT that brings to them similar exposure and learning opportunities as those available in the cities. Governments, especially those in developing countries, are turning to ICT not only as a strategy for bridging the digital divide between rural and urban dwellers, but also for improving the living conditions of the rural population (Muhammad Sani Bashir et al., 2011). By narrowing the gap in ICT usage in this manner, the rural population could avail itself to a better quality of life than what it experienced before. The urbanization of the countryside through cyberspace would be more successful if several factors were taken into careful consideration. Among the factors that need particular attention are the local conditions, such as the physical state of the area, its main economy, social and cultural norms, and political affinities. To increase the likelihood of success, the populace should be one that is open to accepting the usefulness of the innovation that is introduced.

The country's development programme proceeded with the implementation of the National Development Policy that was launched by Y.A.B. Dato' Seri Mahathir Mohamad, the fourth Prime Minister of Malaysia on 17 June 1991. The framework of the Second Long Term Programme (Rangka Rancangan Jangka Panjang Kedua, RRJP2) 1991 – 2000 was drafted and this formed the basis of the National Development Policy (Dasar Pembangunan Nasional, DPN), signalling the beginning of a new era in the drive to make Malaysia a developed country by 2020. Among the objectives under focus in the National Policy was that national unity should be the final goal of the DPN because a united people was essential for the strengthening of the social and political stability that would ensure continued economic progress. The National Development Policy (DPN) set out the requisites for Malaysia to achieve the standard of an advanced country, *viz.* social justice, values, ethics and morals, political stability, quality of life, efficient government administration, and economic excellence. The DPN took into consideration the progress achieved under the DEB and the strengths and weaknesses in its implementation. It contained many modifications towards achieving a new dimension in developmental effort, especially in the eradication of poverty and the restructuring of society.

The development of telecentres in Malaysia began in 2000 with villages included in the exercise. The initiative was pioneered by government agencies such as the Ministry of Rural and Regional Development, Malaysian Communications and Multimedia Commission, Ministry of Energy, Water and Communications and various state governments. At the time of writing, a total of 1,945 telecentres are operational under the purview of various agencies. Telecentre projects in Malaysia are known by various names such as the Rural Internet Centre (Pusat Internet Desa, PID), Mini RTC, Kedai Com, USP Communication Centre (UCC), Rural Broadband Library, Universal Service Provision (USP), and Bestari.Com in Terengganu (ESCAP 2006). Telecentre networks play a vital role in facilitating the process of socio-environmental transformation and metabolization; “the networks permit exactly the urbanization of nature and the fetishization of the commodities they carry” (Kaika and Swyngedouw, 2000).

URBANISATION OF THE RURAL COMMUNITIES THROUGH TELECENTRES

The ICT revolution and the attendant process of globalization have resulted in far-reaching social and political transformations. At the macro level, the ICT revolution is said to have given rise to a new economy, new society, and new politics (Chu and Tang, 2005). Rural communities are rapidly being transformed by ICT. The development of telecentres in Malaysia began in 2000 with villages included in the exercise. The initiative was pioneered by government agencies such as the Ministry of Rural and Regional Development, Malaysian Communications and Multimedia Commission, Ministry of Energy, Water and Communications and various state governments. At the time of writing, a total of 1,945 telecentres are operational under the purview of various agencies. Telecentre projects in Malaysia are known by various names such as the Rural Internet Centre (Pusat Internet Desa, PID), Mini RTC, Kedai Com, USP Communication Centre (UCC), Rural Broadband Library, Universal Service Provision (USP), and Bestari.Com in Terengganu (ESCAP 2006). Until the present time, the development of telecentres in Malaysia has involved two main phases, and another phase is scheduled to follow. In the first phase (2001-2010), telecentres were set up to address the problem of the digital gap.

The second phase (2011-2015) was aimed at *Bridging the Digital Divide* (BDD) while the third phase (2016-2020) will focus on upgrading telecentres to make them advanced, independent, and robust in order to stand the test of time.

Based on the developmental history of Malaysia, the ‘urbanization of the countryside through cyberspace’ is a continuation of earlier programmes under the New Economic Policy (DEB) that sought to urbanize the countryside by providing modern urban facilities and conveniences. In the 70s and 80s, the expression ‘urbanize the countryside with city conveniences’ was a popular call in the push for rural development. This approach was in part aimed at avoiding the potential problems associated with the mass movement of rural residents to existing urban areas. During the period spanning the Second Malaysia Plan to the Fifth Malaysia Plan, programmes for the urbanization of rural areas were actively pursued through the development of Felda settlements, while new directions for rural development and the establishment of new service centres to improve rural areas were put in place, especially in the more isolated locations. Traditional village areas that had potential for development, such as those near main roads, were upgraded to serve as Rural Growth Centres (Pusat Pertumbuhan Desa, PPD). PPD represented the final ranking for growth centres that offered facilities like those in the cities. The explosive growth of ICT in Malaysia that began in the late 80s, continuing on to the 90s, and now in the 2000s, puts into practice the principle of ‘urbanizing the countryside through cyberspace’, by bringing tangible advancements in development. The project aimed to place one computer into each home and the telecentre project in rural districts. Cyberspace refers to the virtual space that is accessed through the internet. Cyberspace is also used to send messages rapidly regardless of boundaries or time. This means that cyberspace represents a mode of communication that can take place between parties at the same location and time, same location but different time, different location but the same time, as well as different location and different time (ESCAP 2006).

The telecentre is a one-stop centre where computer and internet facilities are installed for use at a reasonable price for the local population, especially rural folk who cannot afford to own such facilities and equipment in their homes. The main aim of telecentres is to reduce the digital gap among various sectors of the Malaysian population. The project received strong support from the government under the Eighth Malaysia Plan which emphasised the setting up of ICT infrastructure, especially in rural areas. A telecentre can be defined as a centre that regulates and provides ICT services to users, as well as teaching and learning of ICT and its related skills. Besides that, the telecentre also facilitates digital communication and access to information. The telecentre even contributes towards the local economy and to the incomes of users through advice and counselling on various aspects of the e-economy, such as e-government, e-banking, e-commerce and e-industry that can generate lucrative returns. In order to ensure that rural folks are not left behind in the digital age, governments in developing countries, including Malaysia, have established information and communication centres popularly known as telecentres in villages. For example, in India many telecentre projects have been established in order to provide information, communication and other ICT services to the rural communities (Muhammad Sani Bashir et al., 2011).

Telecentres in Malaysia can be divided into three main groups, based on the authorizing agency or funding source. The first group covers telecentres that are wholly owned and managed by the government through a top-down structure. The second group of telecentres encompasses those that are set up under the Corporate Social Responsibility (CSR) programmes of large companies, especially those operating in the ICT industry such as Dell, Microsoft, Maxis, Celcom and others. Telecentres in the third group are those set up by individuals for profit, where services are offered in return for payment. The ‘urbanization of the countryside through cyberspace’ requires sustained effort in the promotion of physical development and human capital, comparable to what is found in the cities. Unless progress is comparable from the physical and human viewpoints it would be difficult to achieve the goals of telecentres. As in the city, telecentres here function as cyber cafes and information kiosks. Telecentres in Malaysia are known by various names such as:

- Rural Internet Centres (Pusat Internet Desa, PID)
- Rural Information Court (Medan Info Desa, MID)
- Kedai.Com, USP Communication Center (UCC), Bestari.Com in Terengganu (ESCAP 2006)

TELECENTRE AND COMMUNITY DEVELOPMENT

Smart communities make use of ICT to acquire and share information as well as to carry out various daily transactions. The benefits of interactive, Internet-based applications can be fully exploited by those knowledgeable in ICT (George Kuk and Marijn Janssen, 2011). Multi-purpose telecentres are planned to grow in symbiosis with social, physical, and spiritual development. In this regard, they are not only centres for ICT, but also serve as centres for social engineering of the rural society. Telecentres develop communication systems and a social network that enable both internal communication and communication with other communities (Jalaluddin, 2012). They are digital platforms that integrate the tools and technologies of ICT, and allow for the development and planning of smart ICT (Stratigea et al., 2015). Figure 1 shows how implementation of the telecentre embodies and enriches the social, physical, and spiritual aspects of the rural population, serving as a focal point of social engineering in the process. Telecentres further support the K-economy and development of a knowledge society.

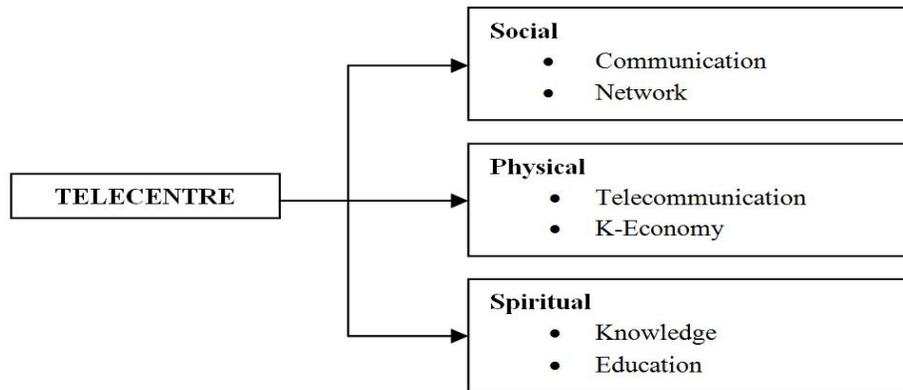


Figure 1: Telecentre as the embodiment and enrichment of social, physical, and spiritual aspects of the rural population

Source: Adopted from Jalaluddin (2012)

i. Communication

With the explosion of knowledge, it is impossible to handle and process huge volumes of data and information without the help of computers and communication technologies (Igwe, 2010). This means that ICT must facilitate the creation of a new type of communicative environment, one that “requires the comprehensive and balanced development of creative skills, innovation-oriented institutions, broadband networks, and virtual collaborative spaces” (Komninos, 2011). In Malaysia, the telecentre programme has increased the awareness and literacy of the rural community regarding Information and Communication Technology; it has also increased access to computers and provided opportunities for online activities. Community-based telecenters (KedaiKom) play an important role in encouraging digital inclusion among the rural community, thus helping to bridge the digital divide between the urban and rural communities (Zulkefli et al., 2008).

ii. Networking

Technological innovations in the late 1990s ushered in two new mediums of communication, *viz.* the Internet and wireless technology. Telecentres in rural areas use wireless technology to facilitate Internet access. “Technological networks are the material mediators between nature and the city; they carry the flow and the process of transformation of one into the other” (Kaika and Swyngedouw, 2000). The Internet helps to tear down the barriers of information hierarchy, thus giving the public access to information that was previously exclusive to privileged domains. The benefits of the ICT revolution have until now been reaped largely by the developed world. This

is primarily due to the fact that the Internet can be afforded by most people in the developed world while even basic communication facilities are out of reach of the poor in developing countries. The main difference here between the haves and have-nots is that the relative value of time compared to access cost is more in developed societies while the value of time in the developing societies is much less compared to access costs. Hence, fewer poor people invest in ICT resources. The telecentre programme launched in rural areas is important to increase Internet access to ensure that villagers are on par with city dwellers with regard to smart ICT (Mathur and Ambani, 2005). Telecentres also promote the development of networking, hence fostering social, economic, and territorial cohesion (Santinha and de Castro, 2010).

iii. Telecommunication

Computers and telecommunication technologies are utilized to handle information processing regardless of where the information is processed. ICT is the aggregate of computers, telecommunication equipment, multimedia, and other related technologies that are applied and utilized in the total process of information management and dissemination. ICT components include the computer system (hardware and software, input and output devices), storage media like CD-ROMS, USB disk/flash, and smart drives as well as telecommunication equipment like telephone, facsimile transmission, services of the Internet), video, teleconferencing, and so forth (Igwe, 2010).

iv. Economic Benefits

Telecentres are set up to enable communities to access and utilize information that can help them improve their economic and social well-being (Harris, 2005; Muhammad Sani Bashir et al., 2011). ICT plays a vital role in the promotion and development of intelligent cities in the context of a globalized economy (Santinha and de Castro, 2010) as it encourages innovation and efficiency. If knowledge is the engine and information the fuel of economic development, ICT can be seen as driving the innovation process. These technologies do this by reducing distance and time constraints in inter-personal and inter-institutional contacts, and by reducing the complexity of exchanging and acquiring information. However, despite the importance of ICT, these technologies only play a part in enabling the many processes and relationships that characterize the patterns of socioeconomic development. An efficient use of ICT-based services demands the existence of networks related to social interactions, as well as socioeconomic activities conducive to innovation (Santinha & Castro, 2010).

v. Efficiency in Government Administration

ICT plays a vital role, both locally and regionally (Santinha and de Castro, 2010). Generally, ICT helps to improve coordination and reduce bureaucracy concerning administrative procedures and transactions, qualifying and improving efficiency and effectiveness between the government and citizens or other institutions, as well as link services of local/regional governments with other services. Multi-purpose telecentres that offer various services can serve as 'one stop' government

service centres to access the government electronic system for services such as the payment of taxes, registering complaints, and so forth. Services offered by the private sector such as banking and ticket reservation for transportation can be made online using computers at telecentres.

vi. Knowledge

Technologies (ICT) available at telecentres provide opportunities for reducing distance and time constraints by facilitating information exchange and knowledge sharing (Santinha and de Castro, 2010). As the Internet allows users to communicate on a global scale, many have gained access to knowledge that permits them to make informed decisions (Foth et al., 2008; Stratigea et al., 2015). At the time of writing, a total of 1,122 telecentres have been set up to facilitate digital inclusiveness and to promote a culture of innovation and creativity. With the erection of 971 telecommunication towers, 5,737 villages have been connected through the Wireless Village Programme (Program Kampung Tanpa Wayar). The enhancement of Internet access has enabled residents in rural and fringe urban areas to acquire new expertise and knowledge for generating alternative incomes (Unit Perancang Ekonomi, 2014).

vii. Education

The Telecentre project was established within the framework of Vision 2020 with the aim of using ICT to create a knowledgeable Malaysian society. For full effectiveness, frequent use of telecentres should be encouraged and integrated into community work such as education and administration (Linda Johansson Hedberg, 2010). The telecentre programme in schools has helped students obtain information from all over the world for their school projects through the Internet. The aim is to produce a generation of students who are IT literate and who can form the nuclei for Smart Schools.

viii. Mobility

An Intelligent Transport System (ITS) can improve transportation safety and mobility and enhance productivity through the use of advanced technologies. From the operational perspective, intelligent infrastructure systems offer smart systems for parking management, toll roads, public transport operations, coordinated freight transport systems, and road management. From the perspective of users, intelligent vehicle systems incorporated into personal ICT devices enable travelers to adapt to road conditions, avoid congested routes, and use public transport more efficiently. Indirectly, an ITS may have a positive effect on the demand for travel as it improves the use of roads and public transport and reduces their cost (Cohen-Blankshtain and Rotem-Mindali, 2016). ICT can also combine transport and telecommunications to promote collaborative mobility (i.e. carpool, car share) by facilitating the process of matching users (Miller, 2011). Hence, ICT improves the efficiency of road transportation and reduces the negative external costs of work travel. To obtain successful carpools, ICT features such as interactive mapping, intelligent route matching, and administrative functions are required to

manage the matching process (Buliung et al., 2010). However, ICT capabilities are not likely to be sufficient to influence employee commuting patterns without supportive policies (Buliung et al., 2012).

METHOD

This study used primary and secondary data as the main reference materials, with library research on telecentres and rural development as the principal research approach. The scope of the study was centred on the socio-cultural, economic, and environmental aspects of rural society that embraced ICT as an agent of change in a culture of knowledge and learning.

A SWOT analysis is used to determine the effectiveness of the telecentre programme in the development of the community at which it is targeted. It is a method that is commonly used to arrive at a decision or conclusion regarding a proposal or programme under discussion. Hence this analysis would provide an objective evaluation of the strengths, weaknesses, and opportunities offered by the telecentre programmes. The implementing agency would then have a greater awareness of the circumstances surrounding the project, and be better prepared to face potential problems that arise. Based on the SWOT analysis, the implementing agency can select strategies that are most effective in complementing the inherent strengths of the target community, while addressing the weaknesses and threats that could arise from the project. In this manner, important factors that ultimately determined the success or failure in bringing ICT to the rural populace could be duly analysed.

FINDING

In this study, Jerangau Village in Dungun district and Pasir Gajah Village in Kemaman district, Terengganu, Malaysia were selected as the locations for establishing pioneer telecentres. They were also the centres where the SWOT analyses for this study were conducted. The two villages are located within the administrative area under the Central Terengganu Development Board (Lembaga Kemajuan Terengganu Tengah, KETENGAH). Jerangau Village is about 30 km from Dungun Town and 95 km from Kuala Terengganu City, whereas Pasir Gajah Village is about 16 km from Kemaman and 170 km from Kuala Terengganu.

Urbanization of Rural Society in Malaysia through Smart ICT Facilitated by Telecentres

a) Strengths

i. Enhanced Learning Efficiency and Effectiveness

The facilities provided by telecentres in Jerangau Village and Pasir Gajah Village by the Mini Rural Transformation Centre(RTC) helped to raise the efficiency and effectiveness of learning by the local residents, especially among students. This was confirmed by villagers who agreed

that computer usage was helpful in teaching and learning. The computer facilitated acquisition of various types of information in an effective and interesting manner such as when videos or Powerpoint presentations were used. In this respect, courses in the application of ICT run by the Mini RTC were particularly useful. Learning in a more interactive atmosphere increased student participation and enhanced the learning process. The womenfolk, in particular, agreed that the use of technology in education helped their children to perform better in school.

ii. Rapid and Flexible Trade Transactions

The harnessing of technology introduced by the Mini RTC benefited the residents of Jerangau Village and Pasir Gajah Village substantially. There was an increase in the number of entrepreneurs in the two villages who had set up on-line businesses for their products to be marketed far and wide. This mode of business attracted the attention and interest of the younger generation in particular. It is expected that such businesses would expand in time when more users and customers conduct their transactions *via* the Internet. A core group of Internet users with a different way of thinking from that of the older generation might lead to the Internet being a channel for trade among villagers in the future. Women in the villages were not left out; a number of them also began conducting their businesses online. For example, frozen foodstuff, crackers, cakes, etc. that used to be marketed conventionally were being offered online by women, sometimes with the help of their Internet-savvy family members. The villagers were in agreement that the Internet served as a launching pad and a catalyst in the opening up new opportunities for their businesses. Nevertheless, the active involvement of women in Internet sales was still limited because they lagged in ICT competency overall.

iii. Simplified and Improved Telecommunication

Telecentres in Mini RTCs aided the residents of Jerangau Village and Kampung Pasir Gajah Village in communicating with friends, relatives and acquaintances. They could contact whomever they wished in a world without borders though email, short message services (SMS), Skype, WhatsApp, and so forth. For the villagers, their world view broadened considerably with the introduction of ICT. World events could be followed in real time though news websites, blogs and social networks such as facebook. Live coverage of a sporting event or an international conference that was taking place in Korea, Japan or the United States could be followed through the Internet, Astro, smart phones, television and live video feeds through the application of ICT. Users of the Internet and the notebook computer could take advantage of the telecentre which provided access to Smart ICT in rural areas.

iv. Increased Efficiency in Management

The use of technology accorded by the Mini RTC telecentre brought many benefits to the residents of Jerangau Village and Pasir Gajah Village. ICT application in the management of administrative processes increased efficiency. Government and commercial transactions were more rapidly and efficiently processed through the use of ICT. This resulted in savings not only in the

time spent and the effort involved, but also in personal and government expenditure. With day to day administrative tasks handled more efficiently, improvements in the way the rural areas were managed became evident. Areas that benefited from these changes included document management, and applications for permits and licences. Through the use of ICT, data generated in the course of transactions were processed and stored immediately. The automated teller machine (ATM) and the Internet enabled monetary transactions to be carried out all over the world in a simple and secure manner.

b) Weaknesses

i. Low Acceptance by Villagers towards Online Transactions

Despite the efforts of the Mini RTC in exposing villagers to ICT, adoption of the new technology was still in its early stages. This could be seen from the fact that there were residents in the two villages who were still hesitant to use the technology, especially in buying and selling online. Most villagers were more comfortable making purchases in brick and mortar shops. While more villagers were getting used to seeing the Internet as a conduit for trade, the trust and confidence that they placed in technology were still lacking. Their reluctance to use the Internet for online orders stemmed partly from the fact that they were unable to inspect the goods they wished to purchase. Online illustrations were perceived by some to be misleading, and this led to concern and caution on the part of the villagers. They were also worried that their accounts were not sufficiently secure and might be misused by others. Rising incidences of Internet fraud only added to their reluctance to participate in business transactions conducted through the use of ICT.

ii. Perceived Unhealthy Influence of ICT on the Younger Generation

Some of the villagers in this study had the perception that the technology facilities provided by the RTC had been misused by the young for undesirable activities such as those related to addictive entertainment and games. They blamed the Internet for being source of negative influence on children and youths. Hence, telecentres were perceived by some as failing to provide beneficial learning. Residents in the two villages were perturbed and had accordingly voiced their concern over the harmful long term effects of the new technology in the absence of adequate regulation by the authorities to restrict ICT facilities to the uses they were intended for.

c) Opportunities

i. Adoption of Technology that Positively Impacts the Local Economy

The communities in the two villages agreed that the RTC helped to improve the local economy. A small sector of the population was already benefiting from online trade that could be transacted easily and rapidly while keeping costs low. Cost savings were due to the fact that entrepreneurs did not have to spend on product promotion and advertisements on billboards by the roadside, in shopping centres and other public places. On the other hand, promotion *via* the

Internet had a wide reach, and was relatively cheap because transportation and worker costs were absent or minimal. Successful online businesses contributed to uplifting the economical status of the village.

ii. Expansion of the Market Economy

Technology helps entrepreneurs everywhere to grow their businesses and widen their market reach so that their products can become better known. For example, cracker producers in Jerangau Village and Pasir Gajah Village did not need to restrict the sales to local consumers but could sell to buyers outside the village. Promotion and subsequent sales over the Internet generated sizable profits as their goods were able to reach a wider market.

d) Threats

i. Misuse of Technology among Youth and Children

Technology today is becoming an increasingly important aspect in society, particularly among the young. According to residents in the two villages, children and youths could end up being involved in cyber crimes as a result of their obsessive pursuit of current technology. Internet misuse at the time of writing was concerned mainly with indulgence in video games at the expense of the Internet's proper usage. The pervasiveness of blog pages tempted youths and children into participating in activities that were sensitive or unproductive that might involve fraud, information theft, etc. Such misuse of technology was difficult to contain because of the tendency among the youth to keep abreast of technology.

ii. Dissemination of False Information

The RTC served an important function also in alerting villages to the dangers of being unduly misled and influenced by false information promulgated through cyberspace. While appropriate websites provide useful resources, youths were more interested in visiting social websites, blogs, etc. Political factions also tended to disseminate news on their activities online using different outlets such as *Facebook*, web pages, blogs and *twitter*. These sources were not always reliable and frequently posted unconfirmed or unverified information.

The results of the SWOT analysis showed that the telecentre programme brought about more positive developments to the rural community in terms of strengths and opportunities as compared with the weaknesses associated with the programme (Figure 2). The SWOT approach was an appropriate instrument by which to address the problems from four different aspects, *viz.* strengths, weaknesses, opportunities, and threats. It showed how the strengths of the telecentre programme helped villagers reap benefits from the opportunities available, and subsequently how weaknesses that negate benefits could be overcome. The study also showed how the strengths of the programme could repel threats and remedy weaknesses that would otherwise accentuate existing threats, or even engender new threats. With careful consideration of the

cross-interactions of these four factors, the resulting analysis would enable the structuring of a vision and mission for a telecentre programme leading to “Smart ICT”.

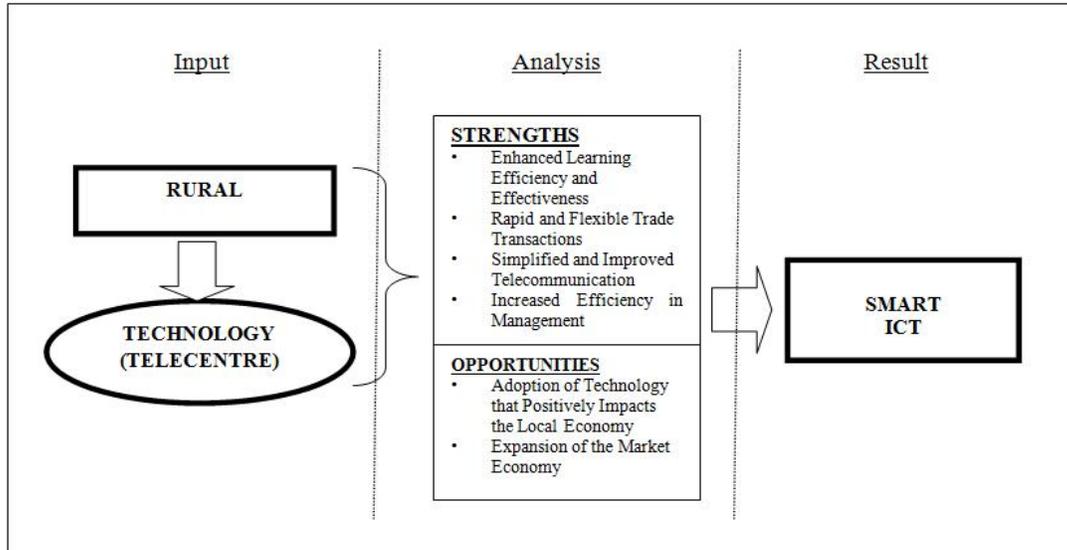


Figure 2: SWOT Analysis Model (strengths and opportunities) for ICI Technology telecentre

CONCLUSION

In conclusion, the telecentre is a centre that offers services related to ICT, especially to those who lack such facilities in their homes or who lack the skills to exploit ICT. Such an initiative is based on the hope that rural folk who are competent in ICT skills would be in a better position to improve their economic status, thus reducing the disparity in opportunities between the well informed and the less well informed sectors of society. Telecentres provide opportunities and facilities relevant to the management of the economy, improvement of academic performance, and the handling of daily chores of residents in rural communities. The ultimate goal of telecentres is to mould a society competent in SMART ICT. In this regard, it is vital to ensure that there is co-operation from all concerned parties such as the government, private sector, statutory bodies, non-governmental bodies, and local residents.

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