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Identifying potential barriers to community participation and use of telecentres: a Philippines case study

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Abstract

Introduction. Telecentres have been set up in most developing countries to provide digital information accessible to as many people as possible. The main issues associated with telecentre sustainability include cultural, technical, financial, social, political, and programmatic issues that directly affect their sustainability. Therefore, this study aims to reframe the problem of information and communication technology usage and consider factors influencing rural telecentre projects.

Method. The study consisted of a series of qualitative, exploratory, semi-structured interviews administered to thirteen telecentre operators.

Analysis. Thematic content analysis was used to interpret the interview data and identify common themes, which were applied in an affinity diagram for clarification and to reveal any sub-issues within each central theme.

Results. The significant findings of this study showed that there are several issues either encouraging or inhibiting individual use of telecentres, which further affects the sustainability of telecentre projects.

Conclusion. The study concluded that the issues affecting telecentre sustainability include the physical characteristics of the centre, operational and management approach, service availability, the nature and impact of local competition, and the participation of interested parties, external interested parties, and local community groups.

Introduction

A significant role is played by information and communication technologies in the socioeconomic development of communities in developing countries (Kapondera and Chigona, 2017; Thapa and Sæbø, 2014). In this context, the establishment of telecentres is considered one of the strategies utilised for bridging the informational digital divide, with specific regard to public access to information and communication technologies and enhancing access to information services and communication within rural areas (Furuholt and Sæbø, 2018; Mwantimwa, 2017). Typically, telecentres rely on external funding provided by multilateral agencies, government institutions, and non-government organisations; therefore, they are considered not-for-profit organisations (Lwoga and Chigona, 2019). The ownership of most telecentre initiatives in developing countries lies either with the public sector, private initiatives, or public-private partnerships (Mbangala and Samzugi, 2014).

The primary purpose of telecentres is to provide access to information and communication technologies and associated access to the Internet, e-commerce resources, and public information services to achieve specified community development objectives. Telecentres are defined by Caspary and O' Connor (2003, p. 16) as '*a common point of access for multiple users (often an entire community), providing a range of information and communication technologies services including internet, fax, word processing, and even specialized information retrieval or applications (e.g., distance education)*'.

Telecentres in developing countries are designed to cater to the needs of people at the bottom of the social pyramid and to offer benefits to marginalised and low-income groups. (Liyanage, 2009; Oestmann and Dymond, 2001). In addition, to ensure equitable access to technologies, they typically align their goals with community needs. All telecentres have as their prime focus the deployment of technologies that improve connectivity, bridge the digital and informational divide, and promote social and economic development (Harris, 2007a).

Rurality and the remote location of many regions mean that cellular phone coverage and broadband internet service are often unavailable. For most Filipinos, the question of availability is less binary (Roberts and Hernandez, 2019). Some regions may have only voice coverage but lack data coverage, whereas some areas may have intermittent and unreliable coverage. The level of connectivity often reflects pre-existing geographical and economic exclusions. In other words, the connectivity issue reinforces traditional socio-economic barriers. Even though technology access is available for some people, it may not be affordable for the vast majority of the population.

The broadband (high-speed) internet penetration level of the Philippines is '*below the expected level of countries with comparable per*

capita income' (World Bank, 2019). Demonstrating that internet connectivity is still beyond many Filipinos with low incomes (Roberts and Hernandez, 2019). Although like internet penetration, internet download speed in the country continues to improve, it remains among the slowest in the region (Oxales, 2021).

Telecentres provide improved opportunities for women residing in rural areas as the telecentres help them achieve development objectives and make better-informed choices (Alao et al., 2017). Another study by Alao et al. (2022) reported that telecentres helped women build their economic capabilities, psychological and economic dimensions, and individual empowerment.

The Philippine national government established over 1,000 telecentres branded as Community e-Centres through the National Computer Centre. The telecentres are primarily located at the local government unit's municipal hall throughout the country. These telecentres are frequently operated by existing local government employees seconded from the municipal hall (Brown and Hoque, 2016).

Despite the increased significance of telecentres, the access to information and communication technologies between countries and rural and urban areas within counties, are not satisfactory (Hoque and Kabir, 2022). According to the International Telecommunication Union (ITU, 2016), in recent years, the number of telecentres has dropped by 2% in developed countries and by 16% in developing countries. A study conducted by Sey and Fellows (2011) reported that telecentre users followed traditional lines and were dominated by young males belonging to high socio-economic groups. These results also agreed with previous studies (Wijaya and Polina, 2014; Kapondera, 2014; Kapondera and Chigona, 2017) and recent studies (Mudliar, 2018; Alao et al., 2022) that have asserted that women are restrained by social norms. Internet facilities are limited for women as compared to men (Alao et al., 2022). Therefore, there is a need to understand the barriers to telecentres usage among rural women can offer potential benefits to empower women to attain their objectives (Bala and Tan, 2021). Previous studies have predominantly focussed on community-based information access with a concentration on the organisational aspects of telecentres (Lwoga and Chigona, 2018). There is a need to highlight the significance of telecentres' aims and objectives, the issues associated with sustainability, the identification of critical success factors, and the management of control structures required in telecentre operation (Harris et al., 2003). There is a lack of understanding related to the use of information and communication technologies, despite the high-profile nature of the informational divide debate at present (Selwyn, 2003; Stahl, 2021). One of the studies by Colle (2005) focused on the centralised view of telecentre projects, the impact of new technologies on communities, and awareness of the potential benefits of access to information and communication technologies.

Difference between internet cafés and telecentres

Multipurpose Community Telecentres, which provide basic digital services to vulnerable groups, have evolved to address the digital gap in developing nations. Gómez and Reilly (2001) loosely define these centres as physical locations that provide individuals with a range of digital services to better, for example, their education and promote economic and social growth. Telecentres are non-profit digital hubs that serve as a prelude to digitalisation in remote locations, bridging the digital divide and providing information to underserved groups. Telecentres, according to Chege et al. (2019), also function as centres of attraction for communities with similar interests and ideologies since they bring together local actors who want to exchange their ideas and improve their technical potential. They are typically found in rural regions and remote communities in big cities, where access to information and telecommunications is restricted or non-existent (Furuholt and Saeb, 2018). Telecentres may also be found in low-income regions of major cities, which are equivalent to rural areas. Telecentres are linked to several projects and reforms initiated with

German assistance and government reform programs aimed at closing the digital gap in developing nations like Cameroon (Kuika and Jonathan, 2020).

The vision of the telecentre is focused upon the communal good rather than individual gain and collective or patron-driven process over private ownership of means. Its success is measured by the impact on the community rather than private ownership of means. In contrast, the internet or cyber cafes are often regarded as being identical to any other small economic endeavour in an urban area. Internet cafes are specialist businesses in urban areas with well-developed information and communication technologies infrastructure and demonstrable local demand for communication services (Rangaswamy, 2008). They are private enterprises whose main goal is to support the economic livelihood of their owners.

Gurstein (2007) highlights that the primary difference between a telecentre and an Internet Café is not just that one is free and the other is not. But instead that the telecentre is a site where activities are undertaken to support community projects, while internet cafés are simply sites for individuals to interact with the internet.

Mobile phones as telecentre competition

Kalba (2008) indicates that in many developing countries, particularly in Malaysia and the Philippines, mobile phones have largely replaced fixed-line telephones to a large extent due to the introduction of affordable packages and prepaid services. Salazar (2007) confirms that mobile phones have become more accessible and affordable to lower-income groups who previously could not afford a fixed-line installation. In contrast, Quaglione et al. (2020) assert that telecom operators have contributed to widening digital divides as they invest more in urban areas while leaving behind rural areas. Consequently, there is insufficient digital infrastructure in rural or peripheral communities, which impedes their development. Moreover, digital companies around the world have been focusing on creating a monopolistic market where only urban populations can benefit from the services offered (Quaglione et al., 2020).

With mobile phones growing in popularity (Gould and Gomez, 2010; Roessler, 2018), whether telecentres are still viable, has been questioned. However, the signal is often very weak in rural areas, and 4G or WiFi signals may not be present. Salazar (2007), Quaglione (2020), and Forge and Vu (2020) point out that the high level of mobile handset subscriptions has not translated into an increase in the use of mobile phones for internet access due to the high cost of internet-capable handsets. Harris (2007a) and Siddiquee and Faroqi (2022) developed the argument further, indicating that mobile phones cannot offer the community development aspect afforded by telecentres. However, mobile phones have the potential to provide complementary services. The telecentre 2.0 movement which promotes a general model of a mature telecentre removing the need for further pilot testing of centres, highlights the importance of expanding the scope and scale of telecentres to increase sustainability. Mobile technologies present themselves as a new opportunity to expand the reach of telecentres (Harris, 2007b).

Historically, information and communication technology projects in developing countries have been *parachuted* into communities without considering the local environment or communication with the local population. Therefore, it is significant to initiate a multidisciplinary interaction between researchers, practitioners, policy-makers, and communities of interest to take stock of the information and communication technology 4D field as it encompasses work on information systems, development studies, computer science, and related subfields, i.e., geography, human computer interaction, anthropology, and community informatics (Walsham, 2017). On one hand, rural telecentre projects are not experiencing the initially anticipated levels of use by local communities in the Philippines. On the other hand, according to Statista (2022), mobile phone penetration in the Philippines

grew from 72.1% in 2020, to 74.1% in 2021, and 75.3% in 2022. Still, there is a digital gap in terms of access, social stratification, and power dynamics in the country despite the rapid penetration of mobile phones. It calls the matter of inclusion into question amid uneven access and accumulation of economic and cultural capital (Uy-Tioco, 2019). Similar concerns are related to the education sector of the Philippines as Moralista and Oducado (2020) stated that the majority of faculty had moderate computer literacy, lacked training in online teaching, and had few very stable internet connections. Resultantly, it has led to academic dishonesty and issues in managing education with technology (Moralista and Oducado, 2020). Thus, emphasising the need to investigate societal and environmental factors which influence rural telecentre projects. Therefore, the present study aims to reframe the problem of information and communication technology usage and consider factors influencing rural telecentre projects. The study addresses the challenges and potential barriers to community participation at telecentres in Philippine rural communities. The fieldwork addresses the institutional barriers affecting the use of rural telecentres within the Philippine context. The aim of this study is based on the answers to the following questions.

- What factors influence the use of telecentres in rural Philippine communities?
- How do these factors influence the sustainability of telecentres in rural Philippine communities?

Methods

Study setting

The study is focussed upon telecentres in the Philippines where they are typically established, organised and operated under the supervision of the staff of the local government unit. The Philippine Government has invested heavily in the national telecentre project with the aim of providing one telecentre in every municipality. According to the study by Brown and Hoque (2016), more than 1,000 telecentres have now been established by the National Computer Centre based in Manila. These telecentres have been positioned as Community eCentres. They have been established in the Municipal halls under the local government units, with a goal of enhancing community-based information access and access to information technologies.

Study design

The study consisted of a series of semi-structured interviews for data collection and analysis, in an effort to describe the context of the telecentre and activities that take place at the sites. This was considered the primary data source for evaluating the current situation. Semi-structured interviews were selected for conducting this study as data related to the potential barriers were to be extracted (Alao et al., 2017). More importantly, this study design helps in collecting the data directly from the respondents which offers their perspectives and insights. Moreover, the data extracted from this approach have a minimal chance of introducing researcher bias as the respondents offer their own perspectives that are not influenced by the researchers. The disparity between telecentre services and community requirements is analysed in the Philippines through interviews with the telecentre operators. The literature review highlighted seven main factors or themes which have the potential to influence community use of telecentres. The themes derived from the literature review were used to create the interview schema, to prompt responses and guide the interviews with the telecentre operators. The major themes identified are:

1. Individual characteristics
2. Telecentre characteristics
3. Telecentre services
4. Operational issues
5. Stakeholder characteristics
6. Community characteristics
7. Competition

Competition was not initially considered during the design of the semi-structured interviews. It was only during the course of the interviews that it became apparent that competition was an issue that required further

consideration. Appendix A shows the semi-structured interview guide questions, mapped to the major themes identified from the literature review.

Study sample

The telecentre operator interviews were conducted at thirteen telecentre-serviced community sites in the Philippines. The results of the operator interviews were used for proposing a model that informs existing and future community telecentre initiatives. Semi-structured interviews were used as an exploratory activity to give context to the research setting.

Study tool and data collection

The study consisted of exploratory research to help develop an understanding of the current situation and uncover the barriers faced in rural telecentre projects. The interview schema was qualitative, emphasising the characteristics and operations of telecentres. Further, an understanding was developed regarding inhibitors and motivators to the use of telecentres.

Ethical Consideration: The participants were asked before the interview regarding their willingness to participate in the study. Verbal and written informed consent was obtained from all telecentre operators indicating that they agreed to participate in the study. Verbal consent was also taken from all the participants for the audio recording of the interviews.

Data Analysis: The data obtained through the semi-structured operator interviews were analysed using thematic content analysis. Each semi-structured interview session lasted anything from 30 to 45 minutes in duration, with the average interview length being 35 minutes. After each interview session, the discussions were digitally stored as MP3 files backed up onto laptops. In the thematic content analysis, the data collected from the operator interviews were transcribed and analysed, which further helped identify general themes. Visual cues recorded in the field notes enhanced recall of the situation and improved understanding from the respondent's perspective while transcribing the interviews. Themes identified from each interview transcript were then amalgamated to generate a comprehensive set of themes. Six themes were initially identified by reviewing the previous literature, these themes were revised based on the findings from the telecentre operator interviews.

An affinity diagram was created based upon the overall themes generated from the interview transcript following on from the thematic content analysis. The affinity diagram (See Figure 1) generated a great level of detail; therefore, the major issues were extracted from the affinity diagram themes and interview transcripts, and then ranked in order of frequency of occurrence, with the top five issues being highlighted in each theme.

TELECENTRE CHARACTERISTICS	TELECENTRE SERVICES	OPERATIONAL ISSUES	COMMUNITY CHARACTERISTICS	STAKEHOLDER CHARACTERISTICS	COMPETITION
Infrastructure and Connectivity Problems	Content Relevance	Staffing Issues	No Project Champion	Limited Stakeholder Participation	Internet café partner or competition
Issues with Access, Location and Co-location	Training needed for staff and community	Reliance on LGU for funding	Unidentified Community Requirements	Unknown Stakeholder ID	Centre identity issues - thinks it is an internet cafe
Limited Hardware and Resources	Content Language Problems	No Business plan	Little Community Participation		Impact of internet cafes
	No Outreach Programme	Unidentified Success Metrics	High Poverty and Unemployment		
	Services Used	Limited Technical Skills	Difficulty in user ID		

Figure 1: Affinity diagram

The Competition theme was not initially considered during the interview design, and it was only during the interviews that it became apparent that competition was an issue that required further consideration.

Results

The issues identified through interviewing the operators were grouped under the appropriate headings, as explained in the different themes below.

Telecentre characteristics

Telecentres were situated in the Local Government Units' municipal hall at the majority of the sites; however, a few telecentres were located outside the main building. The operators stated that access issues are generated due to co-locating the telecentre within the municipal hall.

> *This is more accessible and serviceable since the location before, the Farmers Information Technology Services centre is right next to the Mayor's office. So, farmers cannot go up there without shoes and wearing shorts, but here we are happy to serve them if farmers just come in and they are muddy because we know that they have just come from their field.*

Working electrical supply was present at all the sites, while an internet connection was present at less than half of the sites at the time of visiting. Almost all the operators expressed complaints about lack of connection and speed of internet. The main reasons for their decreased operational ability were no funding and no internet connection. Most of the telecentre sites used a low-speed, very small aperture terminal (VSAT) connection or landline connection, and some had no internet connection. Asymmetric digital subscriber line (ADSL) broadband internet connection was not present at any of the visited telecentre sites. Some operators were using their wireless broadband connection in areas with limited services.

The majority of operators reported defective equipment issues. There were only five personal computers at several sites acquired through charitable donations, while other telecentre sites just had two to three computers. All of the sites visited had at least one unit not operational.

Most of the operators were familiar with using Microsoft Windows operating system and Microsoft Office. Ubuntu, a Linux distribution, came preloaded on the PCs supplied to the telecentres but was not liked by the telecentre staff because of limited prior experience. Most operators deleted Ubuntu and installed Microsoft Windows and Microsoft Office because customers preferred Windows. The staff resisted using Ubuntu, which led to comparisons between internet cafés where

Microsoft products were installed compared to Ubuntu at the telecentre sites.

> *Ubuntu is tough to operate, especially for those who don't know how to use Ubuntu, but for us, maybe ok. It is hard to find applications to use with Linux. The people see Windows in the Internet café, and when they come here, they don't want Linux, they want Windows, but then we must buy the licence, but most places don't buy the licence.*

Telecentre services

The issues related to the theme of telecentre services include the importance of localisation, the relevance of content, the appropriateness of language, and the need to provide innovative services. The development and promotion of locally created relevant content were observed at only three sites. A small number of online applications have been developed nationally for use at telecentre sites. These primarily include applications for business registration and payment of taxes and, therefore, are not of interest to most rural community members and were not offered to the users at the telecentre. When asked about the lack of relevant localised content, one of the operators said that they have a lot of computers.

> *I am more interested in the content provided. We already have a lot of computers here, and what we need is content and how we can access it for the farmers to use the content.*

A small number of telecentres offered low-level introductory computer training courses, promoting the use of relevant software and hardware and access to online information. Most telecentres provide on-the-job training to local college students. At the same time, one of the telecentres provided regular sessions for local school children. All of the operators interviewed, expressed the desire to provide more training programs for the local community. The majority of operators stated that they wanted to offer training courses for the users of the telecentre.

> *We are effective because right away, the farmer is served with what they need. If they require some training right away, we schedule them. We have a calendar of activities that they could fit in.*

Some of the telecentres provided a news translation service, combined with various publications in the local language, as most of the online content is in English. There were limitations in comprehending the English language in rural communities. However, most of the operators did not see that the English language was an issue and stated that the Filipinos' understanding of English was excellent. Compared to the community norm, educated and wealthy local government employees possessed advanced language skills. When asked what was done to promote the localisation of content, '*Nothing at present – our English is better than our Tagalog*'.

Setting outreach programmes was another desire of some telecentre operators. It was difficult for the remote residents to come to the municipal hall, and they wanted to provide services to outlying barangays (villages). However, laptops and wireless internet access would be needed for outreach programs, and such resources are lacking in most areas: '*if we want to get to the point where we bring technology to them, we have to get out there and bring laptops and bring your signal*'.

The typical access to office applications, internet access, and Voice Over Internet Protocol facilities was offered through generic services. These services were similar to those offered at Internet cafes; however, most of the operators stated that students at telecentres were not allowed to play games at the telecentre, which was encouraged at the internet café sites.

Operational concerns

The matters arising in performing daily operations at telecentre sites were reflected in telecentre operational concerns. These concerns included a lack of funding sources, technical issues, staffing issues, and business planning issues. Only one part-time employee

was working at a number of the telecentres. That person was responsible for performing their primary duties at the municipal hall and working at the telecentre site. Most of the "operational sites" had more than one staff member; however, less than one-third of sites overall had a full-time staff member, the remaining staff being considered part-time. All the telecentre sites were dependent on the municipal hall for operational funding. This included internet connection costs, staffing, telephone, electricity, office space, and consumables. The operators observed this negatively as they had no budgetary control; however, it negated financial sustainability concerns. This benefit was only observed at telecentres located at the municipal hall.

The significance of having a business plan was evident to the majority of the telecentre operators. The business plan specified the operating days and opening hours; however, only one site had a business plan. These business plans had no worth when the telecentre lost its internet connection as then the opening hours or working days did not matter until or unless there was a working internet connection. All of the operators stated that the sustainability of the telecentre depends on a reliable internet connection, '*the National Computer Centre told us that we must charge for services to be sustainable. If we have a good internet connection, then we can survive*'.

The operators responded positively when they were asked about the success of telecentres in the future. However, they were unsure what defined success and how it would be measured. Some operators stated that their telecentres' success depends on the number of users over a specific time, and this measurement was used to highlight the operational success of the telecentre. One operator stated that the number of users was utilised as a metric for the success of the telecentre, '*in terms of operation, yes, we are a success. In one day, we have a minimum of five customers, sometimes around ten, and others are queuing waiting, but most are 15–20 people in one day*'.

The main concern of operators was the lack of technical support and technical skills. Most of the technical issues were related to internet connectivity and hardware support and maintenance issues. There was an increased reliance of most telecentres on the municipal hall to provide external contracted technical assistance funding. Most of the telecentres lacked technical support, and it was a rare instance where support provision was provided. Most of the operators focused on reliance on the telecentres for external technical support, '*So far here, we don't have in-house technicians, but we have them on a contractual basis. Any time we have a problem, we can just call them up any time*'.

The community-based issues mainly include; identifying project champions, potential customers, community participation, community information, and issues related to unemployment and poverty. The operators were concerned that the local community did not actively participate at the telecentre sites. Another difficulty encountered by telecentre operators was identifying an appropriate project champion from either the telecentre staff or the local community. Only three operators used the term project champion and positioned themselves as the project champion, as they were all from the local community.

Most of the operators highlighted the significance of using social media in telecentres for promoting poverty alleviation and education. One operator narrated one of the most critical uses of telecentres as he described how the telecentre operators had stayed at their office during a recent typhoon. They used their 3G mobile internet connection to stay online and relay weather reports to the barangay officials, warning them as the storm moved steadily closer to their area. This presents a positive example of the telecentre staff providing valuable community service.

> *During the typhoon, our internet connectivity was on, we had a standby generator, so during that time, the Community e-Centres served as the information source providing information*

> *about the typhoon, its location, direction, and strength, feeding this to the mayor, we did overtime during the typhoon providing disaster relief to the barangay councils, we worked as long as we were needed.*

Characteristics of interested parties

This theme considers issues related to the identification and participation of interested parties as perceived by the telecentre operators. The majority of the operators considered participation by interested parties critical at the local level: The municipal hall and the mayor's office. They were unaware of external interested parties' participation in the planning process apart from the municipal hall and the mayor's office. The primary national interested party is the National Computer Centre in Manila, which is seen as a critical interested party combined with the local municipal hall, the local community, and the barangay officials. The majority of the operators could not identify interested parties other than themselves, while others identified these as local and national interested parties. None of the operators were able to identify the main international interested parties, the Canadian-based International Development Research Centre. According to one of the operators *'we do not know about major interested parties outside the municipal hall or what is their participation in telecentres'*.

Competition

The majority of telecentre operators faced difficulty distinguishing their telecentre from an Internet cafe. The only difference was that charges were applied at the Internet cafes and not at telecentres. Internet cafes are private enterprises that have the main goal of supporting their owners' finances (Hewitt and van Rensburg, 2020). They saw the telecentre as directly competing with internet cafes and wanted to charge for services. The alternate view is that Internet cafes could act as community partners to promote computer literacy, and the municipal hall should regulate them as partners. Other sources of competition noted include mobile phones; however, this is not seen as a direct threat and is seen as more of a complementary service. Very few telecentre users had resources for personal home computer access or a home internet connection. According to one of the operators;

> *As Community e-Centres and Local Government Units oversee and manage internet cafes' operation to regulate their activities, particularly to stop students using the internet cafe during class hours. They are not a competition; they are our partners to facilitate computer access.*

The current situation

The themes and issues identified above were used to develop a Rich Picture (Figure 2) to express the current situation at Philippine rural telecentre sites. Rich pictures are part of the soft systems methodology approach; provide a mechanism for learning about complex or ill-defined problems by drawing detailed representations of the situation. The Rich Picture, as defined by Checkland and Scholes (Checkland, 1981; Checkland and Scholes, 1990) shown below, clearly identifies three "camps" or groups of interested parties, (1) the local community; (2) the telecentre itself, and (3) other external interested parties. It is important to note that the rich picture (RP) is developed from the perspective of the telecentre as the data collection was centred on the telecentre operator.

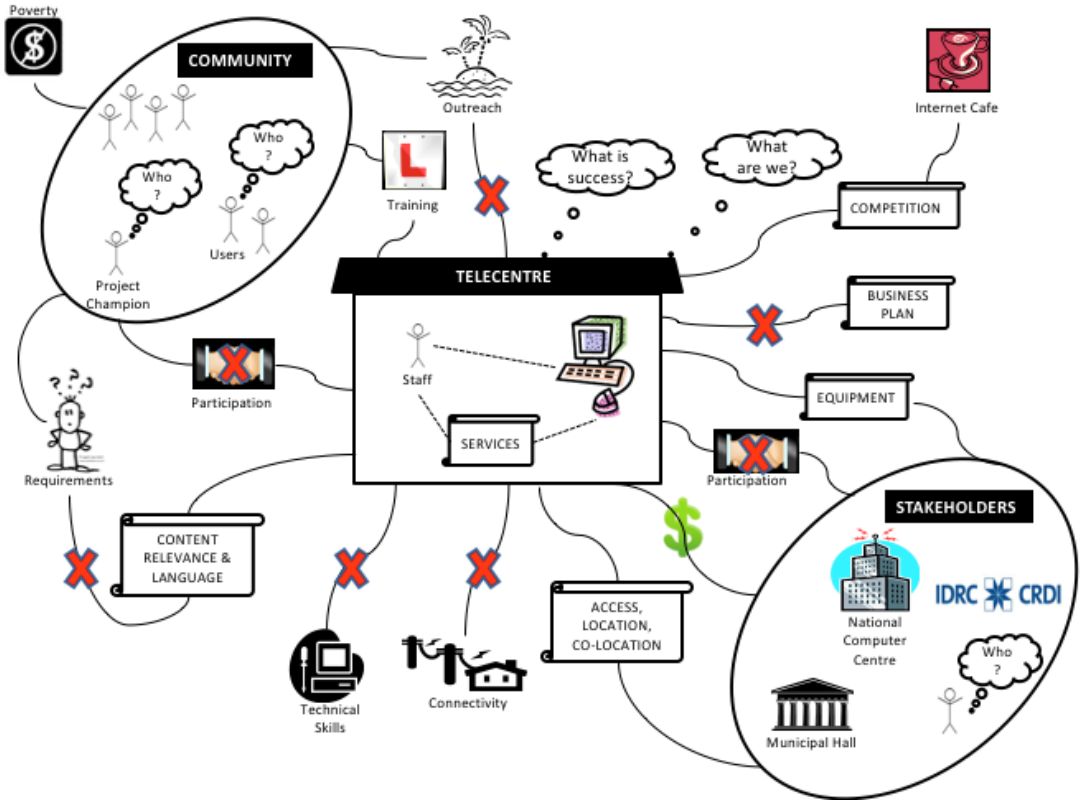

Figure 2: Rich picture of rural Philippine telecentre situation

The rich picture highlights seven key problems and issues across the three major camps. The issues are all related to the local community, the telecentre site and the external interested parties.

Local community issues

The telecentre was seen as belonging to the municipal hall who did not promote the use of and access to the telecentre, to the local community. Little communication and participation with the local community took place when setting up the telecentre, therefore people were not inclined to use or even visit the telecentre facilities.

There was little understanding of local community requirements, therefore the majority of services offered are irrelevant and only available in the English language. This demonstrates that there is a need to provide relevant localised content to meet the local community needs with the involvement of the key interested parties.

As all computers provided are desktop personal computers and no wireless internet connection is available, none of the equipment is portable, therefore no outreach programmes are available for remote communities.

Telecentre issues

The telecentre has very limited technical skills available to them and no budget for the repair and maintenance of equipment and the associated infrastructure. This has led to much of the equipment not being available for use as it is no longer working just a few months after installation.

Connectivity includes both electrical supply and internet services. Many of the sites are in rural locations with very limited power supply availability. These same sites would suffer from either limited or no internet availability, reducing the usefulness of the telecentre sites.

There was a lack of strategic planning for telecentres as none of the telecentres was found to have organizational goals and business

plans in place. Only one site had a business plan, but this had become outdated, and was no longer relevant. As funding is supplied by the external interested parties it is important for the telecentres to identify operational costs and potential revenue streams to cover those costs.

External interested party issues

Interested parties include the Municipal hall, The National Computer Centre in Manila and the International Development Research Centre in Canada, which provided funds and equipment but took no part or follow up on the project. The National Computer Centre allocated equipment to sites, but provided no training, extra staffing or follow up on the project. The Municipal hall provided the location for the centre and the staff, however it was seen that co-location of the sites provided both benefits and disadvantages.

Discussion

Interested parties

The three primary interested parties identified are the Municipal hall, The National Computer Centre, and the International Development Research Centre. The Municipal hall is where the telecentre is co-located, which provides the information, communication, and technology, the centre's location and applies standards for dress codes and operating hours. The Municipal hall also provides staff and operational finances for the telecentre. The National Computer Centre provides the equipment for the telecentre sites and has overall responsibility for the telecentres. The International Development Research Centre is the third interested party, they are the primary donor and main source of funding for the Philippine telecentre project. The telecentre operators could not identify other interested parties, and there was no apparent participation with any other interested parties.

Telecentre issues

The study investigated operational issues associated with telecentres, such as management, staffing, leadership problems, promotional roles, and business model development. Lack of technical support and lack of technical skills of the staff were the primary concern of most operators. There is a significant association between technical issues and the support and maintenance of hardware, internet connectivity issues, and network setup. The skill level and type of staff appointed to work at the centre affect a telecentre's ability to achieve technical sustainability. A similar study by Brown and Hoque (2016) stressed the significance of appropriate staffing of telecentres based on staffing requirements, addressing lack of training and resource issues, and retaining skilled staff. With reference to the contribution of telecentres in Bangladesh, Faroqi et al. (2019) have contended that operational sustainability is the key factor for reaping the full potential of telecentres for the community. The study also revealed that managing private entrepreneurs was a prerequisite for the sustainability of telecentres (Faroqi et al., 2019). Chigona and Lwoga (2017) stated that community participation is needed at telecentre sites to ensure community ownership of the project from conception to operation. The findings of the study are similar to Tan et al. (2020) that have investigated the role of telecentres in rural development under the Telecentre Program for Orang Asli. The study highlighted that innovation and adoption of technology were the precursors to achieving sustainability of telecentres. Moreover, the study reported the observation that due to the involvement of the community, the support and maintenance were provided in a timely manner that in turn led to enabling a friendly information and communication technology platform (Tan et al., 2020). On the contrary, the present study provided little evidence regarding community participation at telecentre sites and the roles filled by municipal hall employees. Most telecentre operators stated that the telecentre local community's increased participation was an important issue. It is further shown that the local community needs are not fulfilled as direct involvement is indispensable toward telecentres' ability to provide services (Hoque, 2020; Kapondera et al., 2019). This is likely to affect the ability of telecentres to achieve social sustainability (Brown and Hoque, 2022).

Local community issues

An important role is played by community ownership, proffering that it is essential to receive the community's ongoing support via community participation to ensure community ownership of the project (Banda and Chigona, 2017). Many telecentres have turned to the local community through the municipal hall for conducting their operations. This is an essential attribute for sustaining or succeeding a project under the direct influence of social sustainability at telecentre sites (Heeks, 2005; Tan et al., 2020).

The present study has also revealed a close relationship regarding social sustainability with the local community. It has been observed as ongoing support derived from the positive impact of telecentres on the local community's economic and social development (Bailur, 2007). The issues regarding community participation have been identified as critical for addressing social sustainability and highlighting the need for further action. The factors affecting sustainability at telecentres include site ownership, lack of a project champion, limited community participation, and a community's economic status. These factors are likely to affect social and programmatic sustainability at telecentre sites.

The privately-operated internet cafes are at the centre of local competition for the telecentres and wanted to charge for services to develop a more level playing field. Few operators shared that internet cafes were community partners that play an essential role in promoting computer literacy. Therefore, there is a need to control and regulate the differences observed by the municipal hall. In a similar context, a collaboration between telecentres and internet cafes was recommended by Gould and Gomez (2010) for providing the highest level of impact. Here, it is essential to note that telecentres would widen rather than reduce the gap between the community's elite and the marginalised sectors if they operate essentially as an internet café (Amariles et al., 2006).

Telecentres' social sustainability depends on their response and ability to fulfil community needs and contribute to community development. A variety of operational issues and community characteristics affect the social sustainability of telecentres. One operational issue that negatively affects social sustainability includes telecentres' operating hours. It is believed that a relationship with the local community could be established by offering more flexible opening hours to enhance telecentres' social sustainability. Moreover, limited community participation, and ownership, the lack of a local champion, and other community issues also affect telecentres' social sustainability. The telecentre sites' ownership lies with the municipal hall, which offers little sense of ownership or participation with the local community. A local or project champion plays a critical role in developing a working relationship with the community. Community needs are directly related to the offered services for uncovering their information requirements which further affect the value placed upon the telecentre by the community.

Conclusions

The issues related to telecentre services acting as barriers to telecentre use include; training, content relevance, inadequate delivery of services, and content language. The use of telecentres is affected in rural areas through a limited understanding of the English language. The research focuses on the success and sustainability of telecentres by aligning operational issues, with service provision, interested parties' involvement, and the role of the local community in the operation of telecentre sites, with a primary concern regarding financial sustainability. This perspective needs to be expanded to understand unique community contexts associated with social and programmatic sustainability initiatives. The study concludes that social and environmental issues can affect the use and sustainability of telecentres. A new feature of competition in this environment was identified by this study that has not been mentioned in previous research. Future studies need to include a larger sample by including outlying barangays to confirm the current findings. It would be beneficial to investigate

the outlying barangays, to understand if telecentre awareness and use figures would have been constant had they been included in the study. Furthermore, future studies should investigate alternate perspectives that influence telecentre use other than the operators.

About the author

Dr. Jeremy Phillip Brown has spent over 20 years teaching and researching in information eystems, e-learning, IT governance and community informatics. He received his doctorate in information systems from the University of Sunderland (UK), where he investigated factors affecting use of telecentres in rural communities. He has taught internationally at universities in Saudi Arabia, UK, Japan, Singapore, New Zealand and Ireland. In 2005 he joined University Brunei Darussalam where he played a central role in the planning and implementation of e-learning systems in further and higher education institutions throughout Brunei. He moved to Oman in 2013, and joined Sohar University in September 2018 as an Assistant Professor within the MIS group, and is currently the Programme coordinator for the MBA programme. He can be contacted at jbrown@su.edu.om

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