Using ICTs for Rural Development: An Overview

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Abstract - **World Development Report in 1998/99 states that 'recognition of the importance of knowledge has gained momentum, and there is a renewed impetus to integrate knowledge into countries' development strategies'. UNDP Human Development Report in 2001 highlighted the role of ICTs for development as a mean for bridging the knowledge gap and improving access to information among people. In this light, the adoption of ICTs in collective manner could serve as crucial tools for achieving development (i.e. part of development process) rather than just the final outcomes of it. So how ICTs could be integrated into rural development goals; to facilitate training and capacity building, to improve access to information and to alleviate poverty? The answers to these questions should begin with both decision-makers and societies acknowledgement of the important role of knowledge in development, followed by effective consideration to be taken in creating better access to and use of ICTs through policy planning, capacity building and appropriate physical infrastructure development. Future rural development strategies need to respond to changes and transformation in policy planning as well as in bridging knowledge gap and improving access to information. For this reason, this paper will review and discuss some of the potential roles of ICTs for rural development and livelihood strategies, and the integration of local community for promoting capacity building and for bridging knowledge gap.**

Keywords – **ICTs, rural development, capacity building, knowledge gap, alleviate poverty**

I. INTRODUCTION

Knowledge holds the key to development. As mentioned by the World Bank in the 1998/99 World Development Report "recognition of the importance of knowledge has gained momentum, and there is a renewed impetus to integrate knowledge into countries' development strategies" [1]. Concurrent with the importance of knowledge to be obtained for countries' planning and development, one should also recognize the importance of equal distribution and access to knowledge among citizen of the country. Creating and/or providing a better access to knowledge through education and training process could potentially lead to empowerment of people and capacity building, which then can be more clearly linked to socio-economic growth and poverty reduction [2],[3].

It is widely acknowledged that the information and communication technology (ICT) could enhance the power of knowledge for development (for rural development in this context) [2],[3],[4]. As further stated by UNDP (2001: 35) "while education develops cognitive skills, information gives content to knowledge" [1]. In response to this statement, what could be done to overcome barriers to collective knowledge and how ICTs could be integrated into rural development goals; to facilitate training and capacity building, to improve access to information and to eradicate poverty?

The answers to these questions lies on both decision-makers and societies acknowledgement of the important role of knowledge in development, followed by effective consideration to be taken in creating better access to and use of ICTs through policy planning, capacity building and appropriate physical infrastructure development. Future rural development strategies need to respond to changes and transformation in policy planning as well as in bridging knowledge gap and improving access to information. For this reason, this paper will review and discuss some of the potential roles of ICTs for rural development and livelihood strategies, and the integration of local community for promoting capacity building and for bridging knowledge gap.

II. ICT AND RURAL LIVELIHOOD

There is no doubt that information and communication activities play vital roles in rural planning and development agenda [1],[2],[5]. ICT has shown potentials in facilitating human capital development through training and education processes, as well as increase accessibility to information and digital connectivity of community with the world. In reality however, the development of rural areas and its communities are sometimes could be very much in opposite i.e. rural community often branded with information-poor both physically and technically [1],[2]. Making this matter worse, the rural poor often become the most affected group within the community with lack of access to information that could be used to assist the local development [6].

As a response to the urgent need for narrowing the knowledge gaps between urban-rural societies and within difference categories of rural community, and to improve community access to information, the concept of "livelihood information wheel" was proposed by [1] (refer to Figure 1). The proposed concept could serve as a reference for rural community in identifying and prioritizing their main economic, social and cultural activities, and further establish a more suitable way of planning/deciding of their local development and livelihood strategies.
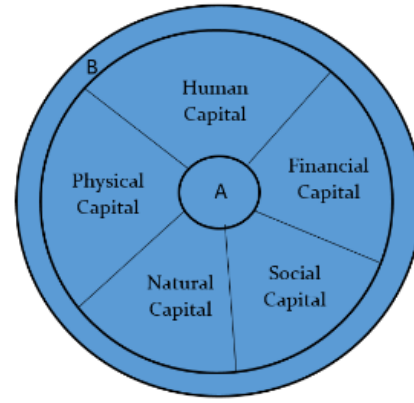

Figure 1: Livelihood information wheel.
Source: Adoption from [1]

- A is the core information that contributes to long-term capacity building for decision-making for appropriate livelihood strategies, usually through education and training, and technical support and assistance with problem solving.

- B is the information that relates prominently to the local context and needs updating regularly for people to make short term decisions regarding their immediate livelihood activities. It can also contribute to medium-term diversification and livelihood strategies.

The proposed concept identifies two categories of information that closely interact with each other hence demonstrate the vital role of information in supporting the development of rural livelihood. Detail descriptions of the five components of livelihood strategies (as shown in Figure 1) is presented in Table 1.

Table 1: Components of livelihood strategies

Components	Description
Human Capital	Improved access to education and training through distance learning programmes, and education tools in a wide range of different formats. The potential to transfer digital content to remote locations easily in the form of text, images, video and radio combined with the vast storage capacity of PCs, CDs and DVDs reduces many of the costs associated with barriers to broad-based information access. The impact of increased information flow on human capital development will depend equally on the effective translation of material into different languages and appropriate formats for the intended users and their local cultural context.
Natural Capital	Improved access to institutions dealing with different aspects of natural resource management including administrative and legal information such as land records. Communication channels can be enhanced with appropriate authorities, landowners, government ministries and local government officials. The experiences of other individuals and communities can also be shared and the information used to compare strategies and develop local solutions to problem and conflict situations.
Financial Capital	Support and strengthening of the local financial institutions including micro-credit organisations to improve information provision on services and

	facilities available such as loans and savings schemes. Extended access to financial information can also improve transparency and more equitable service provision such as through highlighting excessive rates of interest charged by moneylenders. Community-based financial management such as savings schemes can also be introduced together with extended communication among a wider community of financial institutions.
Social Capital	Improved 'networking' both at the community level with existing networks and potentially amongst a much wider community. The ability to build new social networks at a regional and national level can help to bring benefits to existing networks and institutions at a local level. The reduction in the cost and time taken to travel to pursue social networking goals can also have a positive impact at a household level with family members spending less time away and less money on transport. Expanded social networks may also result in increased opportunities for employment both locally and away (potentially increasing rural-urban migration).
Physical Capital	Access to markets and market information helps to improve choices for the sale of goods on local markets according to enhanced information on prices, comparative supply and demand for products. In the longer-term new markets, techniques and processes for production, processing and marketing of products, both farm and non-farm can be explored.

Source: Adopted from [1]

III. USING ICTS FOR RURAL DEVELOPMENT: ISSUES AND CHALLENGES

The effectiveness of ICT in rural planning, training and development is very much depending on how the technology and information are being utilised in a more strategic manner. The review of literature (see [1],[2],[3], [4],[6],[7]) have identified three (3) main challenges/ barriers to local adoption of ICTs through rural development programmes namely:

1. Application of ICT in narrow-focused and specific target projects. With many stakeholders currently involved in rural development projects, the utilization of ICTs are often resulted in a form of segregation of local information and knowledge systems as to fulfil objectives of a different, sector-specific and target driven projects carried out by those agencies/parties. For instance, a programme on breast feeding may 'reach' the target audience of 50% of mothers within a certain age group or area, but the extent to which the programme is acted upon (as with recent evaluations of the impact of AIDS awareness raising programmes) may be limited by the institutional context in which the ICTs and the information is controlled [1]. It is not a wrong strategy for any agencies to conduct a sector-specific project as mentioned above, however, it is also important for project initiators/stakeholders to look into wider context and explore the possibility of linking the ICTs in their projects into other categories of community where they might as well played crucial role in providing the local information and knowledge systems.

2. Inequality of opportunity and access to ICTs. The term 'technology' is closely linked with modernity. Due to the nature of technology which constantly changing and 'evolving', there is a notion that the rural community might face mounting challenges to cope with technology (or new/latest technology) for livelihood development. Rural community however, is not alone in this dilemma as the same notion also applied to the rural development agencies. This situation has pop up a question of, who should be given preferential access in using/operating this modern equipment? This is where the element of 'preferability' or restriction comes into picture. As highlighted by [1] & [2], people with higher status and more educated in the society are likely to be given preferential access to manage the technology based on the assumption that they are more capable and more aware on operating the equipment properly.

3. Cost and quality: Technology, especially for rural development programmes are often describes as too expensive (either to provide or to maintain) and too fragile (to be operated without proper training) to be really used freely for public access [2][5]. This has resulted project-specific ICTs which often safeguarded for its 'high value'. However, the future of ICTs for rural development should emphasis more on criteria such as being portable, lightweight, robust and cheap and/or affordable. The cost for owning smart phone is now decreasing giving more opportunity for spreading knowledge and awareness on ICTs to the community. However this positive movement also need to be balanced with provision of physical infrastructure especially electricity supply and telecommunications networks. Combination of affordable ICT devices and support infrastructure could create more opportunity for using ICTs more strategically for rural development based hence potentially to reduce the tendency towards restrictive control.

IV. COMMUNITY KNOWLEDGE PARTNERSHIP

".... the challenges facing the countryside can be more effectively addressed by applying new ways of thinking and doing based on the principles of sustainable development" [8: 118].

As mentioned in the previous section, among issues related to the utilization of ICTs for rural development programmes includes the 'preferable users and operators' of technologies [1],[2]. On top of this issue, many rural areas, especially in developing countries have also affected with issue of lack of ICTs infrastructure, hence limiting local community's access and capability to adopting ICTs for their livelihood development [6],[7].

As a short term strategy, an approach called "community knowledge partnership" or CKP in short, is proposed by [1] in 2002. This widespread, cross-sectoral local adoption strategy is being promoted as a suitable approach especially during the initial stage of ICTs development for a community. Among direct strategies which can be adopted through CKPs including extending existing information networks and establish new communication linkages such as community radio programmes and rural internet centre at local community centre and/or local school for educational and training purposes [1],[6].
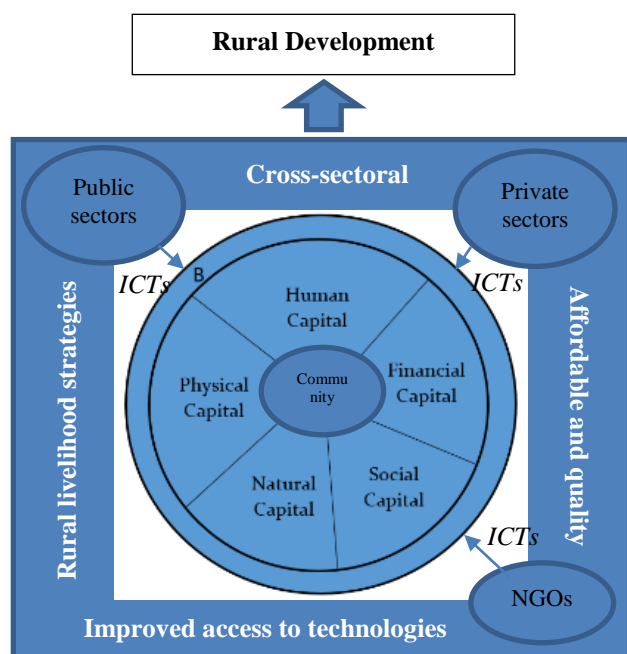

Figure 2: Proposed CKP for rural livelihood development. Source: Author (2015), [1],[2],[6] and [7]

The main purpose of CKP is to enable all stakeholders i.e. community and ICTs providers (government and non-government agencies) to work closely and share responsibility for the provision of information through innovative and decentralised institutional relationships [1]. CKP, in this light, requires all identified stakeholders and partners to be consulted and included in the planning and decision-making processes (refer to Table 2).

Table 2: Definition of Community Knowledge Partnerships (CKPs). Source: [1],[6]

Community Knowledge Partnerships (CKPs) are two-way information linkages designed to overcome existing gaps and blockages within community information systems. They aim to integrate ICTs into local knowledge systems strategically so that both internal and external information can be harnessed by a wide range of user groups for development goals. The range of partnerships will be context specific but could include:

- Rural and agricultural services e.g. government extension, private sector suppliers (inputs and extension services), local markets, national and international.
- Schools, research institutes – local, national, regional and international
- Health centres – local, national and international.
- Libraries, Book publishers – regional and international.
- Media – local, national, international, e.g. newspapers, community radio, television.

Ideally, CKP should adopt a 'bottom-up' planning approach i.e. driven by the community/target group (in line with sustainability principle) with strong and continuous support from government agencies. This is a very important prerequisite as CKP should reflect the local context in which information flows [1],[2]. But again, this 'ideal' process could only be realised once pertinent issues related to the use of ICTs for local development i.e. institutional and physical barriers is being addressed. Only then a range of ICTs can be introduced and made available for the community and their stakeholders. This process will create a wider spread benefit to all stakeholders, including those who are considered as the most marginalised groups where they can find a way of improving their access to and choice of information relevant to their livelihoods.

V. CONCLUSION

This paper highlighted the importance of knowledge and ICTs for the human and economic development for rural community livelihood. International development agencies such as the World Bank (1999) and UNDP (2001) and ADB (2011) have also acknowledged the crucial role of ICTs as tools (and not the ultimate results) of rural development [1],[6]. Recent developments in ICTs together with introduction of various types of new technologies might offer great potential for enhancing training and education for human and economic development [2].

Some pertinent issues or challenges related to the use of ICTs for rural development has also been discussed. These challenges includes the need to widen the sector or scope of ICTs utilization in rural development programmes by including other relevant stakeholders. Other challenges is to create access and opportunity for various groups within the community especially for the

most marginalized group so that they may find a way of improving their access to and choice of information relevant to their livelihoods [1]. Third challenge is related to the need to provide ICTs which are affordable while maintaining certain level in terms of quality of products and services.

It is argued in this paper that conventional thinking on technology adoption for development often underestimate the reality/complex nature of development. However, finding an inclusive, community driven approach suitable to local needs of ICTs for their livelihood development could become an important first step. This paper has also put forward the idea of establishment of Community Knowledge Partnership (CKP). This widespread, cross-sectoral local adoption strategy is being promoted as a suitable approach especially during the initial stage of ICTs development for a community. CKP should encourage all stakeholders i.e. community and ICTs providers (government and non-government agencies) to work closely and to share responsibility for the provision of information through innovative and decentralised institutional relationships.

With globalization phenomena is now advancing throughout the world, rural areas and their societies are now becoming more exposed into global knowledge ecosystem. This paper focuses on promoting a more strategic application of ICTs in facing rural development challenges. In particular the potential contribution of ICTs to fostering community understanding and skills on adopting suitable technologies for existing and/or ongoing, as well as for the future of rural development initiatives.

REFERENCES

[1] Chapman, R. and Slaymaker, T. (2002). *ICTs and Rural Development: Review of the Literature, Current Interventions and Opportunities for Action*. Working Paper 192: Results of ODI research presented in preliminary form for discussion and critical comment. London: Overseas Development Institute.

[2] Kelles-Viitanen, A. (2005). *The Role of ICT in Governing Rural Development*. IFAD Workshop on the "What are the Innovation Challenges for Rural Devvelopment, Rome, 15-17 November 2005.

[3] Chand, A., Leeming, D., Stork, E., Agassi, A. and Biliki, R. (2005). *The Impact of ICT on Rural Development in Solomon Island: The PFNET Case*. Report prepared for ICT Capacity Builing at USP Project, March 2005. Available online at: https://www.usp.ac.fj/jica/ict_research/documents/pdf_files/pfnet_report.pdf

[4] Rao, T. P. R. (2004). ICT and e-Governance of Rural Development. *Symposium on Governance n Development: Issues, Challenges and Strategies*. Gujarat, 20014.

[5] Ghosh, A. (2011). Initiatives in ICT for Rural Development: An Indian Perspective. *Global Media Journal – Indian Edition*, Vol. 2, No. 2, Winter Issue/December 2011.

[6] Asian Development Bank (ADB) (2011). *Guidelines for Knowledge Partnerships*. Philippines: Asian Development Bank.

[7] Meng, C. C., Abu Samah, B. and Omar, S. Z. (2013). A Review Paper: Critical Factors Affecting the Development of ICT Projects in Malaysia. *Asian Social Science*, Vol. 9, No. 4, 2013.

[8] Garrod, B., Wornell, R. and Youell, R. (2006). Re-conceptualising rural resources as countryside capital: The case of rural tourism. *Journal of Rural Studies* (22), 117-128.