

Transition into Internet of Things in Resource Constrained Settings: A Case Study from Malawi

Martin Bright Msendema^{1,*}, Patrick Albert Chikumba²

¹ Faculty of Applied Sciences, University of Malawi – The Polytechnic, Malawi

Abstract

Information Communication Technology (ICT) has in so many ways proved to be the drive of economy and a game changer to many disciplines. However digital divide has been of concern as developed countries have been benefiting more than their developing counterparts. All that resulting from lack of skilled labour and finance to invest into the required technology. This case study focused on the survival of the developing countries as they are constrained by the financial challenges. Three major dimensions from the socio-technical perspective of systems dimensions guided the authors in the study. The study showed the ability of people in developing countries to adapt to the challenging environment as they strive to cultivate from the strengths of ICT. This is particularly within Small and Medium Enterprises. Primary to this adaptation is the use of local expertise to develop own system than relying on imports from developed countries.

Keywords: Information System, Information System Development, Social System, System Development Life Cycle, Resource, Resource Constraint.

Received on 18 November 2018, accepted on 19 December 2018, published on 21 December 2018

Copyright © 2018 Martin Bright Msendema *et al.*, licensed to EAI. This is an open access article distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/3.0/>), which permits unlimited use, distribution and reproduction in any medium so long as the original work is properly cited.

doi: 10.4108/_____

*Corresponding author. Email: mmsendema@poly.ac.mw

1. Introduction

In the past few years, small and medium organisations in Malawi have realised the importance of ICT in improving their operations. However, due to economic constraints that the country is facing, as in other developing countries, these organisations are opting for local technical resources, including expertise, in their development of Information Systems (ISs). It has been noted that developing IS using local expertise, particularly application software, may increase the chances that it fits the context, culture, and language where it is used. Even UNCTAD recommends to governments in adopting policies that help build domestic software capabilities[1]. The creation of a local software industry in developing countries is seen as a potential catalyst for socio-economic development [2]. However, many organisations in developing countries have challenges in the development of IS due to factors such as lack of

adequate skilled labour, economic constraints, systems infrastructure deficiency, and constraints imposed by the social and political contexts. Therefore, the aim of this study is to understand how ISs are developed in a resource-constrained setting, with Malawi as an example, from the socio-technical perspective. Three cases are used: (i) one Public Institution – focusing on Client Information Management, (ii) one Non-governmental Organisation (NGO) – focusing on monitoring and evaluation, and (iii) six Small Medium Enterprises (SMEs) – focusing on accounting and finance. Details on how and why these were chosen are presented Section 3.

In this paper, resources are considered as assets and capabilities that are available and useful in carrying out IS development activities. Capabilities and assets are respectively what an organization has and does [3]. Resources for an activity can be principal, dependent and independent resources. According to [4], a *principal* resource is the main resource whose usage amount may be

