

Systematic Phases for Proposing a New Model of Qualifications Gap Based on Network Technician Data

Karrar Hameed Abdulkareem ^{a,*}, Mohd Sanusi Azmi ^b, Nabeel Salih Ali ^{c,d}, Mohammed Nasser Al-Mhiqani ^b, Haider Alsharqi ^c

^a Agriculture College, University of Al-Muthana, Iraq

^b Faculty of Information and Communication Technology, University Technical Malaysia Melaka, Malaysia

^c IT- RDC Centre, University of Kufa, Najaf, Iraq

^d ECE Department, Faculty of Engineering, University of Kufa, Najaf, Iraq

*Corresponding author email address: khak9784@mu.edu.iq

Abstract

Workers in the Information Technology (IT) sector are employed, selected, and evaluated based on specific qualifications. Qualifications are chosen according to an organisation's views. Literature has examined several metrics such as skill, knowledge, ability, attitude certification, education and experience in industrial and academic areas. However, a few studies have tested the effects of Qualifications Gap (QG) among IT personnel in public universities. This study introduces a methodological framework to measure the influence of lack of the education, experience, and certification on Qualifications Gap (QG) among network technicians in Baghdad's public universities. The research methodology includes preliminary study, literature review, data collection and analysis, proposal, and evaluation. Data are collected from 70 respondents through an online survey to test the proposed hypotheses. Four experts validated survey results through a structured interview. Most of the feedback of the experts matched the results of the questionnaire. The outcome of the study is a QG model for network technicians. The presented models that previously established models in industrial and public areas are compared, and the effects of the proposed factors are evaluated. The conducted model can be used as a reference by decision makers in public universities to enhance the level of the job handling by network technicians and to set employment requirements in the networking field.

Keywords: Network management, Technician knowledge, Certification, Education, Experience, Qualifications Gap (QG)

1. Introduction

Network operators upgrade their access networks to meet an increasing number of the users and the growing bandwidth required by services (Machuca et al., 2011). Due to the fast development of network technology, the complexity of the network architectures and variety of the network services have been increased and resulted in high demand for network capacity and network performance (Liu et al., 2012). Configuring a single router in a network is a task for a trained expert and setting thousands of routers and determining why a network of such size is not functioning as expected can become tasks beyond the capacity of any single human (Peterson and Davie, 2012; Falih et al., 2018). As a result, network configuration and management continue to be a challenge among operators because operators should be configured and adjust a network manually in response to changing network conditions (Kim and Feamster, 2013; Abdulkareem et al., 2016). To achieve network management smoothly, several vital problems on personnel role which is a significant

factor in network management must be considered. These issues include determining who can operate the network at the lowest cost, guaranteeing the highest quality of services, and providing services that satisfy customers (Clemm, 2007). Network management includes several aspects rather than technology such as human dimension. These dimensions refer to how people use management tools and technology to achieve a given purpose as well how users perform management functions, who are ultimately responsible for the smooth operation of networks in addition to what networking services can be supported better. Network managers or decision-makers should have a framework to select and assign skilled network operators for the management and operation of networks. Bailey and Stefaniak (2001) found the shortage of qualified professionals is not caused by a lack of applicants but by the deficiency of individuals with adequate skills (Bailey and Stefaniak, 2001). Authors partly attributed the presented scenario to the overemphasis on short training and certification programs at the expense of university education.