


# Chapter 15

## Factors Influencing Virtual Learning System Usage in Higher Education

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### ABSTRACT

*Virtual learning systems (VLSs), commonly referred to as learning or course management systems, have been formally adopted at many higher education institutions. However, knowledge of the actual usage of VLSs is limited in terms of what specific functional and non-functional characteristics are deemed useful and how this influences system usage. Furthermore, little is known about the role of other non-system-related factors related to VLS usage, such as pedagogic, organisational, and individual difference factors. This chapter proposes and describes the virtual learning system usage model (VLSUM), which represents the factors influencing VLS usage in higher education institutions. The VLSUM is based on a conceptual framework integrating multiple dimensions and is confirmed by the results of an empirical study. A mixed-methods research design was adopted in the development of the VLSUM. This model is valuable to educational technologists, instructional designers, and software designers for VLS implementation in higher education.*

### INTRODUCTION

The formal adoption of virtual learning systems (VLSs) in South African higher education is increasing and e-learning practices are becoming institutionalized. VLSs are a generic term that represents a class of software designed to support online education in universities (Gonella & Pantò 2008; Ozkan, Koseler & Baykal, 2009). VLSs are known as a number of different names, including course management systems, learning management systems (LMS), and virtual learning environments. Examples of well-known VLSs in use are Blackboard, Sakai, Moodle, Atutor, and Kewl (Ssekakubo, Suleman & Marsden, 2011; Unwin, et al., 2010). Despite being formally adopted for implementation by higher education institu-

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tions, adoption rates of VLSs are uneven, and usage of system functions amongst educators is limited. A study conducted at universities in the Western Cape demonstrated limited usage of online interactive discussions, online assessment, online grading and more advanced VLS functions (Mlitwa & Van Belle 2011), as did a multi-institutional study conducted in Ireland (Cosgrave, et al., 2011) and a study conducted by EDUCAUSE Center for Analysis and Research (ECAR) with 151 universities across 13 countries (Dahlstrom, Brooks & Bichsel, 2014). Similarly, Mtebe (2015) reported that while there was increased adoption of VLS in the Sub-Saharan Africa, the actual usage was low. In another study, findings concur that most academic staff at the University of Dar es Salaam in Tanzania use the VLS (referred to as LMS) for uploading content and files only (South Africa Institute of Distance Education, 2013).

Much of the research on VLSs has focused on studies evaluating e-learning systems (Ozkan & Koseler, 2009), measuring VLS/LMS success using an adapted version of the DeLone and McLean Model (Mtebe, 2015), or studies of adoption based on existing models such as the technology acceptance model (TAM) (Davis, 1989), TAM extensions (Tarhini, Hone, Liu & Tarhini, 2017), the unified theory of acceptance and use of technology (UTAUT) (Venkatesh, Morris, Davis & Davis, 2004) and its extension UTAUT2 (El-Masri & Tarhini, 2017). There has been limited research on an integrated approach to studying the problem of limited or uneven VLS usage in higher education from a multidimensional perspective.

The research reported on in this chapter addresses the gap in research on the limited or uneven VLS usage in South Africa with the goal of designing a comprehensive integrated model that specifically addresses VLS usage from a multi-dimensional perspective, taking the lessons learnt from technology adoption and usage models into consideration. Consequently, the questions focused and reported on in this chapter are:

- 1) What are the multi-dimensional factors that influence VLS usage in South African higher education institutions?
- 2) How can these factors and their relationships be represented in a model of VLS usage?

A technology usage model can be utilized by educational technologists and instructional designers to implement strategies to optimize usage of VLSs in higher education. This model can also be beneficial to designers by guiding the future design of VLSs. Therefore, this chapter covers the multi-dimensional factors that influence VLS usage in South African higher education institutions, culminating in a model of VLS usage.

## **BACKGROUND**

VLSs are web-based applications designed to support a model of online teaching and learning based on readings, lecture material, discussion forums, activities and associated communication and management (Gonella & Pantò, 2008; Klobas, & McGill, 2010). VLSs comprise a range of tools to support educational practices, including tools for communication and collaboration, student productivity and involvement, course administration/management, assessment and content (Elabnody, 2016; Wcet, n.d.).

Higher education (or tertiary education) in the South African context encompasses “all learning programs leading to qualifications higher than Grade 12 or its equivalent in terms of the National Qualifications Framework as contemplated in the South African Qualifications Authority Act, 1995 (Act 58 of 1995), and includes tertiary education as contemplated in Schedule 4 of the Constitution” (South

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