Measuring E-Learning Systems Success

A Dissertation submitted by

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ABSTRACT

The education sector has been radically affected by developments in information technology. In the education arena, substantial funds have been invested in the systematic development of technology infrastructure. E-learning is believed to be the main platform for adopting and using new and more advanced IT in the education sector. However, measuring the success of e-learning systems is one of the key issues facing universities and educational institutions. Although considerable attention has been paid to the information systems success issue, there remain arguments about which factors are the most telling in measuring information system success. The issue of evaluation of the success of information systems generally, and e-learning systems in particular, has become more complicated due to the differing interests and needs of stakeholders. Different groups of stakeholders deal with e-learning systems in different ways - for instance, students, academic staff, ICT staff, management, and software developers. These stakeholders have substantially different objectives and often there are conflicts between their aims. This study proposes an evaluation methodology model to assess e-learning systems success.

The model proposed is one which includes eight constructs: IT infrastructure services; system quality; information quality; service delivery quality; perceived usefulness; user satisfaction; customer value; and organisational value. A range of stakeholders such as students, academic staff, and ICT staff are considered in this model. Three instruments were designed to measure the perceptions of three different stakeholders towards e-learning system success. A quantitative study was conducted at University of Southern Queensland (USQ), with survey responses from 720 students who use the e-learning system, 110 academic staff members, and 22 ICT staff. The results confirm that the study model is valid and reliable to measure the success of e-learning systems from different points of view. Some of the relationships among the constructs in the study model were supported and some were not. The study contributed to the body of knowledge by providing a valid and reliable model to measure the success of e-learning systems. Moreover, this study contributes to the practitioners, recommending universities and educational institutions that develop and support e-learning systems.
Publications

- **Book Chapters**


- **Conference Proceedings - Refereed**


- **Journal Articles: Accepted**

  Alsabawy, Ahmed Younis, Cater-Steel, Aileen, and Soar, Jeffrey ‘*IT Infrastructure Services As a Requirement for E-learning System Success*’ paper submitted to the ‘Computers and Education’ Journal ‘Accepted’.
Journal Articles: Under Review


• Report


The researcher compiled a report with the results and recommendations of the thesis for the Faculty Deans at USQ, Deputy Vice-Chancellor (Academic Services) and Chief Information Officer, Executive Director of Australian Digital Futures Institute, and Executive Director, ICT Services. The results and recommendations of this report were adopted by the “Integrated StudyDesk” team which is updating the USQ StudyDesk to improve students’ experience, and also to improve some inefficiencies for academic staff.
CERTIFICATION OF DISSERTATION

I certify that the ideas, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Candidate signature

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<tr>
<td>AGFI</td>
<td>Adjusted Goodness-of-Fit Index</td>
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<td>AHP</td>
<td>Analytic hierarchy process</td>
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<td>AST</td>
<td>Adaptive Structuration Theory</td>
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<td>AVE</td>
<td>Average variance extracted</td>
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<td>BELS</td>
<td>Blended E-Learning Systems</td>
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<td>C.R.</td>
<td>Critical Ratio</td>
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<td>CAS</td>
<td>Computerized Accounting System</td>
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<td>CEO</td>
<td>Chief executive officer</td>
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<td>Confirmatory Factor Analysis</td>
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<tr>
<td>ECM</td>
<td>Expectation-Confirmation Model</td>
</tr>
<tr>
<td>EDMS</td>
<td>Electronic document management system</td>
</tr>
<tr>
<td>EDT</td>
<td>Expectancy Disconfirmation Theory</td>
</tr>
<tr>
<td>EFFI*</td>
<td>Efficiency</td>
</tr>
<tr>
<td>eLSE</td>
<td>e-Learning Systematic Evaluation</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise resource planning</td>
</tr>
<tr>
<td>e-SELFQUAL</td>
<td>Online self-service quality</td>
</tr>
<tr>
<td>e-SQ</td>
<td>electronic Service Quality</td>
</tr>
<tr>
<td>ESS</td>
<td>Enterprise System Success</td>
</tr>
<tr>
<td>eTailQ</td>
<td>eTail Quality</td>
</tr>
<tr>
<td>ETM</td>
<td>Educational Technology Model</td>
</tr>
<tr>
<td>eTransQual</td>
<td>Electronic transaction quality</td>
</tr>
<tr>
<td>FULF*</td>
<td>Fulfilment</td>
</tr>
<tr>
<td>GFI</td>
<td>Chi-Square, Goodness-of-Fit Index</td>
</tr>
<tr>
<td>GoF</td>
<td>Goodness-of-Fit</td>
</tr>
<tr>
<td>$H^2$</td>
<td>Cross-validated communality</td>
</tr>
<tr>
<td>HELAM</td>
<td>Hexagonal E-learning Assessment Model</td>
</tr>
<tr>
<td>ICE</td>
<td>Integrated Content Environment</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and communication technology</td>
</tr>
<tr>
<td>IIT</td>
<td>Image Interactivity Technology</td>
</tr>
<tr>
<td>IQ*</td>
<td>Information Quality</td>
</tr>
<tr>
<td>IS</td>
<td>Information system</td>
</tr>
<tr>
<td>ISSDOs</td>
<td>Information System Service Delivery Organisations</td>
</tr>
<tr>
<td>IT</td>
<td>Information technology</td>
</tr>
<tr>
<td>ITIS</td>
<td>Information technology infrastructure services</td>
</tr>
<tr>
<td>KMS</td>
<td>Knowledge Management System</td>
</tr>
<tr>
<td>LMSs</td>
<td>Learning management systems</td>
</tr>
<tr>
<td>ML</td>
<td>Maximum likelihood</td>
</tr>
<tr>
<td>MOOC</td>
<td>Massive Open Online Course</td>
</tr>
<tr>
<td>NFI</td>
<td>Normed Fit Index</td>
</tr>
<tr>
<td>NNFI</td>
<td>Non-normed Fit Index</td>
</tr>
<tr>
<td>OER</td>
<td>Open Education Resource (OER)</td>
</tr>
<tr>
<td>OLS</td>
<td>Online Learning System</td>
</tr>
</tbody>
</table>
OMIS  Organisational memory information system
ORGV* Organisational value
PCLOSE P of Close Fit
PeSQ Perceived e-service quality
PGFI Parsimony Goodness of Fit Index
PIQ Perceived Information Quality
PIRQ Perceived Internet Retailing Quality
PLS Partial Least Squares
PLS-SEM Partial Least Squares Structural Equation Modeling
PNFI Parsimony Normed Fit Index
PRATAM The Perceived Resources and Technology Acceptance Model
PRIV* Privacy
PSP/IQ Product and Service Performance Model for Information Quality
PWQ Perceived web quality
Q* predictive relevance
QES Quality of Electronic Service
QMS Quality Management System
QUIS Questionnaire for User Interface Satisfaction
R&D Research and development
R* Coefficient of determination
RESP* Responsiveness
RFID Radio Frequency Identification
RMR Root Mean-square Residual
RMSEA Root Mean Square Error of Approximation
S.R.W.* Standardized Regression Weight
SATF* User satisfaction
SCT Social Cognitive Theory
SDQ Service delivery quality
SEM Structural Equation Modelling
SMC Squared Multiple Correlation
SOLE Soft Library Evolution
SQ* System Quality
SOM Software Quality Metrics
SQMAT Software Quality Measurement and Assurance Technology
SRMR Standardise Root Mean-square Residual
TAM Technology Acceptance Model
TLI Tucker-Lewis Index
TPB Theory of Planned Behaviour
TQM Total Quality Management
TRA Theory of Reasoned Action
TTF Task-Technology Fit
UDA User Development computer Applications
UIS User information satisfaction
USEF* Perceived usefulness
UTAUT Unified Theory of Acceptance and Use of Technology
VET Vocational Education and Training
VLE Virtual Learning Environments
WBL Web-Based Learning
WEBCT Web Course Tools
WebCT CCMS WebCT course content management system
WebQual Web site quality
WWW World Wide Web
ZOT Zone of Tolerance
(χ²/df) Normed Chi-square

*This abbreviations created by the researchers to use in the statistical analysis