Evaluating critical success factors in implementing E-learning system using multi-criteria decision-making

By: Naveed, QN (Naveed, Quadri Noorulhasan)[1]; Qureshi, MRN (Qureshi, Mohamed Rafik Noor)[2]; Tairan, N (Tairan, Nasser)[1]; Mohammad, A (Mohammad, AbdulHafeez)[3]; Shaikh, A (Shaikh, Asadullah)[4]; Alsayed, AO (Alsayed, Alhuseen O.)[5]; Shah, A (Shah, Asadullah)[6]; Alotaibi, FM (Alotaibi, Fahad Mazaed)[7]

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Abstract

Learning using the Internet or training through E-Learning is growing rapidly and is increasingly favored over the traditional methods of learning and teaching. This radical shift is directly linked to the revolution in digital computer technology. The revolution propelled by innovation in computer technology has widened the scope of E-Learning and teaching, whereby the process of exchanging information has been made simple, transparent, and effective. The E-Learning system depends on different success factors from diverse points of view such as system, support from the institution, instructor, and student. Thus, the effect of critical success factors (CSFs) on the E-Learning system must be critically analyzed to make it more effective and successful. This current paper employed the analytic hierarchy process (AHP) with group decision-making (GDM) and Fuzzy AHP (FAHP) to study the diversified factors from different dimensions of the web-based E-Learning system. The present paper quantified the CSFs along with its dimensions. Five different dimensions and 25 factors associated with the web-based E-Learning system were revealed through the literature review and were analyzed further. Furthermore, the influence of each factor was derived successfully. Knowing the impact of each E-Learning factor will help stakeholders to construct education policies, manage the E-Learning system, perform asset management, and keep pace with global changes in knowledge acquisition and management.

Keywords

KeyWords Plus: ANALYTIC HIERARCHY PROCESS; DEVELOPING-COUNTRIES; READINESS FACTORS; FACTORS CSFS; EDUCATION; SELECTION; MODEL; INSTRUCTOR; ADOPTION; RANKING

Author Information

Reprint Address:
King Khalid University King Khalid Univ, Coll Comp Sci, Abha, Saudi Arabia.
Corresponding Address: Naveed, QN (corresponding author)

+ King Khalid Univ, Coll Comp Sci, Abha, Saudi Arabia.

Addresses:

+ [1] King Khalid Univ, Coll Comp Sci, Abha, Saudi Arabia
+ [2] King Khalid Univ, Coll Engn, Abha, Saudi Arabia
[3] Bahria Univ, Dept Comp Sci, Lahore, Pakistan
+ [4] Najran Univ, Coll Comp Sci & Informat Syst, Najran, Saudi Arabia
+ [5] King Abdulaziz Univ, Sci Res, Jeddah, Saudi Arabia
+ [6] Int Islamic Univ Malaysia, Kulliyyah ICT, Kuala Lumpur, Malaysia
+ [7] King Abdulaziz Univ, Fac Comp & Informat Technol, Dept Informat Technol, Jeddah, Saudi Arabia

E-mail Addresses: qnaveed@kku.edu.sa

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1. **An evaluation framework for E-learning effectiveness in the Arab World** — Times Cited: 8
By: AbuSneineh, W.; Zairi, M.
Int. Encycl. Educ. Pages: 521-535 Published: 2010

2. **Learning through massive open online courses platforms based on fuzzy analytic hierarchy process** — Times Cited: 1
By: Afa, Y.; Battou, A.; Baz, O.
International Journal of Smart Education and Urban Society Volume: 10 Issue: 3 Pages: 1-12 Published: July 2019

3. **Relationship Modeling of Critical Success Factors for Enhancing Sustainability and Performance in E-Learning** — Times Cited: 6
By: Ahmad, Naim; Quadri, Noorulhasan Naveed; Qureshi, Mohamed Rafik N.; et al.
SUSTAINABILITY Volume: 10 Issue: 12 Article Number: 4776 Published: DEC 2018

4. **Perceived Barriers towards e-Learning by Faculty Members at a Recently Established University in Saudi Arabia** — Times Cited: 13
By: Al Gamdi, M.A.; Samarji, A.
International Journal of Information and Education Technology Volume: 6 Issue: 1 Pages: 23-8 Published: Jan. 2016

5. **Evaluating E-learning systems success: An empirical study** — Times Cited: 7
By: Al-Fraihat, Dimah; Joy, Mike; Masa'deh, Ra'ed; et al.
COMPUTERS IN HUMAN BEHAVIOR Volume: 102 Pages: 67-86 Published: JAN 2020

6. **Success Factors for Adopting E-learning Application in Sudan** — Times Cited: 2
By: Alamin, H. A. A.; Elgabar, E. E. A.
Int. J. Soft Comput. Eng. Volume: 3 Issue: 6 Published: 2014

7. **Critical success factors of small and medium-sized enterprises in Palestine** — Times Cited: 3
By: Alfoqahaa, Sam
JOURNAL OF RESEARCH IN MARKETING AND ENTREPRENEURSHIP Volume: 20 Issue: 2 Pages: 170-188 Published: 2018

8. **E-learning critical success factors: Comparing perspectives from academic staff and students** — Times Cited: 9
By: Alhabeeb, Abdullah; Rowley, Jennifer
COMPUTERS & EDUCATION Volume: 127 Pages: 1-12 Published: DEC 2018

9. **Assessing e-learning system in higher education institutes: Evidence from structural equation modelling** — Times Cited: 6
By: Ali, Muhammad; Raza, Syed Ali; Qazi, Wasim; et al.
INTERACTIVE TECHNOLOGY AND SMART EDUCATION Volume: 15 Issue: 1 Pages: 59-78 Published: 2018

10. **Seven major challenges for e-learning in developing countries: Case study eBIT, Sri Lanka** — Times Cited: 14
By: Andersson, A.
Int. J. Educ. Dev. using ICT Volume: 4 Issue: 3 Published: 2008

11. **Determining e-learning success factor in higher education based on user perspective using fuzzy AHP** — Times Cited: 3