ABSTRACT

Technological advancements are triggering transformations in course delivery in educational institutions through e-Learning mode by many universities in India and abroad. E-Learning offers many advantages like the flexibility of learning at anytime, anywhere, any place, and with any device. However, there are inherent problems and gaps in research that have to be addressed to reap the benefits of e-Learning. The key challenges and issues faced in e-Learning today are, lack of face-to-face interaction leading to student disengagement, shifting the responsibility of learning to the learners and lack of effective e-Learning Frameworks to address these issues. Also, the faculties have to take up additional responsibilities and new role as the facilitator of learning. These challenges provide opportunities for building an effective e-Learning Framework to adapt to changes happening in online learning scenarios. A major need exists today to identify the latent factors and driving forces that lead to success in e-Learning portals. This research work addressed these problems by proposing and developing an effective Self-Regulating e-Learning Framework. The research method involved constructing two experimental prototype websites incorporating a Single and Multi-Faculty Model. These models were validated through experimental evidence and feedback from the concerned students and course teachers.
The first phase of the five phase experimental design, and study, consisted in identifying the key learning strategies to be adopted by online students in enhancing their self-regulating learning behavior. The second phase consisted of sentiment analysis of feedback from online students which was carried out in order to identify student needs and their satisfaction. The third phase consisted of analysis of web usage data using Google Analytics in order to identify the learning behavior and patterns of online users. In the fourth phase, experiments conducted to identify determinant factors on Social Media usage of students. In the fifth phase, experiments were conducted in order to experimentally prove the effectiveness of Multi-Faculty Model in improving learning outcome of students. Statistical analysis of student responses has been done using IBM SPSS Statistics and AMOS.

The Principal Component Analysis done on student responses to self-regulating survey identified the key learning strategies to be adopted by online students to enhance their self-regulated learning behavior. The Sentiment Analysis of Student Feedback reported positive attitude with respect to the experimental website and it helped to understand the learning needs, preferences and expectations of students. The automatic collection and analysis of web usage data provided interesting patterns of students’ learning behavior and helped the faculty to periodically improve the content of the website. Exploratory and Confirmatory
Factor Analysis of student responses proved the eWOM behavior of students that helped to identify the key factors on Social Networking behavior of students. One-way ANOVA analysis on Multi-Faculty model proved that the Multi-Faculty model to be more effective when comparing to other e-Learning Frameworks discussed in this work. Finally a performance analysis was done on massive online courses and the results revealed and reinforced the need for this study and the results are comparable to the experimental findings of this research work.

The contributions made in this research study are significant and the research findings can be practically applied in any Educational Institutions for guiding the faculties, and the students for harnessing the positive aspects of e-Learning and enhancing student retention in online courses. This experimental study can also be scaled up in future for targeting a larger cross section of students and faculties covering multiple institutions.

**KEYWORDS:** e-Learning Framework, Self-Regulated Learning, Social Networking Analysis, Sentiment Analysis, Web Usage Pattern Analysis, Multivariate Analysis, Multi-Faculty e-Learning Model, e-Learning Effectiveness