CHAPTER 2

REVIEW OF LITERATURE
2.0 REVIEW OF LITERATURE

2.1 E-LEARNING STATE OF THE ART

Msomi, A., P. (2016), highlights the fact that the transformation process of introducing e-Learning in educational settings has a beneficial effect on Universities and Higher Education Institutes, allowing them to have a greater geographical reach. E-Learning introduces a paradigm shift in the teaching and learning process. The traditional Instructor centric approach no longer holds, and a Learner-centric approach has to be followed. The study emphasizes that for e-learning to be effective, there must be a process of quality assurance of online materials and a method to ensure that they meet quality standards. Also, revision and updating the content should be an easy process. The e-Learning success is also dependent on Faculties and students’ satisfaction.

Stoyanova, S. et al. (2016) traced the history of education and highlighted that throughout the whole human history, there was a search for improvement in the effectiveness of education and the same can be achieved by finding ways to shorten the learning time and achieve the desired outcome. These objectives can be incorporated in e-Learning settings easily. The e-Learning systems have been designed for the enrollment of a large number of students and there are no time and place limits. The high scalability in e-Learning systems implies that the enrollment of more students does not require more space. Kundi, M. et al. (2014) discuss the opportunities and threats faced by higher education institutions in the developing countries and the need for moving from e-Learning 1.0 to e-Learning 2.0.

Cheawjindakarn, B. (2012) specified five critical success factors for the implementation of online distance learning in higher education after reviewing 19 papers during 2000-2012. The CSFs are Institutional Management, Learning
Environment, Instructional Design, Services Support, and Course Evaluation. Salyers, V. et al. (2014) indicated that the essential characteristics of an e-Learning environment involve the integration of different elements that address the needs of diverse learners such as applying efficient pedagogical strategies and incorporation of state of the art Instruction Design Principles that provide flexible and interactive learning opportunities. Gencturk, A., T. et al. (2017) have made an experimental study on Web 2.0 technologies usage by online users. The following are the findings of their study. Web 2.0 technologies help online students to earn cooperative working habits, improve learning and thinking skills, and provide a positive effect on individual development. The students in the experimental group who were exposed to web 2.0 technology use earned a higher mean score in post-tests compared to the students in the control group who did not use the web 2.0 technologies.

2.2 PROBLEMS IN E-LEARNING

Woodill (2004), enumerated problems in e-Learning implementations like online courses should be based on real need, and not just by applying technology alone. They warned too much electronic content to browse through make a learner to a boring state rather than to a motivational state. Norman, G. (2008) opined that e-Learning is not an omnipotent solution like learners will assimilate the learning content received from many sources and different formats. Guri-Rosenblit et al., (2011) reported that there were gaps in e-learning research like lack of clarity in terminologies used in the literature. They claimed e-Learning cannot be introduced by placing the entire responsibility of learning with users by assuming that learners would acquire self-regulating habits automatically. Beatrice Aguti et al. (2013) reported that only limited studies have been done on
e-Learning effectiveness and current e-Learning scenarios lack a comprehensive framework for effectively using e-Learning systems.

Margaryan et al. (2014) made an extensive study of the Instructional Quality Level of Massive Online Courses (MOOCs). They reported that MOOCs scored poorly on most instruction design principles. Their study stressed the need for identifying the critical factors. A recent research study by Reisman, S. (2014) focuses on issues and problems in current e-Learning systems like massive online courses. As per his study, it was difficult to prove that the learning outcomes of the learners have improved after taking up such courses. As per the research work that was done by D. Venkata Subramanian et al. (2015), the key factors for assessing the effectiveness of e-Learning or Knowledge Portals are Usability, Functionality, Availability, Relevance, and Interaction. According to the authors, humans acquire knowledge through their experiences, values, insights, and contextual information. A case study presented by them highlights that correlation exists between feedback responses collected from knowledge seekers (Learners) and knowledge providers (Teachers or Instructors).

Ho, A.D. et al. (2014) have made an extensive study on learner engagement and performance on 17 first year Harvard and MIT courses launched on the edX platform. According to them, out of 8.4 lakh registrations from 5.9 lakh unique users, only 5 percent of the registrants earned certificates of completion. Another 4 percent of the registrants explored half or more of the course content without certification. An additional 55 percent of the registrants viewed less than half the content. And 34 percent of the registrants never engaged with the online content. From the above statistics, it is apparent that only 4 percent of people are persistent and have taken efforts to stay in the course and have come out successful in the course. It is evident from the above studies that student empowerment, Self-regulated Learning, and Multi-Faculty collaborations are
essential and the need of the hour to overcome the shortfalls experienced in e-Learning settings today. Kizilcec, R.F. *et al.* (2016) conducted studies on 4200 online courses of 550 institutions that reached 35 million people worldwide and concluded that the majority of learners were unsuccessful and only a small proportion eventually completed the course.

### 2.3 E-LEARNING FRAMEWORKS

Dorobat, I. (2014) made an extensive literature review on the role of Models for measuring e-Learning success in Higher Education Institutions. According to his research work, multiple criteria and approaches are needed for making online learning systems successful. According to him, the two models that are used in conceptualizing Information System Success are the Technology Acceptance Model (TAM) and the Delone and Mclean Model. Delone and McLean (1992) developed a model whose main objective was to measure the success of any Information System. The Delone model was later extended to include Net Benefits as one of the deciding factors for IS success. Fig. 2.1 shows the extended model for Information system success developed by Delone and Mclean(2003).

![Figure 2.1: Information System Success Model (Delone and Mclean, 2003)](image-url)
The effectiveness of any e-Learning tool or system can also be assessed through the assessment of the supporting Information System (Dorobat, 2014). The prominent factors like User satisfaction, Intention to use, System Quality, Service Quality and Information Quality can be considered for the evaluation. The overall value of a system can be judged by its net benefits which in turn depends on two important factors namely satisfaction of the students or users and their intention to use the e-Learning systems. M. B. Musah et al. (2015) have made studies on identifying the determinant factors of improving the students’ learning outcomes by using the Student Outcome Model which was based on the Structural Equation modeling approach. According to them, the two important factors that cause positive influence on student outcome are Qualified Instructional Leader and Teaching and Learning Quality. Chang, C. et al. (2014) in their research study on the instructors’ role in online instruction practices emphasize on some important roles. The roles namely Content Expert and Instructional Designer are important roles for the trainers to follow as part of the regular responsibility or task.

As per the research work that was done by D. Venkata Subramanian et al. (2015), the key factors for assessing the effectiveness of E-Learning or Knowledge Portals are Usability, Functionality, Availability, Relevance, and Interaction. According to the authors, humans acquire knowledge through their experiences, insights, and contextual information. Vivekananthamoorthy, N. et al. (2015) highlighted that a Continuous Improvement process has to be embedded in an e-Learning framework. The main approach used for enhancing the effectiveness of an e-Learning site was the sentiment analysis of learner responses and online learner behavior pattern analysis. The technology used for the above is opinion mining and web analytics.

Also, it has been experimentally proved that incorporating Social Networking aspects in the framework will encourage the students to improve their social and
learning skills through interaction with friends, faculties and professional experts. The study confirmed that expert opinion seeking, notifications, and networking with professionals help student engagement in a positive way to improve their identity, academic stand as well as fulfilling their future expectations and professional needs. Gamage, D. et al. (2015) reported gaps in research in the current e-learning settings in not identifying the learners’ views and needs and understanding their learning traits. They advocated an online framework for analyzing the effectiveness of Massive Online Courses using 10 key dimensions. Vikas Kumar (2016) stated that Cloud-Based Moodle LMS provides accessibility and flexibility in terms of time and place as well as supports convenience and Collaboration to Students, Teachers, and Administrators.

Fig. 2.2 shows e-Learning theoretical framework proposed by Aparicio, M. et al. (2016) which is based on three key dimensions depicting Users (People), Technologies, and Services provided by e-Learning System.

![Diagram of E-Learning Systems Theoretical Framework](image)

**Figure 2.2: E-Learning Systems Theoretical Framework**  
(Aparicio, M. et al., 2016)

Deepika Sharma and Vikas Kumar (2017) have developed a Framework that supports collaboration and convenient learning on Cloud Computing Platforms.
According to the authors, empowerment of learners and instructors takes place due to collaborative learning. In spite of being geographically separated from each other, the usage of online collaborative tools like chats, and discussion forums help to reduce the distance.

**Table 2.1: Review of e-Learning Frameworks**

<table>
<thead>
<tr>
<th>E-Learning Framework Reviewed</th>
<th>Features / Benefits</th>
<th>Limitations / Shortcomings</th>
</tr>
</thead>
</table>
**Benefits**: The ten-dimensional effective e-Learning framework acts as a benchmark for MOOC stakeholders | ☐ The Framework has to be tested using an experimental prototype. |
| Aparicio, M. *et al.* (2016)  | **Dimensions**: People, Technology, Services  
**Benefits**: The framework serves as cornerstone to guide the e-learning systems | ☐ The Theoretical Model need to be experimentally tested for its validity. |
| Chiungsui Chung *et al.* (2014) | **Dimensions**: Instructional Design, Facilitating Learning, Learning Assessment, | ☐ Small sample size  
☐ Reliance on self-response |
<table>
<thead>
<tr>
<th>M. B. Musah et al. (2015)</th>
<th><strong>Student Outcome Model:</strong> Structural Equation Modeling <strong>Determinant Factors</strong> Qualified Instructional Leader and Teaching and Learning Quality.</th>
<th>questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiungí Chang et al. (2014)</td>
<td><strong>seven critical dimensions</strong> are crucial for defining instructor’s roles Content Expert and Instructional Designer are important roles.</td>
<td>Experimental validation needed</td>
</tr>
<tr>
<td>Venkata Subramanian et al. (2015)</td>
<td>The key factors for assessing the effectiveness of E-Learning or Knowledge Portals are Usability, Functionality, Availability, Relevance, and Interaction. According to the</td>
<td>Experimental evidence needed</td>
</tr>
<tr>
<td>Authors</td>
<td>Continuous Improvement Process</td>
<td>Study on multi-institutional level collaboration needed.</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>N. et al. (2014, 2015, and 2016)</td>
<td>has to be embedded in an e-Learning framework. sentiment analysis of learner responses and online learner behavior pattern analysis. Incorporation of Social Networking aspects in the framework: Improvement of social and learning skills through interaction with friends, faculties and professionals experts.</td>
<td></td>
</tr>
<tr>
<td>Deepika Sharma and Vikas Kumar (2017)</td>
<td>Learning Framework on Cloud Computing Platforms: empowerment of learners and instructors is taking place due to collaborative learning</td>
<td>Experimental validation needed</td>
</tr>
</tbody>
</table>

2.4 SELF-REGULATED LEARNING

Since in e-Learning the responsibility of learning has been shifted from the shoulders of the teacher to the learner, many researchers stress Self-Regulation as the key-Indicator that has to be embedded in an e-Learning framework in order to
get the students engaged in online learning as well as to enhance the student learning outcomes.

The following paragraphs stress the importance of self-regulation and trace the research work done on the subject by different researchers. Zimmerman (1990) emphasized that the students should take individual responsibility for their learning and they have to control their learning activities directed towards the acquisition of knowledge and skill. According to him, the learners should self-regulate their learning habits to become successful and self-regulation can be inculcated by continual feedback of learning effectiveness. He has formulated 14 self-regulated learning strategies that can be adopted by students to enhance their learning outcome. Some important learning strategies like a) goal setting and planning, b) self-monitoring, c) seeking social assistance, d) self-evaluation, and e) self-improvement can be effectively adopted by students to promote self-regulation in online learning.

Ley, K., and Dawn, Y. B. (2001) have proposed a self-regulating Model consisting of four principles, Prepare, Organize, Monitor, and Evaluate. According to their study, Self-regulation is not inbuilt in learners and it can be learned and brought to volitional control by the learners by a learned response. Whipp, J. et al. (2004) discussed the essentials and prerequisites for a web-based course and emphasized that the key self-regulation factors are Seeking help, Getting timely technical expertise, networking with peers to face loneliness, and encouraging student postings in forums.

As per David J. Nicol (2006), intelligent self-regulation requires that the student has in mind some educational goals to be achieved against which performance can be compared and assessed. Specific targets, criteria, standards help define goals. Feedback is information about how the student’s present state (of learning and performance) relates to these goals and standards. Teachers
transmit feedback message to students about what is right and wrong in their academic work, about its strength and weaknesses, and students use this information to make subsequent improvements.

Zimmermann (2008) discusses an SRL Cyclic Model (Fig. 2.3) consisting of three phases, namely, Forethought Phase, Performance Phase, and Self-Reflection Phase. The first phase highlights the learner’s preparatory work guided by two factors, Task Analysis and Self-Motivation Beliefs. The forethought phase is characterized by bringing the motivation that may prompt self-regulation habits such as understanding one’s capabilities and self-efficacy beliefs, outcome expectations, as well as planning and setting goals. The second phase (Performance Phase) is characterized by factors like Self-Control and Self-Observation that control the learner’s learning process.

Figure 2.3: Phases and subprocesses of self-regulation (B. J. Zimmerman, 2008).
The final phase (Self-Reflection Phase) is characterized by the factors Self-Judgement, and Self-Reflection. In this phase, the learners review their performance. Here the learners reflect on their performance while keeping the final goals in mind and focusing on the learning strategies and final outcomes to be achieved.

Johnson, G. M. et al. (2014) discussed a comprehensive instructional framework of Self-Regulated learning in digital environments. The model describes SRL as a cyclic process of understanding task requirements, plan of action and implementation strategies, and monitoring the effectiveness of the strategies in achieving the desired outcome. The SRL involves Learning Strategies such as rehearsal, elaboration, Organization, and metacognition. SRL is increasingly critical to student success in online learning. It is imperative on the online course designers to explicitly address the degree to which their learners have the capacity to self-regulate.

Shih, K.P. (2010), emphasizes that the main goal of education is to develop the character of students and foster in them a spontaneous desire to learn. According to him, SRL is not an easy task and four dimensions that drive SRL are, the learning schedules, learning materials, learning scenarios, and Learning quality. A learning schedule makes a student’s own learning methodical and there is need to organize the study materials to suit the learner’s needs and preferences. He proposed a UML State Transition Diagram that indicated, the learning status of a self-regulated learner that explains what action triggers a person to reach a successful end state. Some important learning states are Activity Scheduling, Learning and Monitoring and Analysis.

Hui-Ru Shih et al. (2011), in their paper, emphasized upon facilitating learners to acquire cognitive skills, which can guide students to monitor and regulate their learning efforts. There is no shortage of ability in learning; rather,
only the absence of effective use of strategies. They suggested a self-regulated learning model consisting of four cyclic phases a) Planning, b) Implementing, c) Monitoring, and d) Evaluating.

Jansen, R.S. et al. (2016) emphasized that the students undergoing Massive Open and Online Courses (MOOCs) are required to acquire the self-regulation habit to a greater extent than students in traditional classrooms. They have developed an SRL questionnaire and validated the instrument using Exploratory and Confirmatory Approaches.

2.5 OPINION MINING AND SENTIMENT ANALYSIS

Customer opinion is the gold standard that guides the design and operation of e-commerce sites. Product reviews, product ratings, and recommender systems help consumers make complex purchase decisions. Opinion mining and sentiment analysis are the tools used by online consumers and suppliers for successful online marketing. On similar lines, these tools will be of great help to faculties and online course administrators for understanding the sentiments of online learners, which will facilitate making improvements in online course content, deployment and delivery. The following sections give a review of opinion mining and sentiment analysis in the context of applying them in e-Learning settings.

2.5.1 FACULTY-STUDENT INTERACTION

Lack of face-to-face interaction in e-Learning settings makes the learner isolated. The instructor’s role has also been becoming passive in the current online learning scenarios. Under these circumstances, faculty-student interaction is becoming crucial and it has to be incorporated in the realigned educational scenarios. Student feedback establishes a connection with faculties and helps the faculties to understand the students’ current academic needs, expectations and
their concerns, and the difficulties faced by them while pursuing the online courses.

2.5.2 SENTIMENT ANALYSIS

Understanding students’ sentiments expressed in feedbacks helps the faculties to redesign instruction, and improve content which facilitates learner satisfaction, the better usability of the website ultimately resulting in net benefits accrued for the stakeholders. Analyzing and interpreting user sentiments expressed in text form is a complex and laborious task. However, in recent times numerous innovations have taken place in the field of text mining which falls under the broad category of Information retrieval and computational Linguistics. Opinion mining and sentiment analysis is an emerging area of research that attempts to interpret human opinions expressed in text form using text mining techniques that help decision making in the learning scenarios. The following paragraph summarizes the research works related to sentiment analysis in the context of e-Learning.

Bing Liu et al. (2010) have done extensive work on opinion mining and highlighted that opinions or sentiments expressed in text form as comments can be automatically categorized into polarities such as positive, negative, or neutral which help the users to understand the opinions and makes the complex decision-making process of a consumer or producer easier. Richer Socher et al. (2013) have developed a Recursive Neural Tensor Network Model (RNTN) for analyzing sentiments expressed in text form in a sentence by parsing the sentence and constructing a sentiment tree for easily understanding the polarity of the sentiment at different levels of granularity in a visual form. Munizero et al. (2013) studied how automatically analyzing learning diaries of students for extracting sentiments and emotions of students. Wen, M. et al. (2014), in their research study collected sentiments from forum posts in a Massive Online Open
Course. The important findings of their study involving collective sentiment analysis show a strong correlation between the sentiments expressed in the course forum posts and the number of students who drop the course. Altrabsheh N. et al. (2014) expressed that extracting student sentiments from feedback can help instructors to enhance student engagement. Fang, X. et al. (2015) made studies on using sentiment analysis for sentiment polarity classifications of product reviews at the sentence level and review level. They used the methods such as Naïve Bayesian, Random Forest and Support Vector Machine for sentiment classification.

2.6 WEB USAGE PATTERN ANALYSIS

According to Román Graván, P., and Cabero Almenara, J. (2013), web analytics is an emerging field and is a powerful tool used to understand the behavior and interaction of users in websites which helps web administrators to make improvements in websites as well as enhancing user and stakeholders satisfaction in meeting their goals. In recent times, web analytics is finding application in learning management systems and a new discipline known as Learning Analytics is emerging. Escobar, A., E. et al. (2014) made their research work on improving E-Learning Objects using analytics modeled on Google Analytics. According to them, traditional website development, implementation, and maintenance follow a cycle, needing periodic improvement, and the web analytic data helps to identify flaws in current website usage, based on which improvement action can be taken. In e-Learning scenarios, learning analytics can be used for tracking the behavioral pattern of online students.

Filva, D., A. et al. (2014) highlights that while transforming education to e-Learning settings, new and different approaches are needed for tracking student learning patterns. Academic analytics with intelligence tools will help faculties
and administrators to monitor learner performance in online courses. Whitmer, J. (2012) made a study on the course usage pattern of online students and how it had contributed to student achievement. The authors have used Google Analytics to collect time series data on student engagement and interactions to understand student performance as well as nonperformance.

2.7 SOCIAL NETWORKING

Social Networking connects like-minded people to get connected with their friends, peers, and professionals. Online courses physically separate students, and instructors and the problems faced by students doing online courses can be greatly mitigated if students are offered social connectivity in online settings. The following sections review literature in the context of applying social collaborative tools in e-Learning settings.

2.7.1 WORD-OF-MOUTH

Word-of-Mouth (WOM) is an interpersonal communication in which a sender spreads a message to the receiver. Fig. 2.4 shows the WOM Communication Model (Anja Gfrerer et al. 2012).

2.7.2 ELECTRONIC WORD OF MOUTH

Users communicate with other users on social media using the channel known as electronic Word of Mouth (eWOM). The major differentiating feature of eWOM communication (online WOM) are i) It is asynchronous, ii) facilitates fast diffusion, iii) Wide or unlimited reach, and iv) it is mostly anonymous.

In the past decade, there is a steady growth in the usage of Online Social Networking Sites by college students and young professionals. It has become an indispensable tool for students and it offers instant connectivity and facilitates networking with friends, relatives, professionals, and like-minded persons beyond institutions and geographic boundaries across the world.
Already Social Media had proved its utility in helping online consumers to seek out product and service information posted by other consumers as product reviews and their experiences on the usage of the products for making complex purchase decisions.

![Figure 2.4: WOM communication Model (Anja Gfrerer et al., 2012)](image)

Many research studies highlight eWOM as a powerful tool that helps lakhs of consumers to make complex online purchase decisions quickly (Juha, L., 2014, Cheung C.M.K., and Thadani, D.R., 2010, Kuester et al., 2012, and Chu, SC et al., 2011).

According to recent research studies on eWOM, eWOM communication is very fast and the messages can reach a very large target audience instantly. The scalability and reach of eWOM are its main advantages. According to Cheung and Lee (2012), eWOM represents a paradigm shift in WOM communication, giving it a global reach, greater speed of diffusion, persistence and the consumers have to judge the credibility of the source based on cues provided by the online
system. As per the research study by Keitzmann JH et al. (2013), consumers trust recommendations from friends and family for making purchase decisions.

2.7.3 EVOLUTION OF ONLINE SOCIAL NETWORKING

Social Networking Sites are offering unprecedented connectivity and instant access among online users and provide enormous opportunities to interact with a larger audience across the globe transcending geographical boundaries for sharing information and gaining knowledge. A large number of research studies focus their attention on the importance of Social Networking Sites in recent times. As per the research of Juha, L. (2014), recommender systems offer help to consumers to narrow down, the number of web pages to be viewed, as well as reducing information overload while making important online purchasing tasks and enable them to make faster decisions. Kuester S., and Tomsen J. (2012) highlight that when customers are more socially connected, it results in more intense eWOM marketing that promotes consumer-to-consumer communication, helps to reach the target audience faster and establishes more trust in eWOM. Chu SC, Kim Y. (2011) highlights that conceptually eWOMs in Social Media Sites involve seeking, giving, and passing opinions among the users.

Kietzmann JH et al. (2014) emphasize that eWOM has positive and negative implications on consumers in making online Purchasing Decisions. Jin, L. et al. (2013) have made a comprehensive review of the state-of-the-art research related to User Behavior in Online Social Networks (OSNs) from several perspectives covering Social Connectivity and Interactions. According to the authors, Online Social Networks with a very large user base, serves as a conducive climate for innovation amidst challenging problems to be solved. A large number of research studies have been done on specific Social Media Sites like LinkedIn, Twitter, Facebook etc with the perspective of the Uses and Gratification Theory (Stafford,
According to Karampiperis, P. et al. (2010), recommender systems play a vital role in online social environments where user comments, discussions and reviews guide the consumers in knowing the quality, appeal, and reputation of a particular resource.

2.7.4 ADVANCES IN ONLINE SOCIAL NETWORKING

This section highlights some important research work done by many researchers on innovations and evolutions taking place in Social Media usage in the contemporary setups. Here the users can be novices, faculties, professionals, software developers and experts in a domain. Some of the recent terminologies, concepts, and theories used in the current literature that are relevant to this paper are also highlighted in this section. Kietzmann J. H. et al. (2011), have defined a framework for social media which comprises seven critical factors including a personal profile which identifies a person. The foremost and important element is personal identity which is based on a person’s profile which tells about qualifications, experience, skills, and expertise possessed by a person as well as endorsements from peers and other contacts. By taking a real world example, a LinkedIn profile identifies a person and summarizes his or her educational and professional qualifications skill sets and experiences. A LinkedIn user can get connected with other members by establishing communications through postings or endorsing skill sets of other members. A member can share text, images, audio or video resources with other members. A member can exhibit his social standing and presence to other members. The members can maintain the relationship with other members using features like friend requests, following the other members, or being followed. Members can create user groups to facilitate knowledge sharing among group members.
Shen, H. et al. (2015) have made an extensive study on the usefulness of “Yahoo! Answers”, a social networking site where the users post questions and get answers. Here the collective intelligence of users helps in finding answers to questions which forms a most effective QA system. As per the research studies by Feng Xia et al. (2015), Socially Aware Networking (SAN), is an emerging new field that utilizes the social properties of network nodes for designing network solutions. An important aspect of social network analysis is community detection. According to Campbell, W.L. et al. (2013), communities are characterized by nodes having strong connectivity within a group and weak connectivity across groups. The main usage of communities in networks is characterized by faster diffusion of messages posted by firms for example, regarding their new products to a larger audience instantly. Uusiautti, S. et al. (2014) opined that Social Networking Sites enhance students’ social capital in a variety of ways like participation in peer groups and serves as enhancing bonding.

2.7.5 SOCIAL NETWORKING APPLICATIONS

In spite of the large online presence of Social Media, driving consumers to access the media in various ways for the gratification of their needs, still, there are many challenges and issues that have to be addressed. According to many research studies, the Uses and Gratification Theory (Karnik, M. et al. 2013; Anael, Q-H et al., 2010) is a powerful technique to address these problems. According to Meng-Hsiang Hsu et al. (2015), advancements in information and communication technologies have triggered the advent of Social Networking Sites such as Facebook, LinkedIn etc. attracting an ever increasing user base across the globe transcending geographical boundaries. They facilitate users to get connected and interact with numerous contacts and satisfying their personal, professional, educational needs irrespective of differences of gender, age etc.
Paul, T. et al. (2015) have made an extensive study on user behavior on the most popular OSN, Facebook for the 5 year period starting from 2009. According to them, Online Social Networking fascinates millions of users and promotes socialization among the contacts and helps reputation building. Utz S. (2015), defined a Framework for social media usage of popular sites such as Facebook, LinkedIn or Twitter for Dutch Online Users. According to them this kind of networking with people helps users increase their Social Capital. LinkedIn, for example, is considered as helping users to be more productive and successful as it provides connectivity to people, helps recruiters selecting people for companies.

Marlow, J. et al. (2013) have made a study on how social media helps job recruiters by tracing the interactions of software developers in online workspaces. For example, a study was made on GitHub, an Online Coding community to understand how recruiters assess their candidates by going through their profiles by matching their skill sets with the job requirement for hiring Software Developers. Storey, M-A, D. et al. (2014), have made a study on Social Media usage by Software Engineering professionals. According to them, Social media has become an indispensable tool providing capabilities like Collaboration and communication among teams, learning by experience etc. The amount of knowledge transfer in face-to-face contact has limitations in scale and reach. However, in recent times, the knowledge diffusion through social networks is very high in terms of speed, scale and reach. Jenkins, H. et al. (2006), observed that social media brings to its users’ teamwork and collaboration in sharing one’s creations with others as well as mentoring novices by experienced persons.

2.8 RECENT TRENDS

Keengwe, J et al. (2012) have defined an e-Learning framework with six dimensions of Learner, Instructor, Course, Technology, Design, and
Environment. They studied student and instructor satisfaction regarding the usage of online learning tools based on the Expectancy Confirmation Theory and Technology Acceptance Model. According to their research findings, student expectation was the key factor that was instrumental in aiding the instructors in selecting the apt technology tools, with an objective of enhancing student learning outcome. Studies by Strong, R. et al. (2012), emphasize user satisfaction in online courses and it should be ensured on a regular basis and continuous monitoring to be resorted to checking whether the improvements in learning outcomes are happening. Bhuiyan, T. et al. (2009) made a review of opinion mining literature and highlight that customer feedback is vital for service providers. This information available on the Internet as customer reviews, comments, newsgroups post, discussion forums or blogs which are collectively known as user generated contents helps an online user to take complex decisions in an efficient way.

Cambria E. et al. (2013) highlight the importance of Opinion mining and sentiment analysis which provide help for the online community in making complex decisions involving choices in online products and services. The sentiment analysis involves a simple type of polarity classification to complex aspect level sentiment extraction. For example, it may involve processing a large corpus of text like customer reviews on a product. In recent times, learners have opportunities to participate in online communities such as forums, blogs, and social networks to enhance their social relationships, knowledge, and experience. Wen, M. et al. (2014), in their research study collected sentiments from forum posts in a Massive Online Open Course in order to monitor sentiments expressed by students regarding their experiences in the usage of major course tools. The important findings of their study involving collective sentiment analysis were, that a strong correlation exists between sentiments expressed in the course forum
posts and the number of students who drop the course. Ezen-can et al. (2015), opined that discussion forums can be utilized by online learners to seek help from peers, and discuss and share their strong points on specific areas pertaining to a course. The study highlights that abundant opportunities exist for learning analysts to provide real-time support to the learners. Bakharia, A. et al. (2016), highlights that Learning Analytics is an emerging discipline with vast potential for addressing problems and issues faced in MOOCs today especially regarding improving retention in online courses. They stress that the knowledge gap as existing today has to be filled by faculties who can potentially use LA techniques in analyzing vast student interaction data and come out with suitable pedagogical actions to enhance student retention.

Crossley, S., (2016), studied and analyzed on MOOC completion data using Learning Analytics tools. They used Clickstream information and unstructured textual information and have applied Natural Language Processing techniques in order to understand and predict student retention in MOOCs. By exploring student interaction patterns and textual responses, course administrators can develop interventions that can help to enhance retention rates. According to Susan Bull et al. (2016), there are a plethora of new visualization tools introduced in Learning Analytics dashboards, such as skill meters, concept maps, stars, gauges, networks, smileys and radar plots. The researchers suggest that Learning Analytics should provide pedagogically useful information that is actionable. These visual charts provide a dynamic state of an online learner at any time. The faculties are expected to intervene by detecting anomalies in user behavior, for example by way of offering help to a disconnected user.
2.9 MOOC RETENTION

Adamopoulos, P., (2013) undertook a study on student performance in Massive Online courses, and their findings revealed very low student retention rates. They predicted it would be an onerous task to attempt to satisfy the student needs in such courses, which is vital for improving the success rate of MOOCs. They undertook a quantitative study and analysis on the real-world data set created from the learner responses to online course reviews. The objective was to identify the important determinants that can affect retention in the online courses. Sentiment analysis on student responses was carried out and it was arrived at that the professors’ role is vital for the success of online systems. It constituted a crucial factor in influencing student retention in online courses.

Reisman, S. (2014) has made an extensive study on the performance of massive online courses and it was found that the educational improvements attained by such courses were very low. It would be very hard for an instructor to monitor the learning progress of an online student. In spite of a very large targeted audience, 90 % of the students have withdrawn from the course in the middle. According to studies, only 3% have completed the course successfully. According to Reisman, it would be very difficult to monitor and give support to thousands of online students in a class with only a few instructors, as the student-instructor ratio is abnormally high. As a solution to improve the retention rates in MOOCs, Ann-Kathrin Watolla (2016) tried a variety of teaching approaches including the deployment of multilayer instructors and concluded that distribution of teaching offered perceived benefits to the learners. The above study was based on a 14-Week online course organized by the Goethe-Institute in collaboration with some European universities with 17000 online learners from 170 countries.

This chapter presented a review of the literature on e-Learning highlighting the state-of-the-art concepts, methods, technologies and existing e-
Learning frameworks which were relevant today as observed by e-Learning researchers. It discussed the opportunities and potential as well as major problems needing solutions for making e-Learning framework more effective. The chapter reviewed various approaches and tools that can be integrated into e-Learning settings like Sentiment Analysis, Web usage pattern analysis, and Multivariate data analysis. This chapter elaborated the current Social Networking literature in the context of using it in online learning scenarios.

2.10 RESEARCH GAP
The context analysis, literature survey and scientific critical reflection brought forth the fact that researchers and scientist have not studied an integrated approach of “ENHANCING EFFECTIVENESS OF E-LEARNING FRAMEWORKS: DETERMINANT FACTORS AND DRIVING FORCES” till date. Therefore, scope and relevance of the study exists for exploration and experimentation.