

**THE ROLE OF DIGITAL LEARNING TECHNOLOGIES TO FOSTER  
ENTREPRENEURSHIP SKILLS IN HIGHER EDUCATION: A  
QUALITATIVE STUDY OF UNIVERSITY STUDENTS IN PAKISTAN**

**Muhammad Nadeem Sadiq**

School of management sciences Quaid i Azam University, Islamabad, Pakistan  
Email: [Regular634mbe@gmail.com](mailto:Regular634mbe@gmail.com)

**Mohsin Raza**

Superior University, Lahore, Pakistan

**Usman Baig**

School of Management Sciences Quaid i Azam University, Islamabad, Pakistan

**Abstract**

The modern job market changes quickly, making it even more important for graduates to have academic information, practical skills, and an entrepreneurial spirit. In the current dynamic job market, there is a heightened focus on providing graduates with academic knowledge and practical skills. Entrepreneurship skills have become increasingly crucial in the modern world as they empower individuals to innovate, create new business ventures, and contribute to economic growth. Higher education institutions play a pivotal role in nurturing these skills among students. However, traditional teaching methods often need more support and resources to develop entrepreneurial mindsets. This study employs a qualitative method approach to examine the significant role of digital learning in fostering entrepreneurial skills in students. The methodology used for this study includes conducting interviews with a diverse range of respondents, including students, recent graduates, instructors, and entrepreneurs. This study aims to discover what role colleges and universities play in teaching students how to be entrepreneurs and how that affects their careers. The purpose of this article is to investigate whether or not digital learning fosters the entrepreneurial skills of higher education students in Pakistan. This research thoroughly investigates the integration of entrepreneurial education in higher education curriculum, understands students' perspectives on the development of entrepreneurial skills during their academic journey, and identifies practical strategies used by higher education institutions to promote entrepreneurship skills and overall growth of individuals and prepare them for successful careers in a competitive entrepreneurial world by connecting theory and practice.

**Key Words:** Digital Learning, Entrepreneurship, Learning Experience, Higher Education

## **Introduction**

In recent years, the emergence and rapid development of Digital Learning have revolutionized the education landscape across the globe. This method has gained popularity in various academic disciplines, including business education. Our society is changing and has an uncertain future. The global crisis has affected education beyond other issues. Educational institutions at all levels have rapidly adopted digital change. In this changing environment, organizations emphasize developing employees for future difficulties. Universities help graduates develop skills for the labour market and empower them to generate global solutions through entrepreneurship (M. P. Castro & M. G. Zermeño, 2020) . The educational trend at all stages has transfigured in accordance with social amendments and systematic progressions in technologies. The results show that a digital learning instructional model can be tailored to varied circumstances and foster an entrepreneurial mindset, which students generally struggle to achieve. The higher education sector faces continuous pressure to prove the quality and effectiveness of educational offerings, including the outcomes of graduates. The central objective of modern universities is to adequately prepare students for the professional work environment. This task remains a topic of interest for policymakers and scholars, particularly within the broader contexts of labor market instability and the expansion of higher education (Tomlinson, 2012). In contrast to the preceding period of Digital Learning, during which persons possessing university qualifications were essentially assured of continuous professional work, modern graduates are now required to exhibit proactive and adaptable qualities. Individuals must adjust to a labor market that may not readily accommodate them and is characterized by constantly evolving prerequisites (Braun & Clarke, 2006). According to popular belief, instead of relying on job security, recent graduates are advised to prioritize their employability to ensure stability in their careers as

Thus far, colleges have mostly addressed the job-seeking goal by incorporating "graduate traits" and "employability abilities" into the course of study of their degree programs. These qualities and talents are believed to provide graduates with the necessary abilities to effectively navigate the demands of professional jobs at a graduate level. **Yorke (2006)** argue that employability can be defined as a collection of accomplishments, encompassing skills, knowledge, and personal qualities, which enhance the likelihood of graduates securing work and achieving success in their respective fields.

Development of pedagogical, digital, and soft skills to enable instructors to offer lessons in an electronic setting and showcase their professional competence specific practical exercises

in a way that enables students to acquire the content and develop their entrepreneurial skills (Parcheva, 2021a, 2021b).

In terms of five competency areas—positive attitude and initiative; communication and interaction; teamwork and collaboration; critical and analytical thinking or problem solving, including risk assessment; creativity and innovation evaluated the effects of taking part in a business model challenge. Bolzani and Luppi (2021) concluded that only exposing our sample to the business challenge was insufficient to stimulate the development of entrepreneurial abilities because they did not find any significant improvements across these dimensions (Bolzani & Luppi, 2021).

By fusing the Social Learning Theory with the Theory of Reasoned Action, Aftab (2022) investigates the mediating function of student participation in the relationship between student accomplishment and features of digital learning among Pakistani entrepreneurship students. Results show that student engagement is positively impacted by digital competency. Furthermore, the results demonstrated how student participation acted as a mediator between digital competence, digital readiness, and e-learning attitude and how these factors affected students' academic performance in business and entrepreneurial programs in Pakistan (Aftab, 2022).

This study primarily establishes the correlations between education, entrepreneurship, and employment. This study aims to explore the potential of Digital Learning in fostering entrepreneurial skills among students, transforming them from basic job seekers to job creators. This article introduces a technology-based educational innovation project to discover entrepreneurial skills in university students. This design-based study used qualitative approaches to collect data that met our goals. These abilities are then developed throughout their academic career, connecting them to the university's entrepreneurial ecosystem.

In Pakistan, there exists an ignorance gap related to the potential of digital tools to enhance students' entrepreneurial skills. Most scholarly investigations on this subject have been conducted within Western countries, potentially limiting the direct applicability of their findings to our specific context. Significant differences exist between our culture, available resources, and educational methodologies compared to those common to Western nations. Therefore, it is crucial to evaluate the efficacy of digital tools in enhancing our productivity. In addition, it is essential to note that a significant portion of the population in Pakistan lacks adequate access to internet connectivity and technological resources. The utilization of digital resources for learning presents challenges for certain students. The government is

actively promoting entrepreneurship and recognizes the potential of digital tools in facilitating the promotion of entrepreneurship. However, it remains to be seen whether the government's goals align with the current utilization of digital tools in education. The study we need in this context applies to identifying strategies for effectively integrating digital tools within our cultural and resource constraints, ensuring universal accessibility, and ensuring alignment with governmental objectives. This initiative is expected to enhance the entrepreneurial skills of students in Pakistan. It is necessary to conduct a comprehensive analysis to determine the main components of a digital learning educational paradigm that effectively recognizes entrepreneurial competencies among university students operating within an entrepreneurial ecosystem. This research investigates the role of digital learning technologies in fostering entrepreneurship skills in higher education. By comprehensively reviewing existing literature, this study identifies the benefits and necessity and contextualizes the proposed research in relation to previous studies.

### **Literature Review**

In today's world characterized by digitalization, the rapid and collaborative progress of technology is transforming the employment landscape that graduates enter and the positions they aspire to occupy. The developments being observed in various domains, including quick data processing, artificial intelligence, robotics, networked communication, and cloud computing, are widely acknowledged as significant factors driving the transformation. It is anticipated that these changes will continue to gain momentum and further intensify in the coming decade (McLaughlin, 2016).

### **Innovation in education**

The concept of educational innovation refers to introducing and implementing creative methods, strategies or practices within the field of education. The creativeness of ideas becomes apparent by utilizing the upcoming invention through economy of knowledge (Marcela Georgina, 2011). Rapid and most recently (come into sight) revolutions in this globalized and driving world have made innovations, technology, and science a compulsory part in the upbringing in the countryside in an unpredictable era in which we all survive (M. P. Castro & M. G. G. Zermeño, 2020; Rubio et al., 2018). To enhance the teaching procedures of learning, such global revolutions intakes provocations that need to be grasped on in entire relevant fields (Fidalgo-Blanco et al., 2015) so that contemporary cultures will be generated by the participants, assuring the hike of processes in the preparation institutions and motivate their participants to explore inventive cultures. The terminology of the invention is associated wit new discoveries, changes to behaviors, amendments in the methodology through wh The

inventive didacticism consists of active innovations of learning, interdisciplinary learning environments, incorporation of innovative working life, stretchable curriculum, entrepreneurship, development and research and internationally converging methodology (Keinänen & Kairisto-Mertanen, 2019). On the contrary, to make inventive effectiveness in classification to advocate innovations in distinct environments, it is crucial to progress strategies that assist its execution (Khatri et al., 2016). Due to disparity in modifications that assemble inventive work, comprehension and transmission of those who are indulged is compulsory, for it to remain sustained (Sergio Reyes Angona, 2017). Innovations that have become mandatory to enhance learning of students are a fundamental part of education.

#### ICT applications in education

The ICT contributes a major role to the procedures of amendments in the numerous sections of society. In the field of education, the emerging trends of technologies and process of learning modified in accordance with the learning and teaching patterns occur (Almenara & Palmer, 2017). These new framework essentials ensure the embodiment of tensile environments, in which innovation and researches are substantial edges for acquiring much explored evolutions (Vázquez-Cano et al., 2017). The current analysis ensures that innovations related to educational leaning are merely not beneficial until the didactics that encourage them.

Information and Communication Technology (ICT) has been increasingly utilized in education. With the inventions of new technologies in the learning education, numerous educational processes have made an apparent existence with distinct technological and professorial characteristics that are fundamental to their accurate enactment. One of the most crucial innovations is e-learning, which appertains modern technologies to facilitate educational leaning content to various community subdivisions (Huss et al., 2015). The latest pedagogy is being used for its reliability and probability of reliance in personal responsibilities and everyday work. In consequence, it has embellished tool that enables authorized education to be distributed at distinct. It consists of distinct elements that should be under consideration during its implementation.

Entrepreneurship is a natural phenomenon within the field of business. This phenomenon is a fundamental component of the business world. The presence of entrepreneurial skills and the implementation of adaptive management practices evidence a flourishing business culture. Therefore, it is advantageous for each business entity to understand the conceptualization of entrepreneurship, the origins and classifications of entrepreneurship, and have the ability to responsibly regulate entrepreneurial initiatives. This study employs a

qualitative research methodology that is grounded in a comprehensive literature analysis. The primary objectives of this research are to establish a clear definition of entrepreneurship, identify the many sources and forms of entrepreneurship, and offer practical suggestions for effectively managing entrepreneurial endeavors. Various definitions of entrepreneurship can be identified depending on different sources and forms, including factors such as entrepreneurial talents, innovations, and management. Previous studies have categorized entrepreneurship using several conceptual frameworks, including technology-based and process-oriented entrepreneurship. In addition to offering practical guidance, emphasis was placed on the significance of entrepreneurial skills (Diandra & Azmy, 2020). Every business has its unique vision and objective, and being an entrepreneur is crucial to success. The key responsibility for converting this vision into reality lies with individuals actively involved in business activity. However, the varying origins and educational experiences of persons engaged in business activities raise inquiries regarding acquiring and using entrepreneurial competencies, which have become an essential component of the entrepreneurial endeavor.

With the ongoing evolution of the economy and technology, entrepreneurship has experienced increased diversity and competitiveness. The concept of innovation has gained widespread recognition, but it presents a distinctive set of difficulties for individuals engaged in entrepreneurial pursuits. It is important to acknowledge that not all entrepreneurial endeavors produce favorable outcomes for a business entity unless guided by proficient entrepreneurial competencies and managerial methodologies that foster adaptability and knowledge acquisition. To uphold an excellent performance standard in entrepreneurship, it is important to supervise entrepreneurial endeavors proficiently and explore the necessary skill sets essential for achieving success (Diandra & Azmy, 2020).

The entrepreneurial process requires self-discipline. Entrepreneurship is a unique and autonomous discipline in its regard (Crocini, 2016). According to Barot (2015), Everyone who starts an independent business enters a new entrepreneurship paradigm, which is crucial to success. Entrepreneurship requires discipline and independence to -change old behaviors (Barot, 2015). According to Chang and Wyszomirski (2015) entrepreneurship can be seen as an art form. According to Chang and Wyszomirski (2015) , art entrepreneurship is a relatively recent subject of investigation. The primary areas of interest in this field are examining the entrepreneurial management process, including factors such as creativity, autonomy, adaptability, and the ability to provide artistic, economic, and social value (Chang & Wyszomirski, 2015).

Multiple definitions of entrepreneurship exist, with some perspectives describing it as an efficient management of activities. In contrast, others define it as the development of a

specific mindset and associated skills. However, the ultimate objective of the concept of entrepreneurship is to foster job creation and facilitate economic growth (Barot, 2015)(Hessels, 2019). In addition, it is important for entrepreneurship to efficiently use human resources comprising of both technical and skilled labour, as well as managerial abilities (Barot, 2015; Chang & Wyszomirski, 2015). Increased uncertainty in the job market, rapid advances in information technology, efficient workplaces, sector-specific requirements and accreditation benchmarks, internationalization, and economic shifts all play a part in redefining the objective of 21st-century higher education (Humburg & Velden, 2013). Educational institutions, along with their students and employers, have a consensus regarding the significance of foster students' employability competencies and academic knowledge and skills. The concept of employability is multifaceted and difficult, with a crucial aspect being the capacity to secure and sustain a job during an individual's professional development (Aarts & Künn, 2019).

Pisoni et al. (2019) argue that educating individuals in entrepreneurship can provide significant challenges. This entails facilitating students' understanding of theoretical concepts while fostering practical application, thereby developing diverse skills. Developing these skills is of utmost importance in developing a mindset focused on problem-solving and an entrepreneurial mindset, which are becoming increasingly important in the prospective job market. The increasing digital transformation and digitalization rate has led to greater demands for individuals with the necessary skills and knowledge to excel in entrepreneurial initiatives. The mentioned transition has resulted in a need for new educational methods (Pisoni et al., 2019). The focus in the continuing discussions concentrates on identifying effective strategies for integrating education into innovation and entrepreneurship.

Pisoni et al. present a new methodology designed to develop basic abilities in higher education learners. Developing these abilities is often seen as essential for taking an active role in society, personal well-being, and achievement in the modern knowledge-based society. When examining the competencies students acquire throughout their higher education experience, it is important to classify them into two major categories: technical and non-technical. Other than subject-specific skills, technical skills contain the knowledge and competence that are important to a particular field or study, such as computer science or engineering. The mentioned skills are essential for achieving exceptional performance in a specific field. In comparison, non-technical skills refer to a set of flexible and multidisciplinary abilities that have significance in various aspects of an individual's personal and occupational initiatives, from initial to high-level managerial positions. Non-technical or soft skills cover a range of essential qualities for success in several domains. These include

effective verbal communication, problem-solving, decision-making, emotional intelligence, maintaining a good attitude, interpersonal skills, teamwork, self-discipline, self-management, and the capacity to work independently (Pisoni & Renouard, 2019).

Römgens et al. (2020) proposed a comprehensive understanding of employability by recognizing its intricate and multifaceted nature. They put up a definition of employability that is based on competencies, encompassing six characteristics that draw from both E-Learning and workplace learning. The dimensions of employability encompass various aspects such as the acquisition of specialized knowledge within a particular profession, the development of transferable generic abilities, the ability to regulate emotions effectively, the cultivation of career development skills, the practice of self-management skills and the enhancement of self-efficacy (Römgens et al., 2020). These variables highlight a correlation between assessments of graduate employability and good outcomes (Chhinzer & Russo, 2018). According to the research student's capacity to find gainful employment is a byproduct of their participation in both classroom and extracurricular activities and their active participation in both (Pool & Sewell, 2007).

Countries worldwide have adopted the innovation-driven development model because, in today's dynamic global economic system, the first to adapt and succeed are those with the most cutting-edge technology and creative workforce. Thus, it is essential to investigate the elements that influence college graduates' chances of finding gainful employment; given that graduates' skills are the primary determinant of this success, it is also important to investigate their employability (Meng et al., 2021). The concept of employability skills, alternatively referred to as soft or generic skills, encompasses various competencies, such as teamwork. These skills play a crucial role in enhancing the entrepreneurship and employability of graduates (Barac et al., 2021). The skills that students need to find good jobs and be competitive in the job market are very important for their future. These skills include things like being able to communicate effectively, solve problems, work well in a team, think critically, and adapt to new situations. To help students develop these skills and improve their chances of getting hired, many colleges and universities in Pakistan have incorporated entrepreneurial and employability skills tools into their courses. They believe that entrepreneurial and employability skills can be a valuable resource for students to learn the skills that employers are looking for and need for entrepreneurship.

This study aims to find out how digital learning affects the skills of business students in Pakistani universities and will help them develop entrepreneurial and employability skills. By looking at the experiences and opinions of university students, the study hopes to shed light on how well digital learning helps develop and improve important skills for gaining



entrepreneurial and employability skills in the business world. The study uses a qualitative method research design. In-depth interviews and focus group talks are the main ways for data collection. Different business students from different Pakistan universities were chosen to ensure We talk about what people think, feel, and have done with digital learning and how that has affected their entrepreneurship skills for getting a job.

Recent studies in accounting literature have brought attention to the necessity for educators to establish additional work-integrated opportunities. These opportunities aim to enhance the readiness of graduates in their transition into the professional workforce (Herbert et al., 2021). Advanced automation, artificial intelligence, and machine learning influence students' ability to do accounting tasks (Aldredge et al., 2021). Digital learning requires basic computer abilities, accounting knowledge, and math ability. Developed countries recruit and retain accounting specialists with professional, technical, theoretical, and practical skills (Ariail et al., 2020). Recent graduates need more than theory to succeed in accounting. Companies desire candidates with practical accounting skills right away. Accounting requires basic Microsoft Excel skills; thus, fresh graduates must have these (Herbert et al., 2021). Recent studies in accounting literature have brought attention to the necessity for educators to establish additional work-integrated opportunities. These opportunities aim to enhance the readiness of graduates in their transition into the professional workforce (Twyford & Dean, 2023). To make it easier for graduates to find jobs, the curriculum should focus on integrating practice-based pedagogies and industry involvement. During the COVID-19 pandemic, numerous colleges and universities encourage their instructors and students to utilize online teaching aids to continue learning. Utilizing technological tools offered an alternative method for instructing and evaluating accounting courses. Teachers could communicate and interact with students using the most recent technologies (Alhawsawi et al, 2020).

The study of entrepreneurship education has attracted considerable interest in recent times owing to its ability to foster the development of entrepreneurial mindsets and abilities. However, conventional classroom instruction methods frequently restrict students' access to genuine entrepreneurial experiences, impeding their capacity to realistically apply theoretical knowledge. Digital learning technologies, including online courses, virtual simulations, and interactive platforms, have emerged as promising methods for addressing this knowledge gap. These institutions provide distinctive opportunities for students to actively participate in experiential learning, utilize up-to-date resources, cooperate with fellow students and professionals, and cultivate entrepreneurial skills. The purpose is to study the potential benefits of utilizing digital learning tools in developing entrepreneurship abilities within the

context of higher education in Pakistan. Through the implementation of an in-depth review, this research offers empirically supported perspectives on the efficacy of these technologies and their influence on students' entrepreneurial mindset, acquisition of knowledge, and practical utilization.

The current study has multi-folded objectives. The first objective is to identify and critically analyze existing literature on the role of digital learning technologies in fostering entrepreneurship skills in higher education. Second objective is to explore digital learning technologies' role in students' knowledge acquisition, practical application, and self-efficacy in entrepreneurship. The third objective of the study is to examine the benefits and limitations of digital learning technologies in developing entrepreneurial mindsets and skills. Fourth is to identify the key components of the digital learning model for identifying professional-level entrepreneurial skills in university students within an entrepreneurial ecosystem. The last objective is to provide recommendations for integrating and effectively using digital learning technologies in entrepreneurship education.

Digital Learning can only be fruitful if both the instructors and the students make effective use of the available technology. The preceding literature analysis demonstrates that numerous studies have examined the subject of Digital learning and its effectiveness within the context of higher education. Moreover, various study efforts have been conducted to investigate employability skills and the significance of enhancing these skills in E-Learning. These efforts ensure that recent graduates are adequately prepared for the job market. However, there needs to be more scholarly research investigating the effects of Digital learning on the development of entrepreneurial and employable skills. Notably, there is a lack of research examining the role of Digital Learning in developing entrepreneurial and employability skills among students in Pakistan.

## **Research Design and Methods**

### *Research Design*

A qualitative research design was employed in this study to gain an in-depth understanding of the role of Digital Learning on the entrepreneurship skills of university students in Pakistan. Qualitative method research allows for exploring the experiences, perceptions, and perspectives of the participants in a detailed manner. The participants were presented with a series of inquiries, including but not limited to: "To what extent are you familiar with digital learning technologies within the realm of higher education?" "In your perspective, what is the significance of digital learning technologies in cultivating entrepreneurship skills within higher education in Pakistan?" and "How do digital technologies facilitate collaboration and networking among students, faculty, and external partners in entrepreneurship education?"

Have you encountered any problems or restrictions in utilizing digital learning for skill development? If so, would you kindly provide further elaboration on the aforementioned points? What are the anticipated future trends in the utilization of digital learning technology for entrepreneurship education?

#### *Sample Selection*

Students enrolled in higher education programs at universities in Pakistan were chosen for the interviews through a purposive sample method. The sample includes students from different universities to ensure a comprehensive representation.

#### *Data Collection*

Semi-structured interviews were conducted with selected participants to gather rich and detailed information about their experiences with Digital Learning and its impact on their employability skills. The interviews were conducted with consent from the participants and transcribed for analysis. Focus group discussions are conducted with small participants to encourage interactive discussions and explore common themes and perspectives. These discussions provide insights into shared experiences and facilitate the exploration of different viewpoints. The interview was conducted in three phases. In the first phase of the interview, the respondents were asked to describe their beliefs and thoughts about enhancing universities' entrepreneurial skills through digital learning. In the second interview phase, the respondents were asked to share their experience with abinstructors' use of IT tools for teaching entrepreneurship courses. In the third interview phase, the respondents were asked to share their experience using IT for learning business courses.

The study's primary objective was to gain insights into human behavior within a social context by utilizing field research methods to gather and analyze data. The research was conducted in higher education institutions with a significant digital transformation. These institutions have transitioned from traditional learning methods, which relied on hardcopy learning materials, to a fully Information Technology (IT) based environment. In this new environment, learning is facilitated through technology-enhanced techniques and approaches, including using tablets and other IT gadgets such as laptop computers. The participants exhibited proficient information technology (IT) and entrepreneurial aptitude. Empirical data were collected from a sample of ten (10) participants who were enrolled in higher education institutions in Lahore, Pakistan, during the last semester of 2023. The study's sample comprised six male and four female scholars of diverse ethnic backgrounds and varying levels of computer and entrepreneurship abilities. The participants' ages ranged from 24 to 30 years. The present study employed convenience and stratified sampling methodologies to ascertain the sample groups from the larger population. Convenience sampling was utilized in this study to a certain extent, as the subjects were selected based on

their availability and the researcher's affiliation with the higher education institution where the inquiry occurred.

The study gathered data on how participants felt about using a digital learning app in the classroom and how they felt about the potential of the software to help them develop their entrepreneurial abilities. Questions like "What are your thoughts on the use of digital learning?" were asked of the respondents in the poll.

#### *Data Analysis*

Thematic analysis was employed using NVivo software to analyze the qualitative interview data. The transcripts were coded, and themes were identified and categorized based on recurring patterns and emerging concepts related to the impact of Digital Learning on entrepreneurship skills.

In this study, we used member checks, reflexivity, and rigor in our interpretations of the data to ensure the reliability, dependability, transferability, and confirmability of the qualitative data we collected. A single researcher analyzed the data. Transcripts and interpretations of interviews were sent to participants for review to ensure they accurately reflected their comments before finalization, which significantly increased confidence in the results. Disagreements were settled by adapting to the participants' perspectives wherever possible.

#### **Results and Discussions**

The responses were analyzed using a thematic approach. According to Braun and Clarke (2006), the first step to acquiring familiarity with the data is employing a procedure known as immersion, which is frequent active reading. This phase of the process takes place at the beginning of the process. The data that were gathered and recorded verbally during the interview were subsequently transcribed using interpretative data analysis, which used various norms of speech-to-text translation. After this, codes were generated using a method driven by the data, with the emphasis on the data. A methodical strategy was utilized in the processing of the data collection. As the researcher moved forward, themes became more apparent, which are data groupings that have been categorized and compiled. The themes were then developed by rigorous reviewing, each theme was defined and labeled, and the basic coding scheme was produced as a result of this process (Braun, 2006). The process of continual review led to the discovery of Six overarching themes, which were as follows: Understanding Digital Learning Technologies, Perceived Impact of Digital Learning Technologies, Student Engagement and Learning Outcomes, Collaboration and Networking, Assessment and Evaluation, Future Trends and Recommendations.

### *Word Cloud for Digital Learning and Entrepreneurship Skills*

A word cloud is a form of data visualization generated based on the frequency count of words inside a given text. In this context, words' dimensions and visual attributes serve as indicators of their significance within a given text, text documents, or information. The positioning of words holds significance, particularly when prominent words are placed centrally. NVivo offers various ways to create word clouds.

Analytical clustering is being implemented by the researcher on item edges in accordance with digital learning. Thematic analysis of version 12.3 by QSR through the channel NVivo has been executed. The ambiguities related to word frequency as per one thousand words of every single subject theme have been stationed with the association of hierarchy clusters of resemblance words, with codes and distinct cases (Pearson's coefficient relationship items analysis), cluster analysis. The content of themes is accomplishing the qualitative phenomenon technique the analyst-implemented alignment, sub code setting, and main coding, and their vision comprised how digital learning fosters students' entrepreneurship abilities.

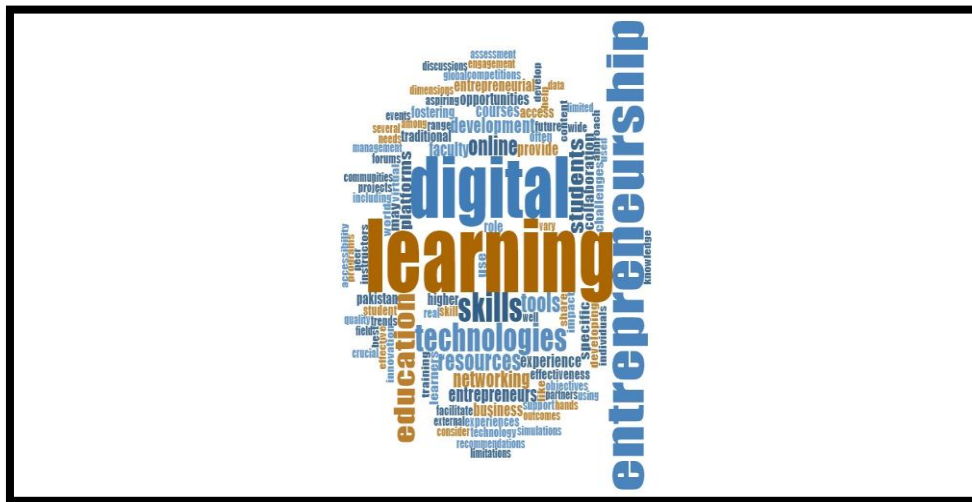


Figure 1

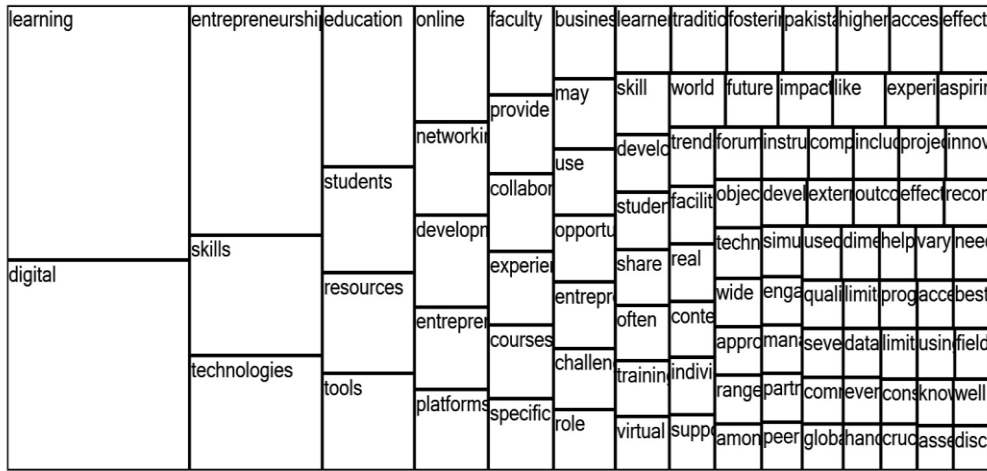
### *Word Cloud for Digital Learning and Entrepreneurship Skills*

All literature is being interpreted in text form with the help of MS Word. Firstly, the analyst adopted the strategy of picturing the highly demanded words' occurrence for digital learning. The broadness of subjects according to their words per dimensions is observed by word clouds. The prescribed word cloud is tagged to illustrate the basics of numerous themes encircled by digital learning (Fig. 1). The entire discussion revolves around digital learning

entrepreneurship. Figure 1 comprises of word count procured from a one thousand word catalog manufactured in content. This word cloud is utilized to highlight the most frequently occurring words by the appellants. The words occurring in the majority of digital learning include technologies, business support outcomes, education quality trends, specific developing individuals, development future trend, assessment discussion, global competitions, and community

***Hierarchical Cluster Analysis of Themes***

In the next stage, word tree representation is generated to depict the ornament of similarities in the domain of codes and associated sub-codes through cluster analysis in NVivo. A treemap is generated based on the results of a word frequency analysis. The magnitude of the area associated with a specific term is equivalent to the frequency of occurrence of such a word. The frequency of word mentions inside a text indicates the significance of that concept. The positioning of terms on the left side indicates their frequency of usage, with the most regularly used. The words placed on the right side are less frequently utilized. The main subject theme is the words' resemblances under different grouped numerous codes (edges), appellants reviews were investigated that were closer, cluster-wise. Figure 2, the second graphical representation, surely exhibits the context resemblances with related words and merges them as a cluster.



*Figure 2 Treemap Diagram  
Hierarchical Cluster Analysis of themes digital learning and entrepreneurship skills*

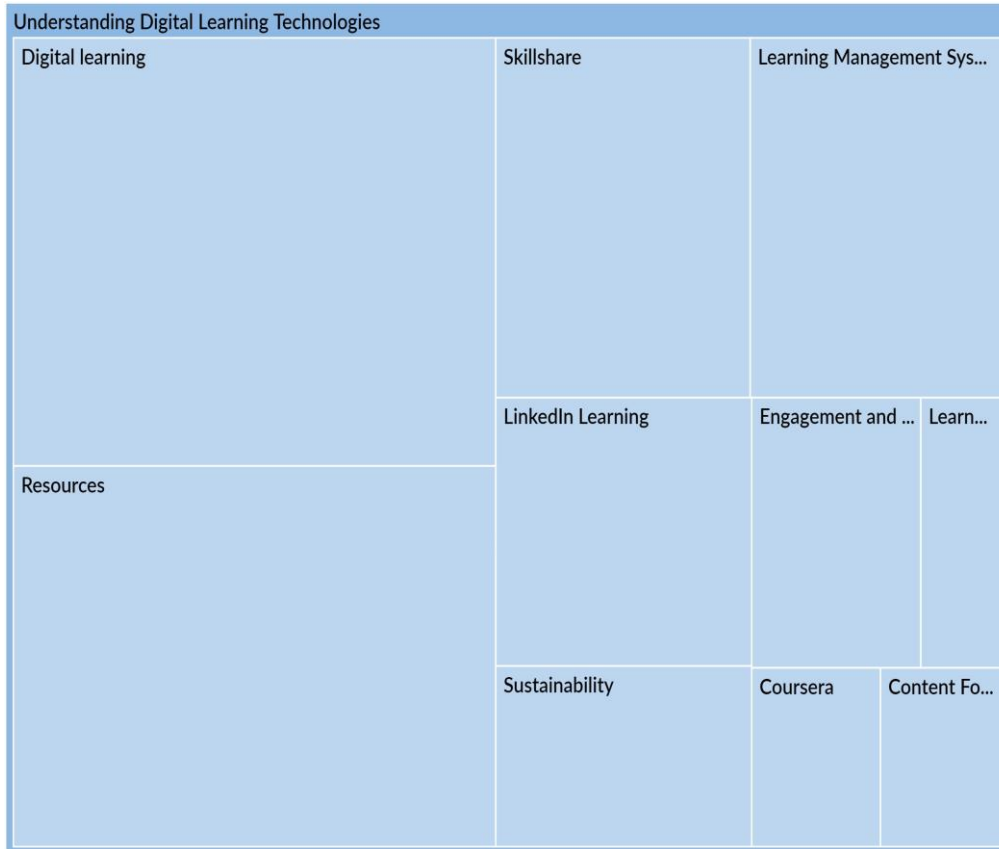
Digital learning tools, technologies, skills, resources, courses, specifications, experiences, and networking are precisely described through words, length, count, and weighted percentage. Words occurrence of learning is 8, 776, and 5.59% by length, count, and by weighted percentage. Whereas digital and entrepreneurship secured 7 638, 4.60% and 16 506, 3.65% respectively. In the next step, skills, technologies, and education are analyzed, which assures (6, 267, 1.92 ), (12, 253, 1.82), and (9, 247, 1.78), respectively. Finally, words occurrence for students, resources, and tools is being investigated properly, which constitutes (8, 162, 1.17), (9, 155, 1.12), and (5, 149, 1.07), respectively.

### ***Understanding Digital Learning Technologies***

Digital learning technologies encompass the utilization of technological tools to facilitate and augment the process of acquiring knowledge and skills. These technologies comprise a diverse array of tools, platforms, and tactics specifically developed to facilitate education and training across many contexts, including conventional classroom settings and virtual or remote learning environments.

Participant 1 expressed that digital learning is beneficial in fostering entrepreneurship skills in higher education through using resources of audio-video text. Participant 3 expressed that digital learning tools used skillshare for entrepreneurship skills. This feeling was similarly shared by Participant 5, who emphasized that digital learning is enjoyable and provides valuable information.

Understanding digital learning technologies emphasizes the potential of self-monitoring and evaluation within the context of scholar-centered learning, as explored in scholarly literature. Figure 3 reflects the correlation between entrepreneurial abilities and understanding digital learning technologies contributing to academic performance. Digital learning, content format, resources, Learner support, learning management systems (LMS), engagement and motivation, sustainability, LinkedIn learning, skillshare, and Coursera are significant sub-themes of coding cultural projection understanding digital learning technologies.



*Figure 3 Treemap Diagram*

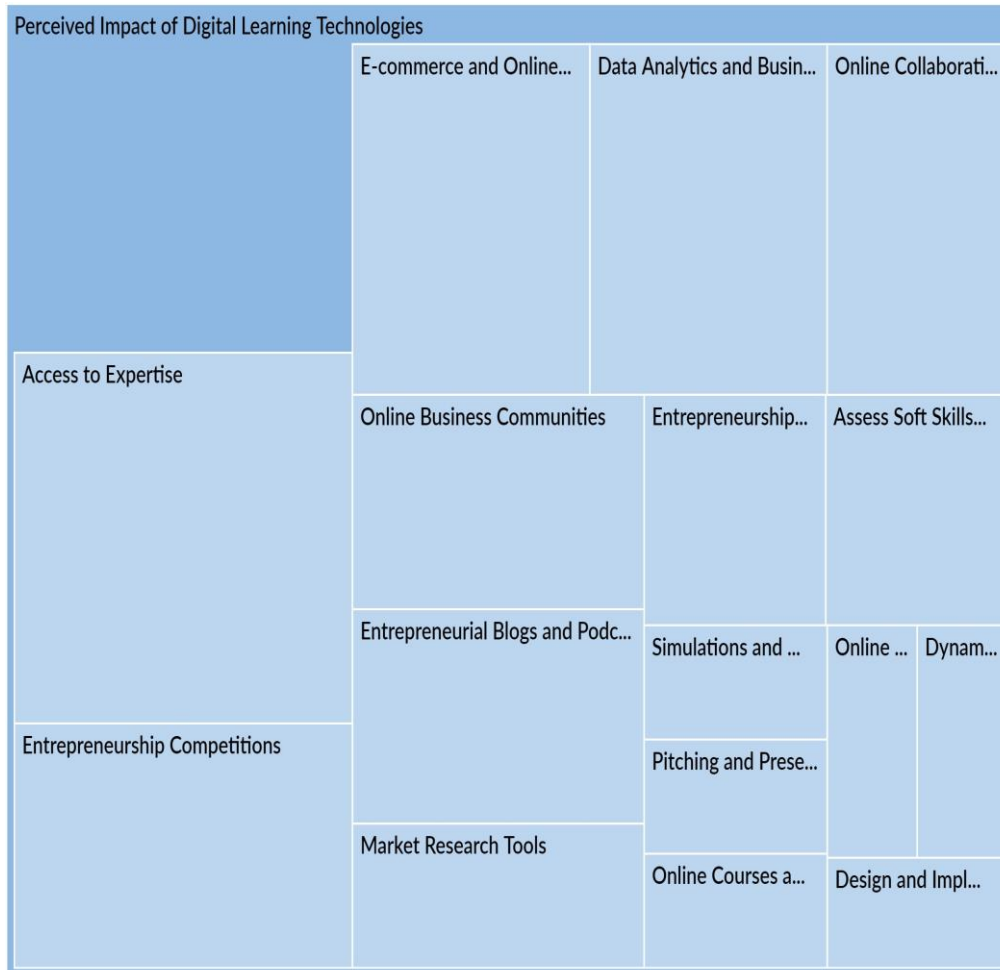
*Hierarchical cluster analysis of sub-themes understanding digital learning technologies*

***Perceived Impact of Digital Learning Technologies***

The perceived effects of digital learning technologies, commonly referred to as educational technology or EdTech, exhibit variability based on the viewpoints of diverse stakeholders, encompassing students, educators, and educational establishments. Figure 4 shows prevalent perspectives regarding the influence of digital learning technology in accordance with the different respondents. The major code of perceived impact of digital learning technologies is currently being investigated within the context of several significant sub-themes, namely, online courses and programs, simulations and gamification, online collaboration, access to expertise, entrepreneurship competitions, pitching and presentation skills, entrepreneurship ecosystem mapping, self-paced learning, dynamic and immersive experiences, online courses and tutorials, entrepreneurial blogs and podcasts, online business communities,



market research tools, e-commerce and online selling, data analytics, and business intelligence tools.



*Figure 4 Treemap Diagram*

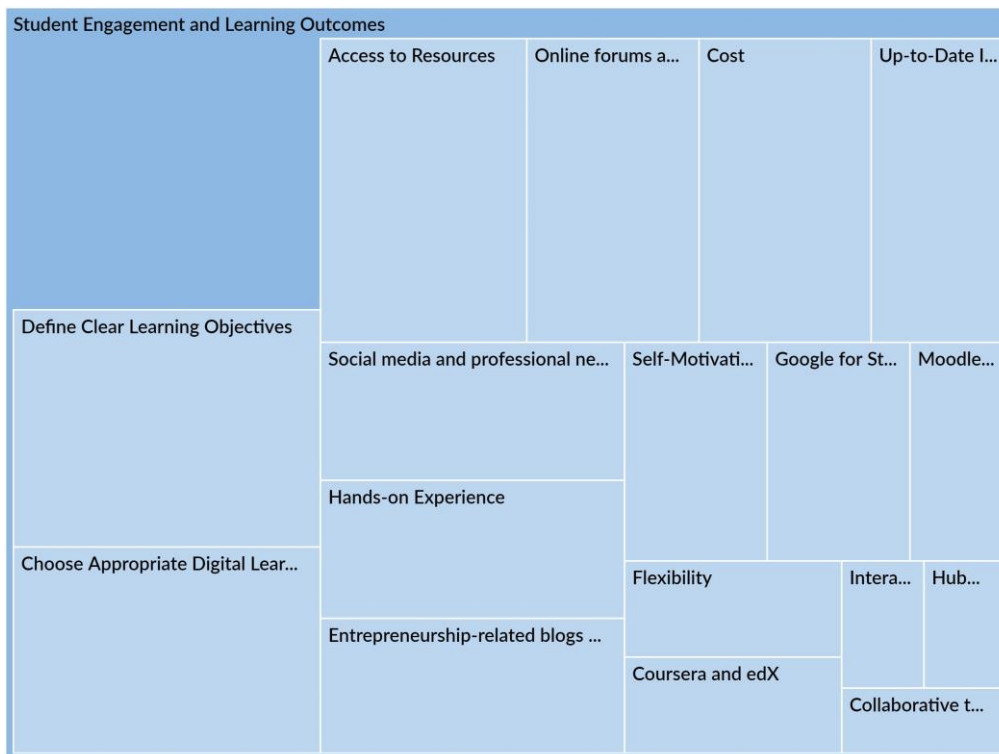
*Hierarchical cluster analysis of sub-themes perceived impact of digital learning technologies*

***Student Engagement and Learning Outcomes***

Student involvement and learning outcomes are integral aspects of the educational process, and they exhibit a strong interrelationship. The relationship between student involvement and learning outcomes is interconnected within the educational process. Students' effective engagement can enhance learning outcomes, thereby equipping them with the necessary skills and knowledge to tackle future academic and real-world issues more effectively.

Instructors must prioritize the development of teaching methodologies and curricula that effectively cultivate student participation and facilitate the active evaluation of learning results, guaranteeing the achievement of desired educational objectives. Based on respondents' responses, the following themes are identified in Figure 5 below. Moodle and learning management systems (LMS), coursera and edx, hubspot academy, google for startups, entrepreneurship-related blogs and podcasts, social media and professional networks

online forums and discussion boards, collaborative tools, access to resources, flexibility, interaction and networking, hands-on experience, self-motivation, cost, up-to-date information, defining clear learning objectives, and choosing appropriate digital learning tools are some of the most prevalent sub-themes under which the primary code student engagement and learning outcomes is being studied.

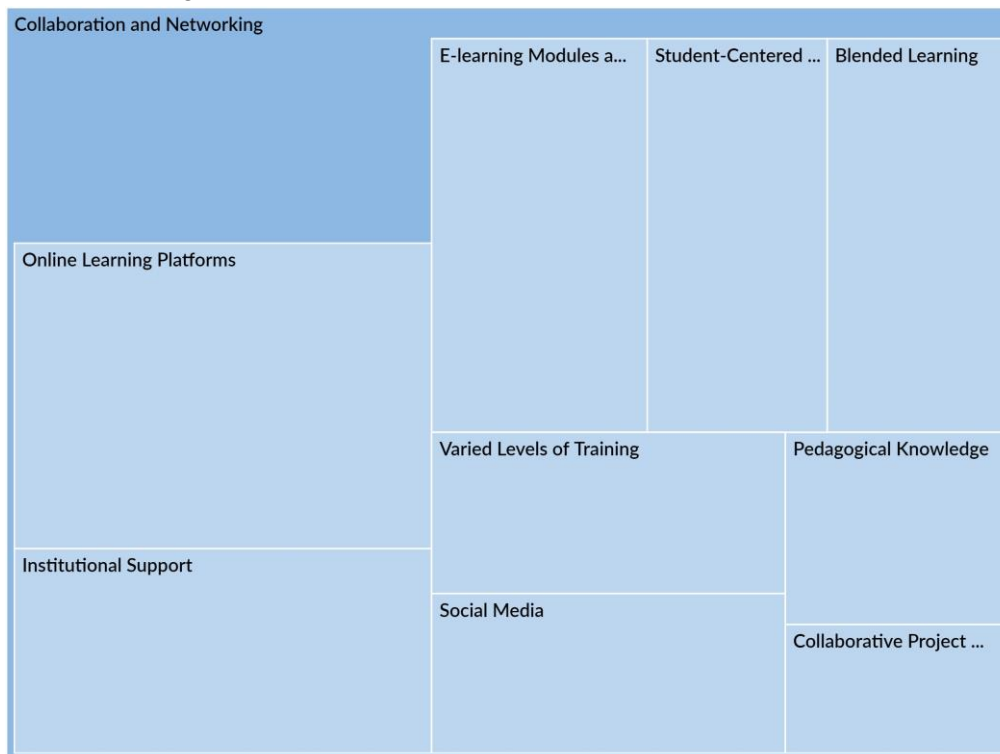


*Figure 5 Treemap Diagram*

*Hierarchical cluster analysis of sub-themes of student engagement and learning outcomes*  
**Collaboration and Networking**

The success of faculty and instructor training in utilizing digital learning technologies within entrepreneurship education can exhibit significant variation contingent upon the institution,

program specificity, and the personnel engaged. Digital technologies are of utmost importance in facilitating collaboration and networking among students, staff members, and external partners within entrepreneurship education. These technologies provide a highly interactive and networked educational setting, promoting the cultivation of innovative thinking and the acquisition of entrepreneurial competencies. Digital technologies play a crucial role in fostering collaboration and networking within entrepreneurship education, shown in the following diagram based on respondents' points of view. The most significant sub-themes that are being discussed to the major code collaboration and networking is varied levels of training, institutional support, pedagogical knowledge student-centered approach, blended learning, online learning platforms, social media, collaborative project management tools, e-learning modules and simulations.



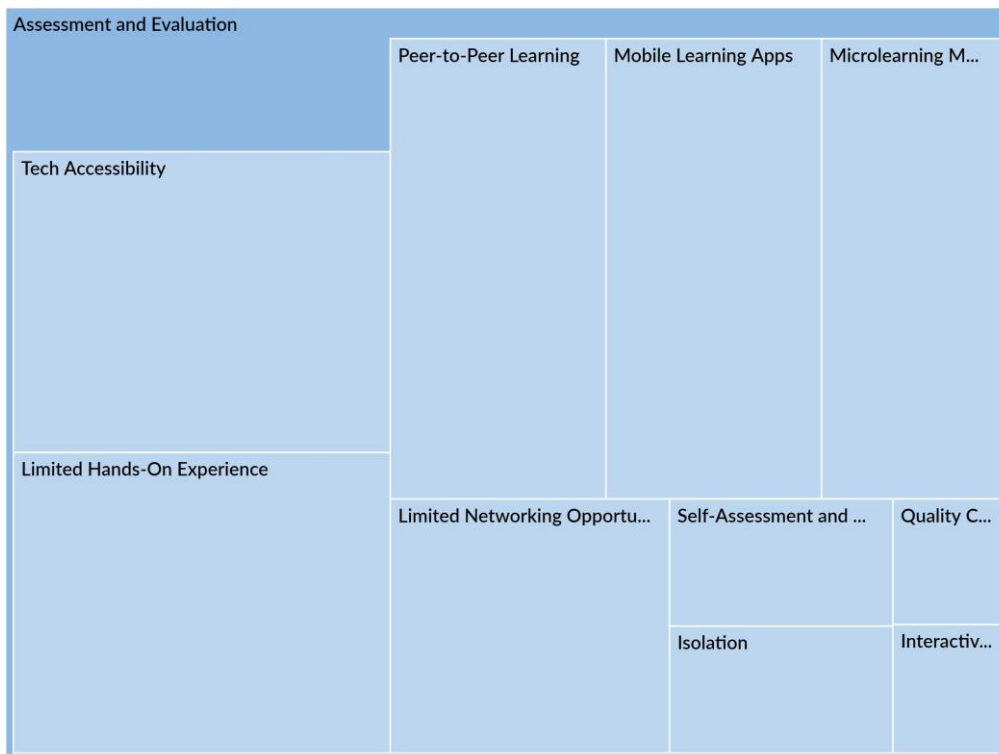
*Figure 6 Treemap Diagram*

*Hierarchical cluster analysis of sub-themes collaboration and networking*

**Assessment and Evaluation**

Digital learning has emerged as a crucial component in cultivating entrepreneurial skills, with many advantages such as adaptability, availability, and a diverse array of educational materials. Nevertheless, this phenomenon does present a distinct array of obstacles and

constraints. To address these issues, a hybrid strategy that integrates digital learning with face-to-face interactions and mentorship can be highly productive. Furthermore, choosing online courses that are of superior quality and have a strong reputation, as well as actively pursuing chances for networking and experiential learning, can serve as effective strategies for mitigating these constraints. The efficacy of digital learning in fostering the development of entrepreneurial skills is contingent upon the unique requirements and circumstances of the learner. Figure 7 shows the theme in accordance with respondents' responses. Limited hands-on experience, isolation, tech accessibility, quality control, limited networking opportunities, peer-to-peer learning, micro learning modules, interactive webinars and workshops, mobile learning apps, self-assessment, and goal-setting tools are important major code assessment and evaluation sub-themes.



*Figure 7a Treemap Diagram*

*Hierarchical cluster analysis of sub-themes assessment and evaluation*

***Future Trends and Recommendations***

The utilization of digital learning tools in the context of entrepreneurship education is expected to undergo further development and adjustment in response to the evolving requirements and preferences of learners. These observed patterns demonstrate the

continuous development of digital learning in the context of entrepreneurship education, in accordance with the dynamic character of entrepreneurship and the requirements of a swiftly progressing global economy. In the forthcoming era, aspiring entrepreneurs will heavily depend on digital education to obtain the requisite skills and information for achieving success within an intensifying and technologically-driven commercial environment. Figure 7 depicts the most significant sub-themes that are being discussed in relation to the major code future trends and recommendations are AI-enhanced personalization, innovation, global collaborative projects, emphasis on soft skills, peer and expert networking, government and industry partnerships, reskilling and up skilling for entrepreneurship, access to high-quality online resources, consideration, online communities, and support networks, entrepreneurship challenges and competitions mobile accessibility, continuous learning, global perspective, cost-effective education, rapid skill acquisition, entrepreneurship ecosystem development.



Figure 7b Treemap Diagram

*Hierarchical cluster analysis of sub-themes, future trends, and recommendations*

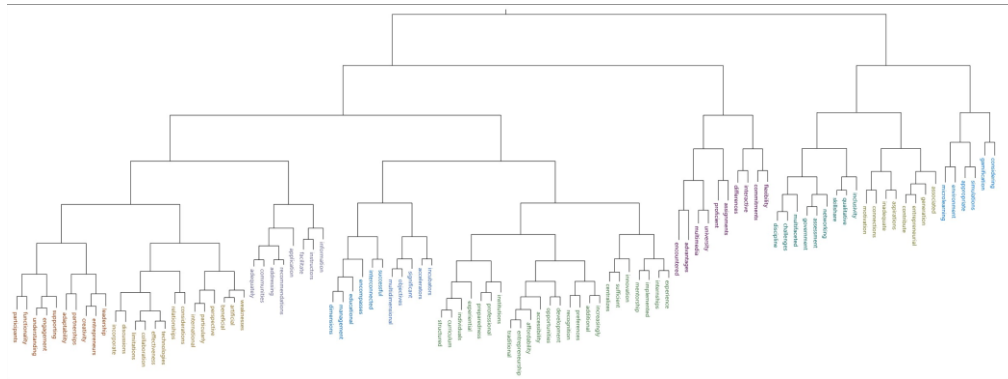
**Hierarchical clustering analysis**

Hierarchical clustering is a widely used technique in data analysis and machine learning. It involves grouping similar data points into clusters based on their Hierarchical clustering methods to identify both macro-level and micro-level sub-clusters inside the larger clusters

or groupings. An often encountered form is shown as a dendrogram, characterized by a hierarchical structure consisting of branches, sub-branches, and leaves.

***Vertical Dendrogram***

Vertical dendrogram exhibits a hierarchical arrangement with a top-down orientation, hence necessitating a top-down reading approach. The words that share a common branch exhibit a proxemic link since they tend to co-occur within a given text or textual corpus. Figure 8 shows that the digital learning and entrepreneurship skills query runs with display words 1000 and minimum length ten is precisely described through words, its length, count, and by weighted percentage. Words occurrence of entrepreneurship is 16, 506, and 3.65% by length, count, and weighted percentage. Whereas technologies and development secured 12, 291, 2.10% and 11, 196, 1.33% respectively.



*Figure 8*

*Hierarchical cluster analysis of themes digital learning and entrepreneurship skills*  
Comparison Diagram:

The role of digital learning and Future trends and recommendations

A word tree was constructed in NVivo to do a comparison diagram analysis and visually represent the patterns of similarities within the codes and sub-codes of respondents. The reviews provided by respondents were examined based on the similarity of the codes (nodes) belonging to parent themes, resulting in the formation of clusters. The machine program accurately organizes the concurrent codes based on their contextual groupings. Figure 9 illustrates the contextual similarities between related components and their clustering.

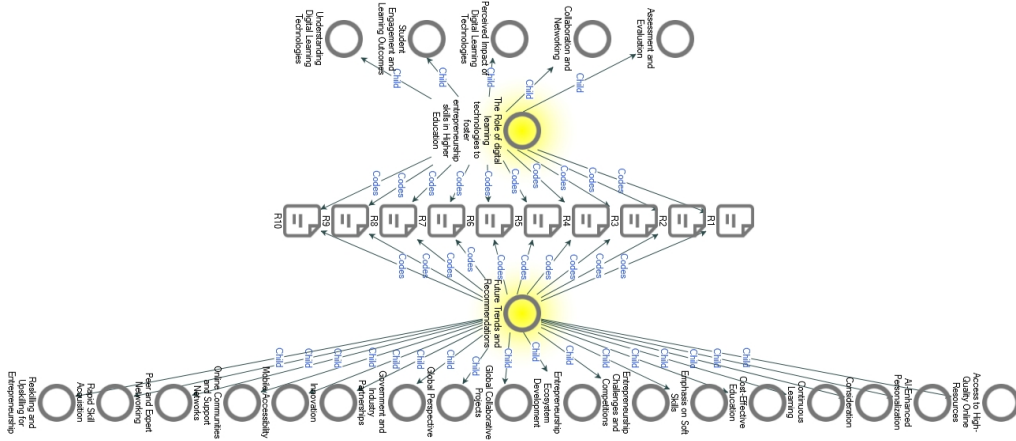


Figure 9  
Word Tree

The concept of a "word tree" refers to a visual representation that displays the hierarchical structure of words. It is commonly used in

A word tree is generated as a component of a textual search query. The word tree in NVivo allows users to interact with it by clicking on any branches located to the left or right of the focal word. This action lets the user view the complete sentence or phrase associated with the selected branch. This visualization offers academics a means to obtain a general understanding of word usage across different forms. The visualization of the word entrepreneurship is given below in Figure 10

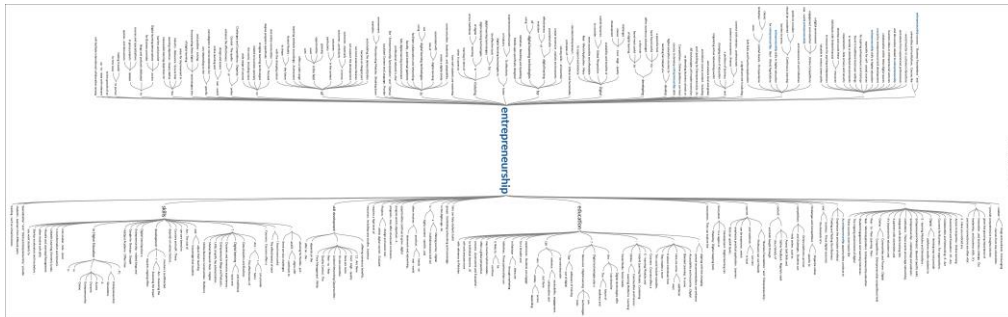


Figure 10  
Enhancement of Entrepreneurial Skills

Participants expressed a range of perspectives regarding the academic, social, and other benefits of digital learning in enhancing their entrepreneurial skills.

Many participants viewed the opportunity to demonstrate their skills worldwide as a means to enhance their prospects of engaging in entrepreneurial endeavors. The findings of the qualitative investigation indicate a wide range of notable entrepreneurial advantages associated with adopting digital learning. The study participants reached a mutual conclusion, indicating that e-portfolios are successful tools in academia. These digital learning tools were found to be resourceful in developing entrepreneurial abilities and enhancing education through practical experiences.

## **Implications**

### ***Theoretical Implications***

The utilization of a technologically advanced digital learning platform at higher education institutions in Lahore, Pakistan, has greatly enhanced students' learning experience and entrepreneurial skills. This entrepreneurial may teach policymakers and students in Pakistani business and entrepreneurship programs a lot. The authors propose broadening their scope to encompass the impact of students' digital competence, e-learning attitudes, and preparation on their academic achievement. In order to examine the feminist viewpoint of developing nations like Pakistan in publications authored by academics at entrepreneurship institutions, the study first gathers data from Pakistan.

This conclusion is drawn from examining existing literature and research conducted in the field. The utilization of digital learning has yielded significant contributions in enhanced scholarly communication, idea dissemination, collaborative efforts, adaptability, critical self-reflection, identification of strengths, and monitoring of progress.

### ***Practical Implications***

This study has made a valuable contribution to the existing literature by examining how students enrolled in higher education institutions in Lahore, Pakistan, can actively participate in the implementation and utilization of digital learning. This study has a lot to convey to decision-makers, administrators, and policymakers. This research offers guidance on how to create a unified digital learning mentality and technology readiness plan, which has practical consequences for the management of business and entrepreneurial schools. The study's conclusions emphasize how crucial it is to provide students the chance to familiarize themselves with and make use of a variety of digital learning resources in order to improve their academic performance. Additionally, it explores the integration of digital learning into learning and assessment processes, emphasizing the importance of effective interpersonal



communication and collaboration. The ultimate goal is to enhance the overall entrepreneurship learning experience for students.

### **Limitations and Future Directions**

In despite this, the study included important limitations and recommendations for the future. Digital competence, digital readiness, and digital learning attitude all have an influence on students' academic success. An additional constraint was that the information was acquired via open-ended, qualitative interviews. These issues may be resolved by carrying out quantitative research, talking with students to get their perspective on how ideas are used in the classroom, and figuring out whether effective methods have been put in place to save these recommendations for later usage and flexibility. Given the constraints of this study, additional longitudinal research should be conducted to monitor whether the implementation of digital learning leads to tangible shifts in behavior, such as increased entrepreneurial activity and enhanced performance. This study examined the influence of digital learning tools on the development of entrepreneurial skills among university students in Pakistan. This study uses qualitative methodologies to investigate the experiences, attitudes, and efficacy of various devices among students. The practical consequences of this study are guiding curriculum design, influencing educational policy, and improving the integration of digital technologies. These measures aim to equip students in Pakistan effectively with the necessary skills and knowledge for entrepreneurial pursuits.

### **Conclusion**

The integration of digital learning is progressively becoming a prominent component of the higher education experience for students. This tendency is anticipated to extend its reach beyond the initial group of early adopters and involve a significant number, if not all, higher education institutions. In order for digital learning to be deemed productive and valuable as an educational instrument, it is imperative that students actively engage with their digital learning.

### **References**

- Aftab, F. (2022). Digital learning attributes and students' academic achievement among Pakistani entrepreneurship students: Mediating role of student engagement. *Journal of Advanced Research in Social Sciences and Humanities*, 7(3), 95-107.
- Aldredge, M., Rogers, C., & Smith, J. (2021). The strategic transformation of accounting into a learned profession. *Industry and Higher Education*, 35(2), 83-88. <https://doi.org/10.1177/0950422220954319>

- Almenara, J., & Palmer, J. (2017). Las Tecnologías de la Información y Comunicación para la inclusión: reformulando la brecha digital. *International Journal of Educational Research and Innovation (IJERI)*, 16-30.
- Ariail, D., Smith, K., & Smith, M. (2020). Do American Accounting Students Possess the Values Needed to Practice Accounting? In (pp. 63-89). <https://doi.org/10.1108/S1574-076520200000023004>
- Barac, K., Plant, K., Kunz, R., & Kirstein, M. (2021). Generic skill profiles of future accountants and auditors – moving beyond attributes. *Higher Education, Skills and Work-Based Learning*, 11(4), 908-928. <https://doi.org/10.1108/HESWBL-08-2020-0180>
- Barot, H. (2015). Entrepreneurship-A key to success. *The International Journal of Business and Management*, 3(1), 163-165.
- Bolzani, D., & Luppi, E. (2021). Assessing entrepreneurial competences: insights from a business model challenge. *Education + Training*, 63(2), 214-238. <https://doi.org/10.1108/ET-04-2020-0072>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Castro, M. P., & Zermeño, M. G. (2020). Educational Innovation Supported by ICT to Identify Entrepreneurial Skills in Students in Higher Education. <https://doi.org/10.1145/3434780.3436556>
- Castro, M. P., & Zermeño, M. G. G. (2020). Educational innovation supported by ICT to identify entrepreneurial skills in students in higher education. *Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality*,
- Chang, W. J., & Wyszomirski, M. (2015). What is Arts Entrepreneurship? Tracking the Development of its Definition in Scholarly Journals. *Artivate*, 4, 31 - 33.
- Chhinzer, N., & Russo, A. M. (2018). An exploration of employer perceptions of graduate student employability. *Education + Training*, 60(1), 104-120. <https://doi.org/10.1108/ET-06-2016-0111>
- Croci, C. (2016). Is Entrepreneurship a Discipline? Honors Theses and Capstones, 296. In Diandra, D., & Azmy, A. (2020). Understanding definition of entrepreneurship. *International Journal of Management, Accounting and Economics*, 7(5), 235-241.
- Fidalgo-Blanco, Á., Sein-Echaluce, M. L., & García-Peñalvo, F. (2015). Epistemological and ontological spirals. *Program*, 49(3), 266-288. <https://doi.org/10.1108/PROG-06-2014-0033>
- Herbert, I. P., Rothwell, A. T., Glover, J. L., & Lambert, S. A. (2021). Does the changing world of professional work need a new approach to accounting education? *Accounting Education*, 30(2), 188-212. <https://doi.org/10.1080/09639284.2020.1827446>

- Humburg, M., & Velden, R. v. d. (2013). What is expected of higher education graduates in the 21st century? ROA-RM-2013/13.
- Huss, J. A., Sela, O., & Eastep, S. (2015). A Case Study of Online Instructors and Their Quest for Greater Interactivity in Their Courses: Overcoming the Distance in Distance Education. *Australian Journal of Teacher Education*, 40, 5.
- Keinänen, M. M., & Kairisto-Mertanen, L. (2019). Researching learning environments and students' innovation competences. *Education + Training*, 61(1), 17-30. <https://doi.org/10.1108/ET-03-2018-0064>
- Khatri, R., Henderson, C., Cole, R., Froyd, J., Gilbuena, D., & Stanford, C. (2016). Designing for sustained adoption: A model of developing educational innovations for successful propagation. *Physical Review Physics Education Research*, 12. <https://doi.org/10.1103/PhysRevPhysEducRes.12.010112>
- Parcheva, M. (2021a). Formation and Development of Entrepreneurial Competences a Challenge to Digital Environmental Training Programmes. 2021 XXX International Scientific Conference Electronics (ET),
- Parcheva, M. (2021b). Formation and Development of Entrepreneurial Competences a Challenge to Digital Environmental Training Programmes. <https://doi.org/10.1109/ET52713.2021.9579617>
- Pisoni, G., Gaio, L., & Rossi, A. (2019). Investigating soft skills development through peer reviews assessments in an entrepreneurship course. 2019 IEEE International Symposium on Multimedia (ISM),
- Pisoni, G., & Renouard, F. (2019). Integrating online education in Innovation and Entrepreneurship (I&E) Doctoral training program. 2019 17th International Conference on Emerging eLearning Technologies and Applications (ICETA),
- Pool, L. D., & Sewell, P. (2007). The key to employability: developing a practical model of graduate employability. *Education+ training*, 49(4), 277-289.
- Römgens, I., Scoupe, R., & Beusaert, S. (2020). Unraveling the concept of employability, bringing together research on employability in higher education and the workplace. *Studies in Higher Education*, 45(12), 2588-2603. <https://doi.org/10.1080/03075079.2019.1623770>
- Rubio, E., McKay, S., Nelson-Santana, J., Rodríguez, R., & Ocon-Carreras, A. (2018). Web Knowledge Turbine as a Proposal for Personal and Professional Self-Organisation in Complex Times: Application to Higher Education. *Journal of Information Technology Research*, 11, 70-90. <https://doi.org/10.4018/JITR.2018010105>
- Twyford, E., & Dean, B. A. (2023). Inviting students to talk the talk: developing employability skills in accounting education through industry-led experiences. *Accounting Education*, 1-23. <https://doi.org/10.1080/09639284.2023.2191288>

- Vázquez-Cano, E., Meneses, E., & Martínez, A. (2017). The Group e-portfolio to improve Teaching-Learning Process at University. *Journal of E-Learning and Knowledge Society*, 13, 65-76. <https://doi.org/10.20368/1971-8829/1221>
- Yorke, M. (2006). *Employability in Higher Education: What It Is, What It Is Not*.