Research Report

Online learning factors that influence the student's learning outcomes

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Statement of Authenticity

By submitting this work, I certify that it is completely mine, except for the parts that have been properly recognized and cited in my submission. It adheres to any word limitations that have been set, as well as the rules and restrictions outlined in the coursework instructions and any other applicable program module declaration. By submitting this work, I declare that I have read and understood the regulations and code of conduct for academic misconduct, including plagiarism, as outlined in the program handbook. I also accept that this work will be subjected to several academic integrity tests.

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ABSTRACT

The research aim is to determine the factors of online learning which has influences on the students learning outcomes. This research is conducted using an online survey to find out the online learning factors from the student's perspective. Research on the definition and many features of online education is numerous but there are relatively few publications on the determinants of online learning. Online education is becoming an increasingly significant part of higher education as both online and traditional colleges continue to broaden their online offerings. The purpose of this research is to understand the online learning factors which can influence student learning outcomes. All the factors are discussed in the literature in detail. The finding indicated that student's learning outcomes are influenced by some factors which are interaction, motivation, satisfaction and advantages of online learning. To find out the effectiveness of online learning an online survey is conducted and circulated on social media platforms. The data gathered from the survey show that online learning is growing rapidly and is very effective with different advantages. Many aspects play important roles, and this literature review will go further into a few of them. The research demonstrates that the importance of technological infrastructure and connection in guaranteeing the effectiveness of online learning is critical. In addition, content and technology suppliers require mobile, high-quality, interoperable solutions so that the same information is offered inside the same institution across other institutions and departments.

This research uses the quantitative analysis approach. This study's test model is a revised Technology Acceptance Model (TAM). Data was gathered using an online survey method and convenience sampling. The remaining part of the research report is structured as follows: First, the related literature on the factors is examined, and hypotheses for this research are developed. Following that, the research method for this study is addressed. The analysis findings, discussion of the findings, and limits for this study are then presented. The appendix and references are the final parts.

Keywords: -E-learning, Higher education, Learning outcomes, Online Learning, Online Survey, Student outcomes, Traditional Learning, Technology Acceptance Model, Satisfaction,

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List of Acronyms

E

eLearning – Electronic Learning

I

ICT – Information and communication technology

L

LMS - Learning Management System

O

OLAT - Online learning and training

S

SCORM - Shareable Content Object Reference Model

T

TAM - Technology Acceptance Model

W

WHO – World Health Organization

1. Introduction

The growth of the Internet has introduced online learning technologies, along with the global availability of and development for digital communications services to established third-party institutions, as they seek better and more efficient means to contact students and offer educational materials. Information technology has been advancing promptly, and it has necessary to use information technology in the education sector. Internet access has led to a precipitate increase in the number of students electing to attempt their higher education with the online learning experience (Kizilcec & Halawa, 2015). The educational institute progressively adopts and execute online learning, and students prefer online learning compared to traditional learning. Traditional learning is where student/teacher interplay and communication occur face-to-face in classrooms (Lebenicnik & Starci, 2018). Online learning enables students to pursue their degree requirements outside the traditional classroom setting and accelerate or increase their graduation time. A critical and equally significant benefit of online learning is that it helps students develop the technical skills and online learning approaches they need to achieve their future educational and professional objectives (Mehall, 2020). Online learning is an advancement in today's era because it directly impacts education. As it is very useful and becoming increasingly popular, online learning is a good option for having an active learning site. Therefore, it is necessary to understand how to set the best online learning goals for educators and students to facilitate effective teaching and learning (Broadbent & Poon, 2015).

A structured literature review is provided with a theoretical framework to make the concept easier for the research. What are the factors of online learning that influence the student's learning outcomes? a literature review is used to investigate them. This research uses the Technology Acceptance Model (TAM), and hypotheses are developed using this theoretical framework. Furthermore, research methods and ethics are established for this report's research methodology. This research employs a quantitative research method. A total of 23 survey questions have been developed and posted to an online survey platform. In the research portion, the survey data is analysed in the form of tables, pie chart and graphs. The literature and survey results are discussed in the discussion section and presented in the conclusion section. The sources section includes all of the literature references. The survey questions, as well as a flow map and the ethical forms for this report, are included in the appendices. Figure 1 illustrates the report's structure.

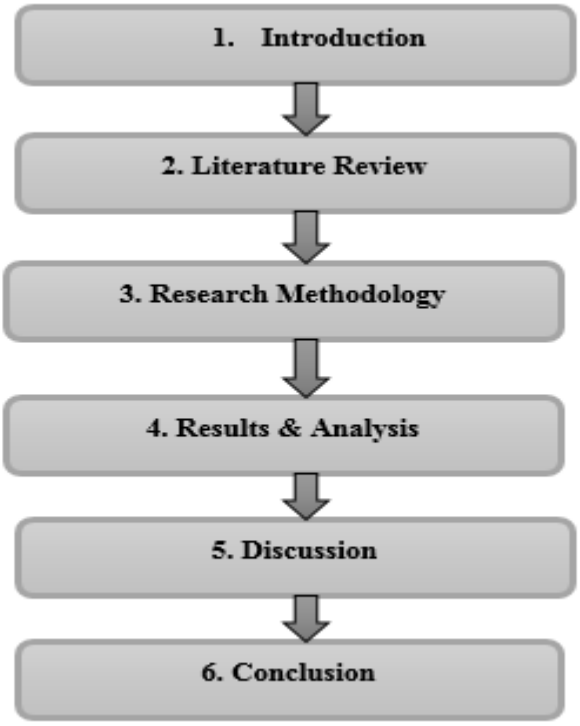


Figure 1:- Report structure

The layout of the research report is represented in Figure 1, which is divided into six chapters. The first chapter covers an overview of the research subject including the problem statement, objective of research and timeline of the research. Following the overview, the report's chapter 2 reflects on the literature review, which is split into many sub-sections. This chapter reflects the information of the previous researches related to online learning. Chapter three defines the research methodology that is used in the research. The collected data from the online survey is analysed in the fourth chapter. Chapter five discusses the analysed data and literature which is conducted in this research. The sixth chapter is for the research report's conclusion with future work and limitations of the research.

1.1 Problem Statement

The research problem addressed in this research is to discover the prospects of students to understand what factors might influence learning results. It was believed that this research may unearth beneficial insights on prospective graduates of online education programs and those who provide them. According to the previous study on this topic, Online graduates are less likely to obtain a job than those who undergo face-to-face educational work, given the notion that education is not as competent as face-to-face learning, yet online education may provide so many advantages. Advances in technology learning have contributed to enhancing face-to-face learning and distance education generations (Li, Marsh, & Rienties, 2016). Online learning is a learning mechanism incorporating information supplied both digitally and through face-to-face instruction. Online learning contributes to the shifts from traditional face-to-face learning to web-based technology tools that enhance collaborative learning and provide students with a completely new learning platform (Jaggars & Xu, 2016). Online learning includes some critical facts that improve the quality of learning and instruction, meet student learning styles and/or needs, improve productivity and performance, improve user accessibility and flexibility in time to engage learners in learning (Stoyanova & Yovkov, 2016).

1.2 Objectives of Research

The objective of this research is to discuss the online learning factors which have an impact on the students learning outcomes. There are some other objectives of this research which are as follows:

- This research is concentrated on the advantages of online learning over other learning methods and the difficulties students face when studying online.
- Research also examines the effect of online learning on their overall results.
- This research aims to investigate how online learning is enhancing learning and teaching methods.
- This study examines the various ways in which online learning impacts student's learning outcomes.
- The results of this research play an essential role in understanding how online learning might contribute to the spectrum of learning.
- The other objective of this research is to find out does online learning influence the motivation of students.

1.3. Timeline and Cost

The research proposal does not involve any financial expenses. The projected timeframe for this study is challenging. In terms of the fact that this study includes using an online survey to collect data, a duration of four weeks might not be adequate to gather reliable results from a broad-based population. In this timeline, steps are mentioned how the researcher planed this research and all the activities are including in which are related to the research. These steps are: Making any required changes to the research proposal, get Ethics approval for Research, create Online Survey on Qualtrics, publish the survey and collect data, collect and analyze additional literature relevant to the research, analyse the data, draft research report, finalize the recommendation based on the findings, Prepare the final report, Submit the final research report.

Figure 2 shows the timeline of the research project.

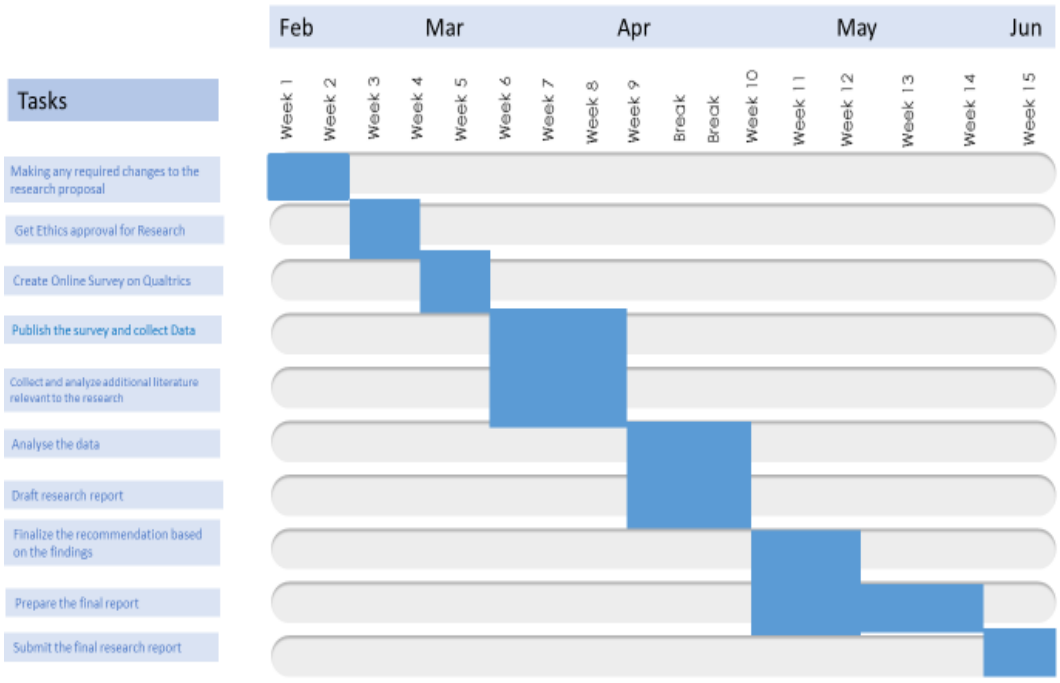


Figure 2: - Timeline of the research report

2. Literature Review

This chapter describes a collection of literature that explores scholarly references (journal articles, e-books, and other electronic resources) about a variety of studies and significance. Figure 2 portrays the research's literature map.

This chapter investigates the impact of online learning on student learning outcomes, what is online learning? history of Online Learning, types of online learning courses, What is traditional learning? Comparison between Online learning and Traditional learning, the impact of online interaction on student learning results, students' satisfaction with online learning, student personal motivation in online learning, Impacts of online learning design features on students, Online Learning during the Coronavirus Pandemic, the Advantages and disadvantages of online learning. All these aspects will be discussed further in this research.

A concept map is a visual representation of the literature subject or areas explored in the research process (Dewi & Widoretno, 2019). Coggle is a website that allows you to create and share mind maps. This tool is intended to assist individuals in taking notes, brainstorming ideas, visualizing connections between concepts, and collaborating with others (Garcia, 2018).

Figure 3 is developed by the researcher using the web tool www. coogle.it (Miro, 2021).

Concept Map

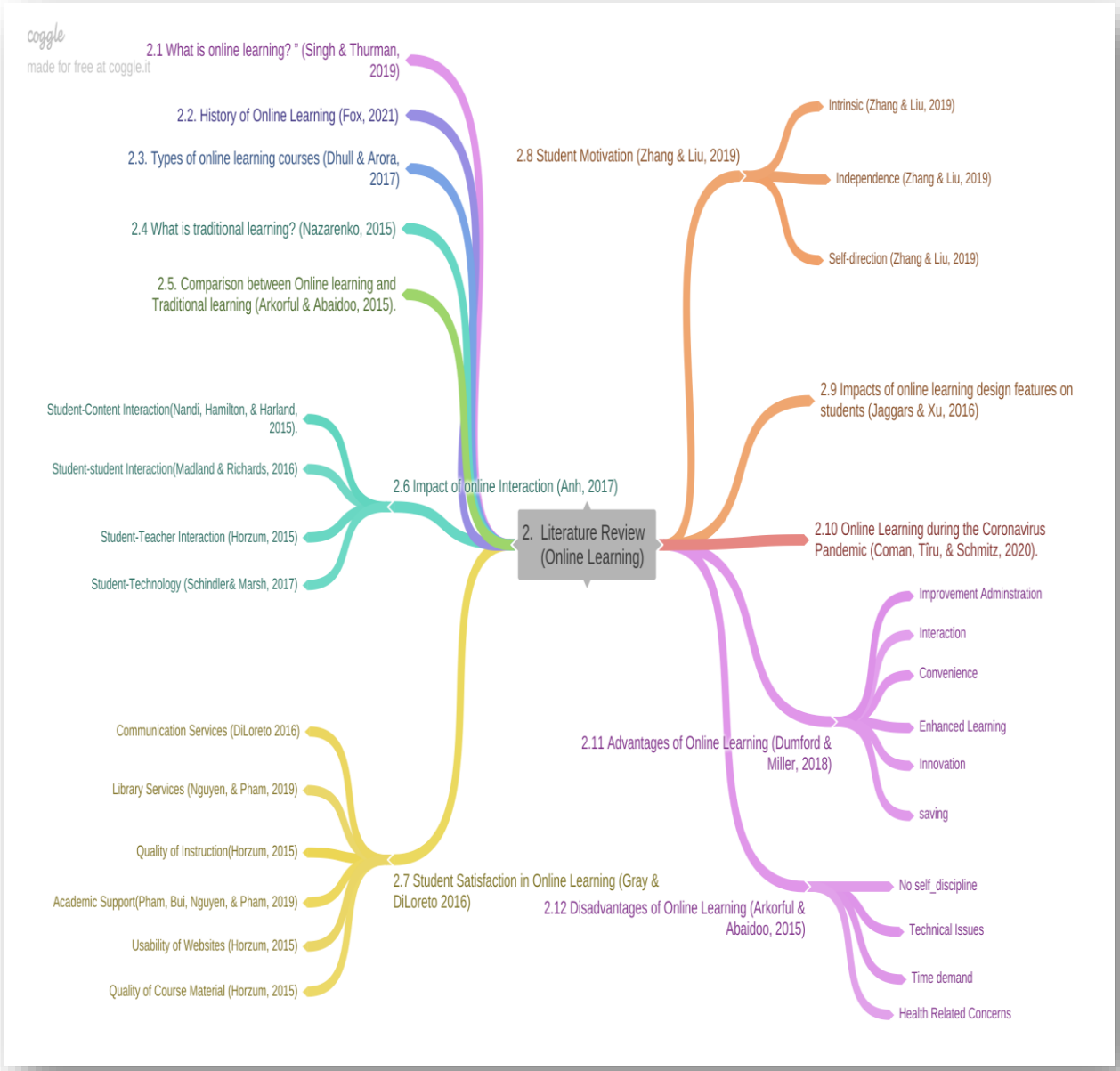


Figure 3: -Literature Map

2.1. What is online learning?

Online learning is a teaching method that takes place through the use of the Internet. It is also known as "elearning," among other things. Computer and web-based training, Mobile learning, electronic learning, distance education, internet-based learning, online teaching (Dhawan, 2020). Online learning has many titles and different styles of teaching, but at its core definition: “Online education is electronically supported learning that relies on the Internet for teacher/student interaction and the distribution of class materials” (Singh & Thurman, 2019). In online learning, students use their home computers by accessing the internet. In the last decade, online graduations and courses have become common with many nontraditional students, including those who choose to continue working full-time or raising families. Online graduation and course programs, some of which are implemented using emerging technology, are often given access through the host university's online learning site (Nguyen, 2015).

2.2. History of Online Learning

Elliott Masie, a US learning expert, created the term "eLearning" in November 1999, when he presented a keynote at the TechLearn Conference: “eLearning is the use of network technology to design, deliver, select, administer, and extend learning.” With the advent of OLAT (“Online learning and training”, the first “open-source learning management system”, in 2000, eLearning as technology was transformed. In the same year, the first version of SCORM (“Shareable Content Object Reference Model”), a standard that allows users to package and share material inside a Learning Management System (LMS), was released. Mobile gadgets, such as smartphones and tablets, were more popular in the early 2000s. Mobile devices are increasingly a popular way for corporations and general education to access eLearning (Fox, 2021).

2.3. Types of online learning courses

Many online learning courses fall somewhere between a "partially online learning" and a "Fully online Learning course." (Tamm, 2021). Some educators have identified online learning types based on educational tools, whereas others have decided to focus on various measures including synchronicity and theoretical learning (Kurt, 2018).

2.3.1 Partially Online learning combines traditional resources and materials, such as textbooks, that are available in print or non-print form, with certain aspects of online learning.

This could include using a learning management system or just a message board with any asynchronous conversation (Dhull & Arora, 2017).

2.3.2 Fully Online learning is completely online learning, on the other hand, where all the learning and teaching activities are conducted online (Dhull & Arora, 2017). Online courses take place in synchronous or asynchronous formats via the internet. The student does not have personal meetings with the instructor or the student's peers with these classes. All information, education and evaluations are carried out online. Online classes offer more flexibility because they allow students to study everywhere and everywhere (Kurt, 2018).

2.4. What is traditional learning?

Traditional education occurs in a classroom environment. Face-to-face learning experiences take place in a physical setting, such as on a college campus. A traditional class consists of a standard program taught in person by a teacher. Standardized assessments are given to students frequently to assess their knowledge (Tawafak, AlSideir, & Alfarsi, 2019).

This model maintains students' time, location, and speed of learning constantly. In a classroom environment, students will openly express their thoughts and explain their questions with the teacher, allowing them to have their questions answered straight away. Classroom learning allows students and teachers to get to know each other better. This helps teachers to know their students better, assess their strengths and shortcomings, serve as coaches, and direct students in their career choices. (Nazarenko, 2015)

2.5. Comparison between Online learning and Traditional learning

The system of learning evolves with the passage of time and the growth of society. However, as learning approaches evolve and the number of learning options expands, it becomes more difficult for students to determine which learning approach is more successful and develops their skills (Hurlburt, 2018). Many research concluded that e-learning is much superior to conventional learning, although others concluded that traditional learning is superior (Arkorful & Abaidoo, 2015).

These differences are due to accessibility, such as in e-learning where people can learn at any time and from anywhere in the world by using online learning channels and the internet, while in formal learning where direct contact occurs, students and teachers can communicate physically (Murray, 2015). On the other hand, it has been found that e-learning promotes

relevant experiences and safe contact through message boards, forums, video calls, chat, and other means of unified communication (Paul & Jefferson, 2019). Students also benefit from doing the demonstration and the capturing of video and audio, which helps them remember information later. When traditional learning is seen, it provides an instant sharing of knowledge, improves socialization, skill growth, and allows learners to get direct input (Odhaib, 2018).

2.6. The impact of online interaction on student learning outcomes

As stated by (Anh, 2017) in online learning, active interaction, including some interactions: learner-self, learner-teacher, learner-learner, learner-technology, learner-content interaction. Online learning is a combination of forms of interaction. This interaction is between the subjects involved in teaching and learning activities (Cavus, 2015). A Learning Management System (LMS) is a software application used in the administration, automation, tracking, and delivery of educational training programs, courses, and online learning programs. LMS allocates the virtual platform for online learning, and it includes several features that save time and are very convenient to instructors. There are some reasons to use the LMS system in learning: cost-effectiveness, ease of accessibility and collaboration, course management, tracking goals, and milestones. These popular LMS presently provide essential tools such as forums, messages, online forms of assignments, Moodle, virtual classroom, etc. (Lai, Lin & Tho, 2019). These forms of interactions have been shown in the interactive form of student success. Student learning outcomes may be influenced by the above mentioned.

2.6.1 The student-teacher interaction

Interaction between student –teacher is a key activity in the traditional learning method where the teacher plays a central role. But in the online learning environment, students are a central role. Student-teacher interaction has a significant impact on student outcomes. Interaction between teachers and students significantly affects a student's ability (Horzum, 2015).

2.6.2. The Student-student interaction

Interaction between students is a critical part of any course knowledge, practice. This contact occurs in a classroom environment very naturally. When the students listen to each other's thoughts, inquire using daily questions, and establish relationships (Madland & Richards, 2016). Student-to-student engagement is essential for community building in an online environment that promotes productive and effective learning and the growth of problem-solving and critical thinking skills. Students who had high interactions with other students showed high rates of interaction satisfaction and literacy (Koskey & Benson, 2017).

2.6.3 The student-technology interaction

LMS systems are designed to help design and develop the course in the form of easier and more convenient mixed or online learning. By offering learning experiences such as lectures, forums, quizzes, wikis, surveys, web conferencing helps students connect easily with the learning environment. Using technology to improve teaching and learning is not a new challenge for institutions (Ashe, 2021). Administrators and teachers have been grappling with how to successfully integrate technological advancements like video and audio recordings, email, and teleconferencing to supplement or replace conventional educational delivery methods since the 1900s. Using a variety of technology apps helps students to engage in higher-order thinking, improve communication, participate in collaborative problem-solving activities and conversations, critically reflect on information, and increase digital capabilities (Geng & Niu, 2019). Technology has the potential to alter education by bringing in a new type of linked learning. This concept connects instructors to their students as well as professional knowledge, tools, and tools to assist them in improving their education and personalizing learning (Schindler, Burkholder, Morad, & Marsh, 2017)**.**

2.6.4 The student-content interaction

Interaction of a student with the learning content, including reading a textbook and completing activities, is known as student-content interaction. This is the key based on predicting satisfaction online. Interaction with the student material can include reading texts, watching videos/images, communicating with e-mails, using research guides with interactive computer-based, and completing all the assignments. Interaction with the material is critical to get new ideas, expertise, and skills for students that alter their understanding and prospects (Agyeman & Siaw, 2018). The procedures of online education are divided into design viewpoint and

manner of delivery. Online courses, in comparison to normal classes, entail tougher requirements for planning and design to be done well in advance of the activity to avoid difficulties that might develop with technological platforms such as Blackboard and Moodle. (Nandi, Hamilton, & Harland, 2015).

2.7 Student Satisfaction in online learning

Gray & DiLoreto (2016) identified that student satisfaction in online learning could be related to four factors: faculty and student interaction or communication, cooperation between classmates, time on task, and active learning. Student's satisfaction in online learning is always one of the most important goals for every educational institute. To obtain this goal, the institute must first understand online learning service quality attributes after required action to enhance service quality. Student satisfaction in online learning can also improve the student's loyalty. (Pham, Bui, Nguyen, & Pham, 2019) Satisfaction could be described as pleasure and fulfilment of student standard of various aspects of learning service that they got through online learning. From this point of view, satisfaction is a factor that can be influenced directly by learning service ingredients. (Horzum, 2015) A variety of courses on offer, quality of instructions, academic support, library services, the usability of websites, communication services, quality of services course materials, and internet speed. Figure 4 shows the conceptual model of online learning where interaction and service quality of online learning leads to student satisfaction and then student loyalty.

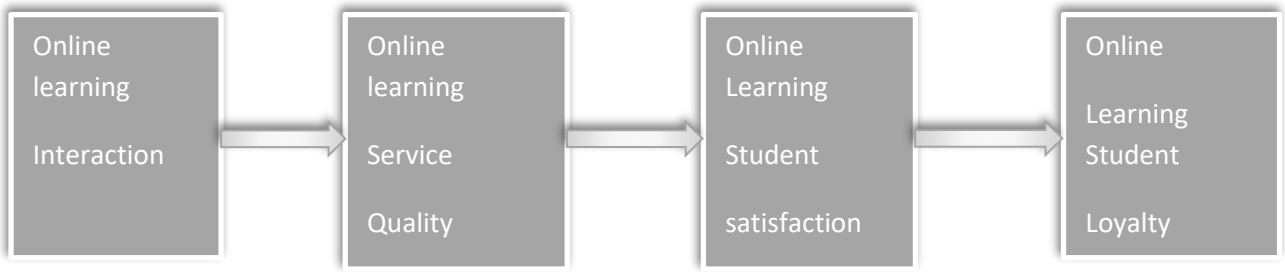


Figure 4: - Conceptual Model (Horzum, 2015)

2.8 Personal Motivation in Online Learning

Motivation has been described as learning's driver,' and can influence what, where, how students learn and is an important performance factor. When deciding whether a learner continues in a course, the degree of interest shown, the quality of the work produced, and the level of achievement achieved have played a significant role (Ferrer & Ringer, 2020). Distance learners have long been associated with the characteristics of independence, self-direction, and intrinsic motivation. Intrinsic motivation was also seen as a significant function of online learners. Online learners are also expected to be more intrinsically motivated because the learning environment generally relies on intrinsic motivation and the associated curiosity and self-regulation characteristics to engage learners (Zhang & Liu, 2019).

According to figure 5 below motivational regulation, perceived task value and learning engagement are interconnected and leads to self-efficacy. The research shows that value perceived by instructors as learners are not only related directly to their commitment to learning but also indirectly linked to their commitment to learning by regulating their motivations (Shoufan, 2019). Teachers' self-efficacy is also related to their motivational regulation and learning engagement. This research aimed to explore the relations between the perceived work value, self-efficacy, motivational regulation, and learning participation of teachers and their mechanisms (Zhang & Liu, 2019).

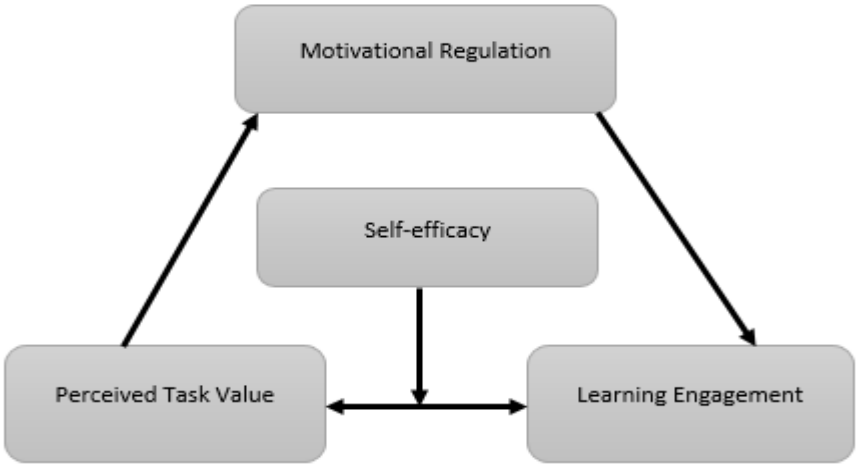


Figure 5: - Hypotheses development (Shoufan, 2019).

2.9 Impacts of online learning design features on students

Online learning design is the platform where learning activities are assisted. This refers to conscious decisions on what to say, where, where, and how (Muljana & Luo, 2019). Decisions must be taken on the content, structure, pacing, pedagogical methods, the sequence of learning activities, the form and frequency of assessment during the course, and the design of the technologies used to facilitate learning (Markova, Zaborova, & Glazkova, 2017). The relative importance of the four online learning design and instructional features suggested in the literature that influence the learning outcomes of students: (1) organization and presentation; (2) learning objectives and assessments; (3) interpersonal interaction; and (4) technological Use (Jaggars & Xu, 2016).

2.10 Online Learning during the Coronavirus Pandemic

The global COVID-19 virus has spread around the world, impacting nearly all nations and territories. Due to the COVID-19 epidemic, most nations have implemented lockdown and social distancing measures, resulting in the shutdown of schools, training institutions, and higher education facilities (Agarwal & Kaushik, 2020). A fundamental shift is occurring in the way educators offer excellent education—via multiple online channels. Despite the problems that educators and learners confront, online learning, distant learning, and continuing education have emerged as a remedy for this unprecedented worldwide epidemic (Bączek, 2021). Making the transition from conventional face-to-face learning to online learning may be a completely different experience for both learners and educators, one they must adjust to with few or no other options (Armstrong & White, 2020). The school system and instructors have accepted "Education in Emergency" via numerous online platforms and are being forced to accept a system for which they are unprepared. (Coman, Tîru, & Schmitz, 2020).

Throughout this pandemic, e-learning platforms played a critical role in assisting schools and universities in facilitating student learning when universities and schools were closed. Investigating students' views of online learning during the Coronavirus reveals that students had a positive attitude toward E-learning, viewing it as beneficial through the pandemic's crisis. (Pokhrel & Chhetri, 2021).

2.11 Advantages of Online Learning

Digital distance learning fulfils a needs ever-growing population of students who cannot or do not want to take part in conventional practice settings in school**.** Online courses provide an excellent method of delivering courses unbound by time or location, allowing access to instruction from anywhere at any time (Vinikas, 2021).

There is some main advantage includes:

2.11.1 **Online classes are Convenient:** Online learning makes education more accessible to students who live in remote regions, have health difficulties or impairments, or travel or move frequently (Mukhtar & Javed, 2020). Getting to class isn't always easier. Students may have to drive long distances, deal with health issues that make going out difficult, balance childcare or day-care schedules, plan lessons around regular work travels, or any number of other things. Online schooling makes education more accessible (Appana, 2008)

2.11.2 Enhanced learning: It enhances learning by increasing the retention of learning content in memory, providing a customizable curriculum, and providing increased technical assistance with 24-hour access. Online Learning can help to learn better and get better marks. This is also the most effective strategy for students. It both saves time and money. **(**Zylfiu & Rasimi, 2020).

2.11.3 Online learning fosters more Interaction: Some people believe that conventional learning in a physical environment is the most normal and effective way to communicate. Although this isn't always the case. Many who are too afraid to pose a question in front of the whole class will now initiate a live, private conversation with their teacher. A teacher can write notes on a digital whiteboard or even appoint a student to write real-time notes that students can quickly download after the class for online learning **(**Zylfiu & Rasimi, 2020).

2.11.4 **Technical Skill Improvement:** Online learning can assist students in improving the technical abilities required in the workplace. New abilities can include the ability to utilize new software suites, conduct in-depth online research, and interact successfully online in a variety of media such as discussion boards and teleconferencing. Employers frequently require these talents since more and more professions need individuals to

work remotely. Students can also add additional talents to their resumes and highlight them in interviews for jobs (Leighsa, 2019).

2.11.5 **Reduced Education Cost:** For a variety of reasons, online courses are significantly less expensive. lowered overhead, Course selection is diverse. For teachers who are unconventional (yet qualified), There are no materials required and Materials that may be reused (Javed, Mukhtar, Arooj, & Sethi, 2020).

2.11.6 **Enhanced Virtual Collaboration and Communication:** Learning to collaborate with others in a virtual setting can help you become a more successful leader. You will gain key leadership skills by using specialist information, developing efficient procedures, and making judgments regarding optimal communication techniques, such as whether to discuss topics in person or electronically (Dumford & Miller, 2018).

2.12 Disadvantages of Online Learning

But with all the e-learning advantages, there are certain disadvantages that one cannot ignore. A clear example of an online learning limitation is that practical skills are challenging to draw from online tools.

These drawbacks also include:

2.12.1 **Technical issues: -** Another significant problem with online classes is access to the internet. While internet coverage has increased by leaps and bounds in recent years, a constant connection with adequate speed remains a challenge in smaller cities and villages. There may be a loss of consistency in learning for the student if learners or teachers do not have a regular internet connection. This is harmful to the educational process (Tamm, These disadvantages of E-Learning must be addressed to ensure the legitimacy and longevity of the online learning industry., 2020).

2.12.2 **Teacher Training: -** Teachers must have a basic grasp of how to use digital modes of learning to teach online. They may not even have the appropriate resources and tools to deliver online lessons at times. To overcome this, schools should invest in providing instructors with the most up-to-date technical training so that they can easily conduct their online lessons (Sadeghi, 2019).

2.12.3 **No self-discipline: -** One of the most difficult aspects of online learning for many students is the inability to focus on a screen for extended periods. With online learning, students are more likely to be quickly side-tracked by social media or other sites. As a

result, professors must make their online lessons concise, engaging, and interactive to keep students focused on the subject (Yuhanna, Alexander, & Kachik, 2020).

2.12.4 Health-related concerns: - Many parents are concerned about the health risks of their children spending so much time looking at a screen. One of the most serious problems and downsides of online learning is the rise in screen time. Students may acquire terrible posture and other physical issues as a result of sitting hunched in front of a screen. An ideal option would be to offer students frequent pauses from the computer to recharge their minds and bodies**.** (Arkorful & Abaidoo, 2015).

2.13 Summary of literature review

Based on the research analysed above, there was substantially less emphasis on evaluating the pros and disadvantages of online learning techniques although a wide range of research is accessible on the many features of online teaching. This study will take account from the standpoint of the many stakeholders of the various advantages and downsides of the Online learning approach. Table 1 was utilized as an inspiration for the linkage with the present thesis of existing research. It clearly distinguishes the scope and associated consequences of the present research. In addition, it ensures that the new research does not replicate the previously discovered material. The survey questions were taken from the literature study.

Author(s)	Topic	Methodology	Findings
(Paul & Jefferson, 2019)	A Comparative Analysis of Student Performance in an Online vs. Face-to-Face Environmental Science Course From 2009 to 2016	The study consisted of 548 students completed between 2009 and 2016 using the Environmental Science Class. In evaluating the performance differences of the online and the Face-to-face teaching, the end courses of the participants were the major comparison element.	Findings show that there is no significant difference in learning outcomes between face-to-face learning and online learning.
(Armstrong & White, 2020)	COVID-19 and Distance Learning: Effects on Georgia State University School of Public Health Students	769 students of a variety of racial and socio-economic backgrounds registered in five different public health programmes to Receive information about the academic requirements of students because of COVID-19 and how distant learning affects their academic activities.	The results give information on the techniques that the faculty uses to enhance the motivation of students during the epidemic, as well as on tactics that may be further reproduced.

(Mukhtar & Javed, 2020)	Advantages, Limitations and Recommendations for online learning	From March to April 2020 this qualitative case study was place. 12 academic members and 12 university students use maximum variation samples. Four interview sessions were held, two were conducted each with instructors and medical and dental students.	This research presents the benefits included remote study, comfort and accessibility, while drawbacks included inefficiency and a lack of academic integrity. The proposals were to establish teaching methods and a curriculum with decreased cognitive burden and enhanced interactivities.
(Muljana & Luo, 2019)	Factors Contributing to Student Retention in Online Learning and Recommended Strategies for Improvement: A Systematic Literature Review	In this study, 40 research between 2010 and 2018, a comprehensive literature review has been done. This literature analysis examines the elements which impact the difference between online learning's appeal and its success rate.	Factors that have been found include institutional support, level difficulties in programs, promotion of a sense of belonging, learning facilitation, courses design, student behaviour and demographic variables, together with other individual characteristics

Table 1: - Summary of the literature review (Martin & Sun, 2020).

2.14 Conclusion of Literature Review

From the analysis above in table 1, the focus on evaluating the pros and drawbacks of the online learning approach was significantly lower, even though many the research is accessible in the many aspects of online education. Online learning is an innovation in the contemporary period since it affects education. Because Online Learning is highly beneficial and more popular, it is an excellent way to build an active learning platform. Therefore, the ideal online learning goals to improve teaching and learning both for educators and students are vital to comprehend. Online learning enables students to fulfil their diploma needs outside of their typical classroom environment and can speed up or improve their time to graduate. Online Learning is a large, growing, higher education platform with a lot of prospects (Martin & Sun, 2020). As online Learning is challenging, it is vital to know how it is to be managed and access the materials. With the finding of literature review, online learning Contributes to transitions from traditional face-to-face learning to using online technology tools that increase collaborative learning and provide students with a completely new learning platform. The survey questions are taken from the literature review. It is identified as part of the research of the various topics that demand students' opinions.

3. Research Methodology

The purpose to conduct a research methodology is to create a structure that can be used to investigate a detailed analysis of the subject. The different research stakeholders take account of the methodological framework. This is also attempting to extract the research outcomes about the research question and the research purpose. This chapter discusses the approaches that were employed as part of this investigation. Furthermore, the chapter focuses on the objective of the method as well as the results.

The processes or strategies used to find, select, process, and analyze information on a topic are referred to as research methodology. The methodology portion of a research report helps the reader to objectively examine the overall validity and reliability of the study. The methods section provides solutions to two major questions: How is information gathered or generated? How it is examined? (Snyder, 2019).

This research's objectives are addressed in this section, along with the main and sub-research questions and hypotheses. A brief overview of the conceptual structure and how all the hypotheses are related to the dependent and independent variables are described. This research is carried out using the Quantitative research methodology, where the connection of the variables would be analysed to interpret the data using quantitative procedures (Creswell & J, 2014).

3.1 Research Design

The technique for understanding and knowledge about a certain subject is described by the research design. Multiple outcomes can be produced from the same research by employing different research methodologies and designs (Rahl, 2017). For this research, three actions are taken to acquire data and improve knowledge of the study topic: comprehend the query, collect data to answer the research question, and use that data to identify the solution. For this research, the researcher identified a research subject, then acquired peer-reviewed literature articles, denoted the objective of the study, collected data via a survey, analysed the data, and wrote a research report. The quantitative research approach is applied in this study.

3.2 Main Research Question and Sub Questions

Through this research, the aim is to examine many aspects of online learning. Identifying the elements of online learning entails crucial theoretical issues that are of great interest to educators today. The key research question and its sub-questions aimed at addressing the objective of this research have been mentioned below:

RQ 1: What are the factors of online learning that influence the student's learning outcomes?

RQ 1.1: Does online learning influence the motivation of students?

RQ 1.2: What are the impacts of online learning on student and teacher interaction?

RQ 1.3: What are the positive impacts of online learning on student's learning outcomes?

RQ 1.4: What are the negative impacts of online learning on student's learning outcomes?

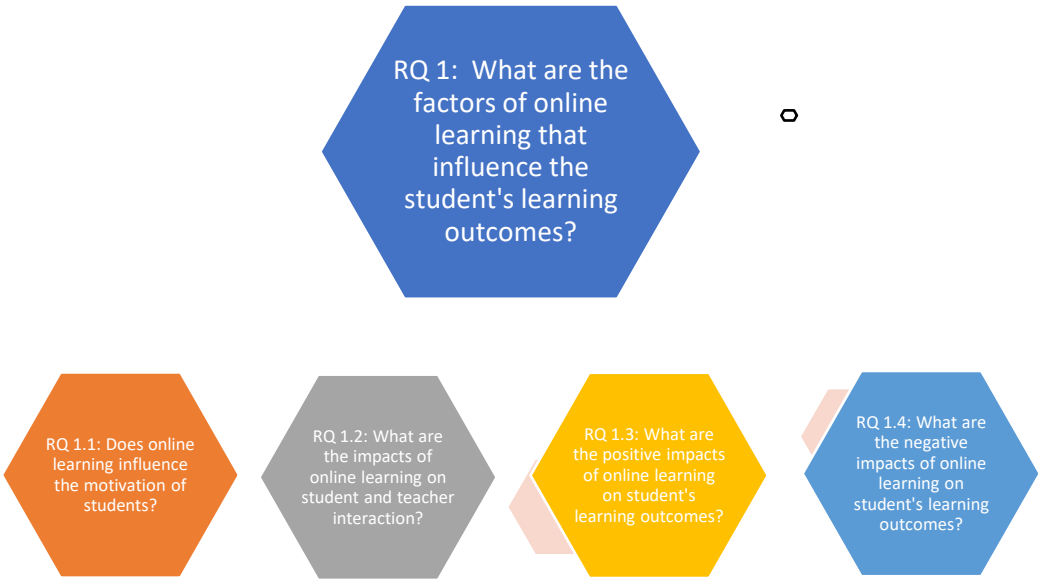


Figure 6: - Main Research Question and Sub-Questions.

3.3 Hypotheses

According to Creswell J. (2009), Hypotheses are statements that predict how a variable can interact and influence each other and will be checked by analysis. During hypotheses, two kinds of variables are tested: dependent variables and independent variables. Hypotheses promote critical thinking with a quantitative approach and find it simple to interpret and describe what is being studied. Hypotheses are categorized into two types: directional hypotheses and nondirectional hypotheses. The directional hypotheses illustrate the presence of direct interaction between variables. These words suggest the partnerships may be superior, greater, positive, or negative. Directional hypotheses are often represented as a hypothesis that illustrates the effect of an independent variable on a dependent variable. Non-directional theories, on the other hand, explain the relationship between variables but never predict the accuracy of the results (Kaur, 2017). As shown in figure 8, a modified TAM Model is defining the relationships and connect the hypotheses given below with the respective dependent and independent variables.

There are eleven directional hypotheses are created for this research which is as given below:

H1: Age has a positive impact on behavioural intention to use online learning.

H2: Gender has a positive impact on behavioural intention to use online learning.

H3: Perceived usefulness has a positive impact on behavioural intention to use online learning

H4: Experience of technology has a positive impact on behavioural intention to use online learning.

H5: Perceived Ease of Use has a positive impact on behavioural intention to use online learning.

H6: Willingness to do has a positive impact on behavioural intention to use online learning.

H7: Personal motivation had a positive impact on behavioural intention to use online learning.

H8: Satisfaction had a positive impact on behavioural intention to use the online method of learning.

H9: Perceived Usefulness had a positive impact on Perceived Ease of Use.

H10: Perceived ease of Use had a positive impact on Perceived Usefulness.

H11: Behavioural intention to use online learning methods has a positive impact on actual Use.

There are eleven directional hypotheses are created for this research which is as given below with the brief detail:

H1: Age has a positive impact on behavioural intention to use online learning.

Hypotheses 1 (H1) expresses the relationship between age and the positive impact on behavioural intention to use online learning. Behavioural intention is the intention to utilize a certain technology that directly influences actual use (Wilson & Kissi, 2018)**.** H1 shows a particular age group of people who perceived online learning as useful for study online and going for higher study. Which age group perceived online learning as useful examined throughout the survey.

H2: Gender has a positive impact on behavioural intention to use online learning.

Hypothesis 2 (H2) shows the relationship between gender and that has a positive impact on behavioural intention to use online learning. H2 forecasts that specific gender has a positive impact on the perceived usefulness of learning online or using online learning methods. H2 shows specific gender perceived online learning as easy to use. Which gender perceived online learning is usefully examined throughout the survey.

H3: Perceived usefulness has a positive impact on behavioural intention to use online learning

Fred Davis described this as "the degree to which a person feels that his/her work performance may be improved utilizing a certain system." It implies whether someone sees it as valuable to what they want to achieve (Mailizar, Burg, & Maulina, 2021). Hypotheses 3 (H3) shows relationships between the perceived usefulness and positive impact on behavioural intention to use. H3 predicts the online learning perceived usefulness for learning has a positive impact on behavioural intention to use online learning.

H4: Experience of technology has a positive impact on behavioural intention to use online learning.

Hypotheses 4 (H4) shows relationships between the experience of technology and behavioural intention to use online learning. Experience of technology has a positive impact on behavioural intention to use. H4 predicts the Experience of technology for learning online by using several devices has a positive impact on behavioural intention to use online learning.

H5: Perceived Ease of Use has a positive impact on behavioural intention to use online learning.

Davis described this as "to what extent a person feels that it would be free from effort utilizing a given system" (Davis 1989). The obstacles have vanquished if technology is straightforward to use. Nobody has a good attitude towards it if it isn't easy to use and the interface is difficult (Shaqrah, 2015). Hypotheses 5 represents that perceived ease of use has positive impacts on behavioural intention to use. H5 predicts that online learning perceived ease of use has a positive impact on behavioural intention to use online learning for study.

H6: Willingness to do has a positive impact on behavioural intention to use online learning.

Hypotheses 6 (H6) shows relationships between the Willingness to do and behavioural intention to use online learning. Willingness to do has a positive impact on behavioural intention to use. H6 predicts the Willingness to learning online by using several devices and methods has a positive impact on behavioural intention to use online learning.

H7: Personal motivation had a positive impact on behavioural intention to use online learning.

Hypotheses 7 (H7) shows relationships between Personal motivation and behavioural intention to use online learning. Personal motivation has a positive impact on behavioural intention to use. H7 predicts the Personal motivation to learning online by using several devices and methods has a positive impact on behavioural intention to use online learning.

H8: Satisfaction had a positive impact on behavioural intention to use the online method of learning.

Hypotheses 8 (H8) shows relationships between Satisfaction and behavioural intention to use online learning. Satisfaction has a positive impact on behavioural intention to use. H8 predicts the Satisfaction to learning online by using several devices and methods has a positive impact on behavioural intention to use online learning.

H9: Perceived Usefulness had a positive impact on Perceived Ease of Use.

Hypotheses 9 (H9) represents the relationship between perceived ease of use, which has a positive impact on perceived usefulness. H9 predicts that online learning perceived ease of use has an impact on studying online by using different online learning methods.

H10: Perceived ease of Use had a positive impact on Perceived Usefulness.

Hypotheses 10 (H10) represents the relationship between perceived ease of use, which has a positive impact on perceived usefulness. H10 predicts that online learning perceived ease of use has an impact on studying online by using different online learning methods.

H11: Behavioural intention to use online learning methods has a positive impact on actual Use.

Hypotheses 11 shows the relationship between behavioural intention to use has positive impacts on actual system use. H11 forecast that the behavioural intention to use online learning has a positive impact on actual system use for file complaints about the airline industry.

3.4.1 Hypotheses and Research-sub Questions

Following Table 2 shows which hypotheses are based on which research sub-question.

Research Sub Questions (SQ)	**Hypotheses**
RSQ 1.	H1, H2, H4, H6, H7
RSQ 2.	H8, H7, H11
RSQ 3.	H7, H4, H8, H5, H3
RSQ 4.	H8, H4

Table 2: - Shows the link between Hypothesis and Research Sub- Questions.

Table 2 depicts the connections between research sub-questions and hypotheses. The research sub-question numbers are represented in the table's first column. The number of hypotheses is represented in the table's second column.

3.4.2 Hypotheses, literature Review and Research Questions

Table 3 displays the literature reviews and survey questions grouped by research question and sub-questions.

Research Questions	Literature Review	Survey Questions (SQ)
Main Research Question 1	2.6, 2.7, 2.8. 2.9. 2.11, 2.12	SQ 2.3,4,7,10,11,12
Sub-Question 1	2.7	SQ 7,8,10,20
Sub-Question 2	2.6, 2.6.1	SQ 11,12,13,14
Sub-Question 3	2.11	SQ 15,19,20,22
Sub-Question 4	2.12	SQ 16

Table 3: Relation Between the Research Questions, Literature Reviews and Survey Questions

Main research questions and sub-questions and survey questions are developed from the literature review after analysing the different researches based on online learning. So, there is a relation between research questions, survey questions and literature review as shown in table 3.

3.4.3 Survey Question, Hypothesis, Research Question, Measurement type

Survey Questions	Hypothesis	Research Sub Questions	Measurement Types
S1	H1	RSQ 1.1	Nominal
S2	H1	RSQ1.1	Nominal
S3	H2	RSQ 1.2	Nominal
S4	H3, H6	RSQ 1.1, RSQ 1.3	Nominal
S5	H3, H4, H9	RSQ 1.3	Nominal
S6	H3, H4, H5	RSQ 1.1	Nominal
S7	H8	RSQ 1.1, RSQ 1.3	Ordinal
S8	H3, H7, H8, H9, H10, H11	RSQ 1.1, RSQ 1.3, RSQ 1.4	Ordinal

S9	H3, H4, H5, H6	RSQ 1.1, RSQ 1.3	Ordinal
S10	H7, H8	RSQ 1.1, RSQ 1.3, RSQ 1.4	Nominal
S11	H8,	RSQ 1.2	Nominal
S12	H3, H5, H9, H10, H11	RSQ 1.3, RSQ 1.4	Ordinal
S13	H3, H5, H9, H10, H11	RSQ 1.3, RSQ 1.4	Ordinal
S14	H3, H5, H7, H8, H9, H10, H11	RSQ 1.3, RSQ 1.4	Nominal
S15	H4, H6, H7, H8, H11	RSQ 1.1, RSQ 1.3, RSQ 1.4	Ordinal
S16	H4, H6, H7, H8, H11	RSQ 1.1, RSQ 1.3, RSQ 1.4	Ordinal
S17	H7, H8	RSQ 1.1, RSQ 1.3, RSQ 1.4	Ordinal
S18	H4, H6, H7, H8, H11	RSQ 1.1, RSQ 1.2, RSQ 1.3	Nominal
S19	H3, H11	RSQ 1.3	Nominal
S20	H7, H8	RSQ 1.1, RSQ 1.3	Nominal
S21	H8	RSQ 1.1, RSQ 1.3	Nominal
S22	H8	RSQ 1.1, RSQ 1.3	Nominal

Table 4: - Connection between Survey Questions, Hypothesis and Research questions followed with their measurement type.

3.5 Research Method

The most widely recognized conceptual structure for carrying out this form of research is the Technology Acceptance Model. Technology Acceptance Model (TAM) has earned significant

support in understanding and managing the innovative technology adoption process. TAM was firstly introduced by Davis (1989) to be used to forecast the user's acceptance of any information technology system and to detect design issues before users use the system by two factors: perceived usefulness (PU) and perceived ease of Use (PEU). PU is described as the user's interest in improving his job performance by using a specific information system (IS). PEU is defined as the level of a user's confidence in effortlessness by using an IS. (Farahat, 2012).

TAM supports in measuring and comprehending the possibility of adoption and understanding of using the method. TAM is a common model for understanding how people use technology. (Millat, 2018). **Figure 7** is the original TAM.

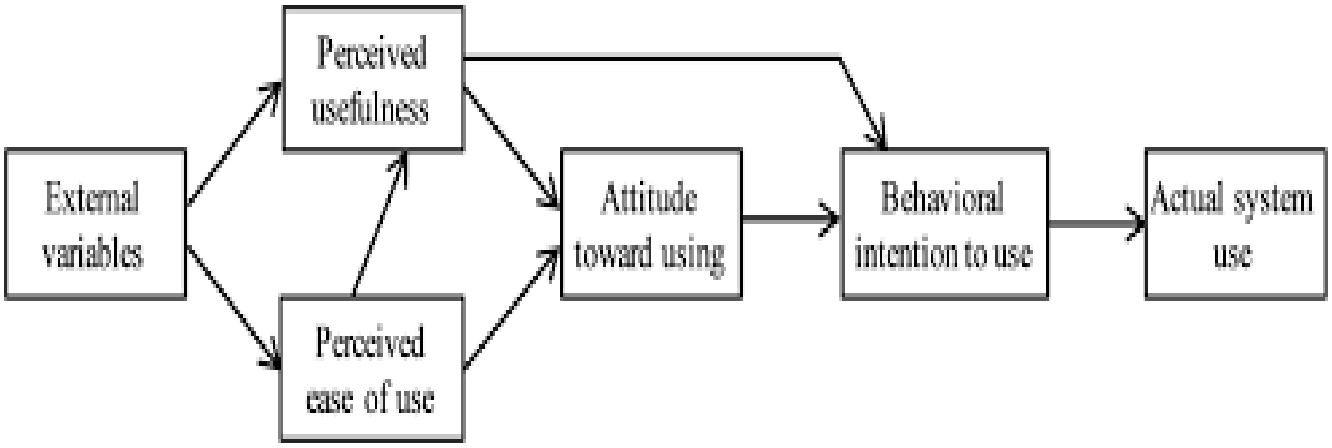


Figure 7: - Original TAM (Technology Acceptance Model) (Masrom, 2007)

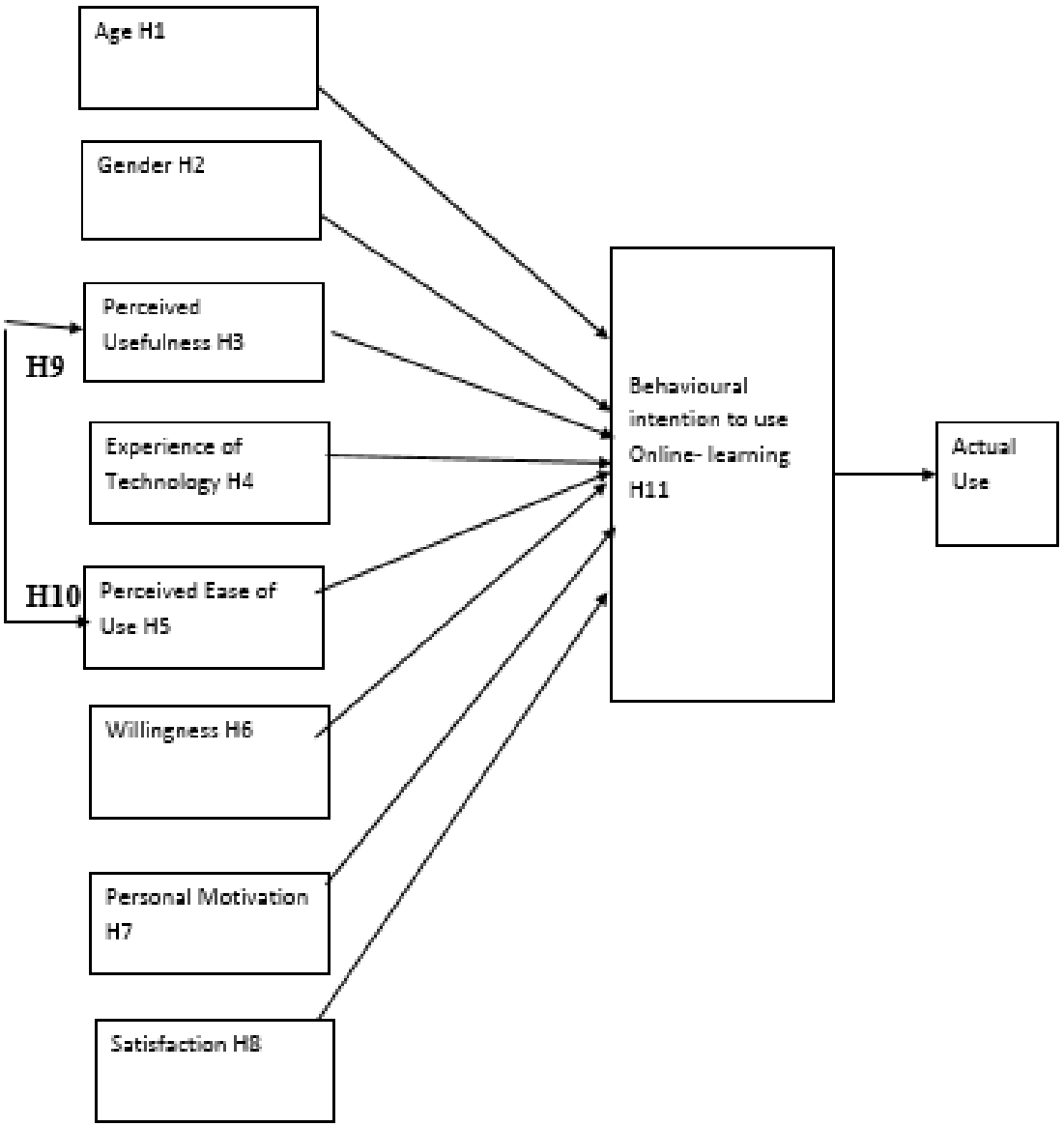


Figure 8: Transformed TAM model- a connection between hypotheses and variables

3.6 Research Tools

This research aims to identify the factors of online learning that influence the student's learning outcomes. As discussed above, this study is also investigating the role of gender, age, satisfaction, motivation, the experience of technology, and willingness.

Since the research's time and budget are inadequate, an online survey is a consistent way to collect the details. Thus, for four weeks, an online survey is conducted to collect the data. The following parts are including a comprehensive explanation of the Use of samples, data collection, analytical techniques.

An online survey was utilized to collect data for this research since it is the most cost-effective technique to collect pertinent data. For four weeks, a survey comprising 23 questions was performed to collect replies. This survey is conducted using the Qualtrics online survey platform. For the analysis, the recorded data were analysed. To collect data, an internet link was developed and distributed to all participants. As a research approach, TAM was utilized. TAM was used to establish two variables and eleven hypotheses to study the problem.

3.7 Research Approach

The research approach is a strategy and technique that includes general assumptions as well as precise techniques of data gathering, analysis, and interpretation. As a result, it is depending on the nature of the research topic being addressed (Alase, 2017).

This section of the research discusses the sampling, target population, sample method, sample unit, sample size, data gathering and data analysis.

3.8 Sampling

The sampling goal is to depreciate both the expense and the workload that would likely be needed to sample the total target population. The selection of information from a group of people is linked to a survey. In this example, an online survey sampling describes the means to coordinate a survey by gathering a sample of factors from the targeted population (Bhardwaj, 2019).

3.9 Target population

The total population from which the sample might be selected is referred to as the target population. A sample is a group of persons who participate in research. The extent to which we can adapt the findings of our research to the target population is referred to as generalisability (Asiamah, Mensah, & Abayie, 2017). The target population to carry out this research is one hundred seventy-five thousand, two hundred forty over 18 who use Facebook and study online.

3.10 Sampling method

Sampling is a technique that allows researchers to infer information about a population based on the findings of a subset of the population without having to analyze every person. In probability sampling, you begin with a full sampling frame of all eligible individuals from whom you draw the sample (Taherdoost, 2016). The sampling technique reflects the non-probability sampling process that is used for this study.

3.11 Sampling Unit

A sample unit in the context of market research is a single person. A sampling unit is a single value inside a sample database. Sampling units are drawn from a larger population, such as a country, customer database, or area, then combined to make a research sample (Kabir, 2016). An individual over 18 years old who can access Facebook or other social media platform is the sample unit for this study.

3.12 Sampling size

The size of the sample is dependent on three variables. These key segments decide the sample size based on the composition of the population, the value of the error of acceptance, and the confidence interval 20. The registered number of Facebook users worldwide from 2020 is 1.75 billion (Tankovska, 2021). To determine sample size confidence level of 95%, the population size is 1.75 billion, confidence interval of 4, and the sample size of 600 was estimated using the sample size calculator. The picture of the following sample size is shown in Figure 9.

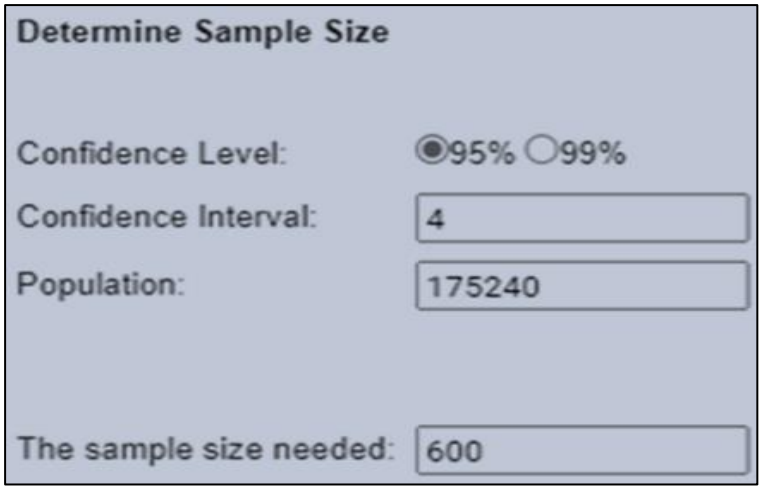


Figure 9: Sample size determination for the Survey (surveysystem, 2021)

3.13 Data Gathering

Data is obtained using an online survey for this study. For this online Survey, the Social Media site, Facebook, is being used for sending the survey link to the participants. This link is active for four weeks only after ethical approval has been given. During this time, participants can use this link and answer questions from the Survey.

3.14 Data Analysis

A statistically relevant questionnaire is used to collect the information needed to address the research questions. Some assessments are carried out to assess the answers obtained from each of the questionnaires. The test is done to measure all the collected answers from each survey question. Table 3 represents the link between research questions, survey questions and hypotheses. In addition, measurement types are described in this table.

4. Results and Analysis

This chapter includes the findings from the current report's online survey. These findings are gained by the collection of data from online surveys, with the specifics given in a quantitative format. The online survey is created and conducted through Qualtrics. This survey is released via the social media platform Facebook. 286 participants took part in this online survey.

Descriptive analyses: Numeric data produced in a research endeavour may be examined quantitatively using statistical techniques in two distinct ways. Descriptive analyses relate to the statistically detailed description, aggregation and presentation of the constructs or connections of interest between them (Thompson, 2009). The researcher submitted a descriptive analysis of each survey question using a frequency distribution table. Using the information from the frequency distribution table, bar charts displaying the response data for each survey question were presented. The frequency tables and bar charts were used to provide interpretations of the data. Each question's frequency table and bar chart are shown below.

Survey Question 1: - Are you over the age of 18 years?

The first question aim is to open the survey questionnaire only to the people who are over the age of 18 years. This question helps the people to participant in the survey. Total 282 responses are collected through this survey, from these 262 responders were over the age of 18 years, they select Yes to participant in the survey. Others who selected No were not able to participant in the survey. The following Figure 10 shows the total number of participants who select yes and no.

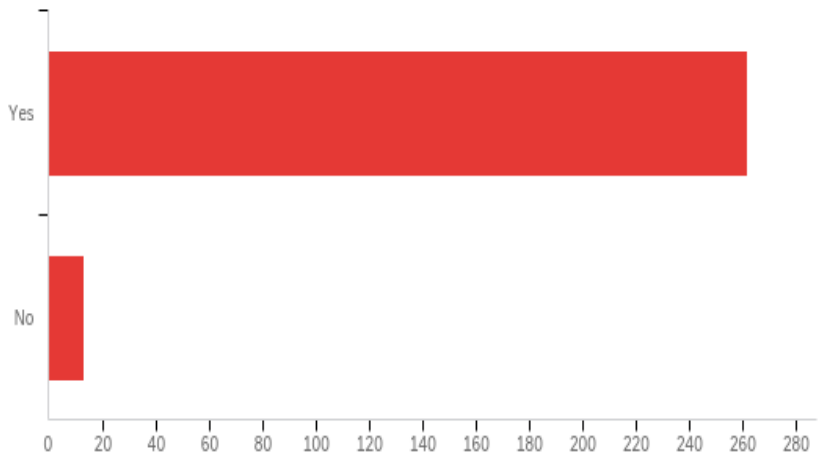


Figure 10: - Participants age

The following table 5 shows, the total number of respondents are 275, from this count 262 answers YES to the first survey question and 13 answered NO so could not proceed further. The total number of respondents is the combination of both people select yes and who select no.

Description	Answer	%	Count
Respondent	Yes	95.27%	262
Respondent	No	4.73%	13
	Total	100%	275

Table 5: - Participant's age

SQ2: - Which age group do you belong to?

Some people are hesitant to disclose their true age. Reluctance frequently translates into a refusal to answer the question or providing an erroneous age, both of which harm data analysis. When an exact age is not necessary for statistical analysis or planning, employ age groups since participants have a greater chance to indicate their right age when they fall inside a group. To keep this in mind, age groups were defined in this survey question.

The following graph shows, the division of the total number of people who select the different age groups from the given six age groups. According to the collected data, 52 and 51 responses are from 18-20 and 21-25 age group respectively which is 25.26% of the total, 59 responses are collected from 26-30 age group people which is 29% of total responses, people from 31-40 age group response less on this survey which is 34 responses and 16% of total numbers. 0nly 7 responses on the survey are done by the people from 41-60 age group which is only 3.45% of total responses. There is no response attempted from the 60+ age group which shows that elderly people are not must interested in online learning or may be in technology or not studying at that age. More responses are done by the age group 26-30, which is the age of the student who pursuing their higher education. Students from 18-30 age are interested in online learning.

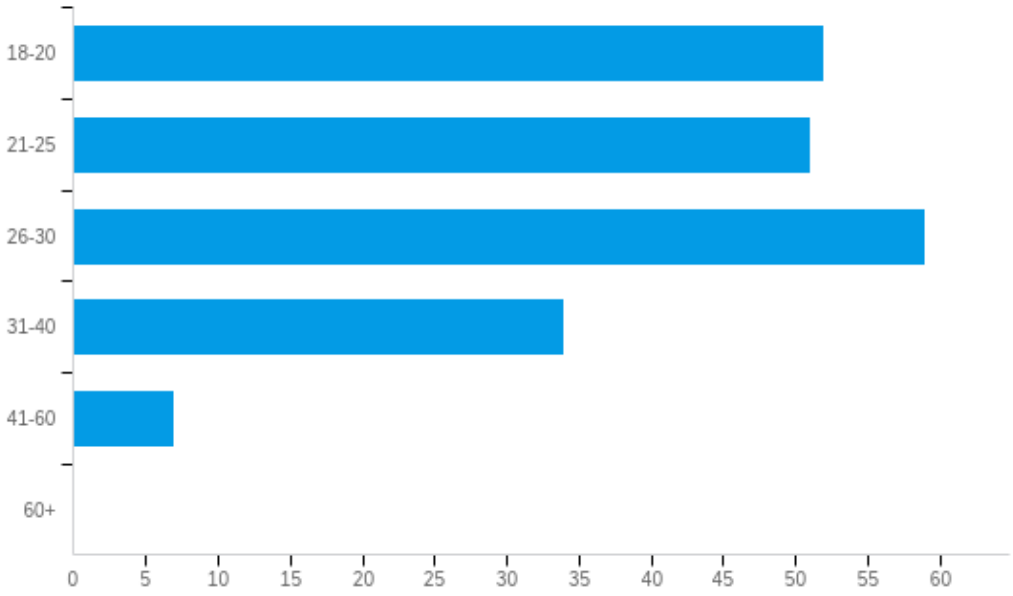


Figure 11: - Participant's age group

Table 6 given below describes the total count and percentage of the participants from different age groups. Six age groups options were given to the survey participants. From these participants had to select one of them. Therefore, this survey question was a single choice question. The highest number is 59, a percentage of 29.06% which is from the 26-30 age group.

#	Answer	%	Count
1	18-20	25.62%	52
2	21-25	25.12%	51
3	26-30	29.06%	59
4	31-40	16.75%	34
5	41-60	3.45%	7
6	60+	0.00%	0
	Total	100%	203

Table 6: - Participant's age group

SQ3: - What is your gender?

Figure 12 and Table 7 present the data recorded during the survey. For this survey question, three options were selected: male, female and prefer not to say. The fourth option was provided to the people convenience who wants to secret their gender and identity.

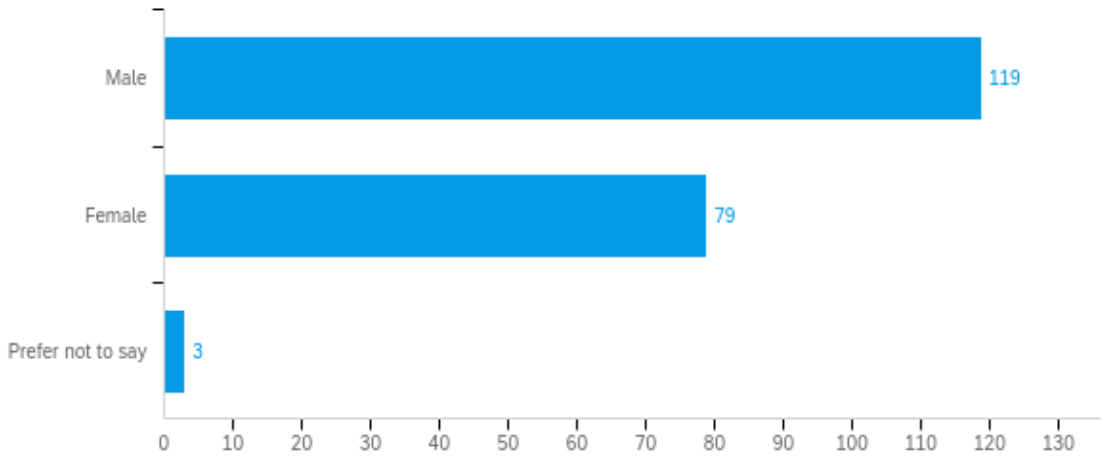


Figure 12: - Participant's gender

From this recorded data, 59.30% male, 39.30% female and 1.49% prefer not to say took part. It shows a huge difference between male and female participants. This data is based on a total of 119 participants, who took part in this survey.

#	Answer	%	Count
1	Male	59.20%	119
2	Female	39.30%	79
4	Prefer not	1.49%	3
	Total	100%	201

Table 7: - Participant's gender

SQ 4: - Are you pursuing or have completed your higher education?

The above survey questions are added to the survey to find out how many people have completed or pursuing their higher education. The graph shown below is describing that 199 participants are pursuing or have completed their higher education and 12 participants answered no to this question.

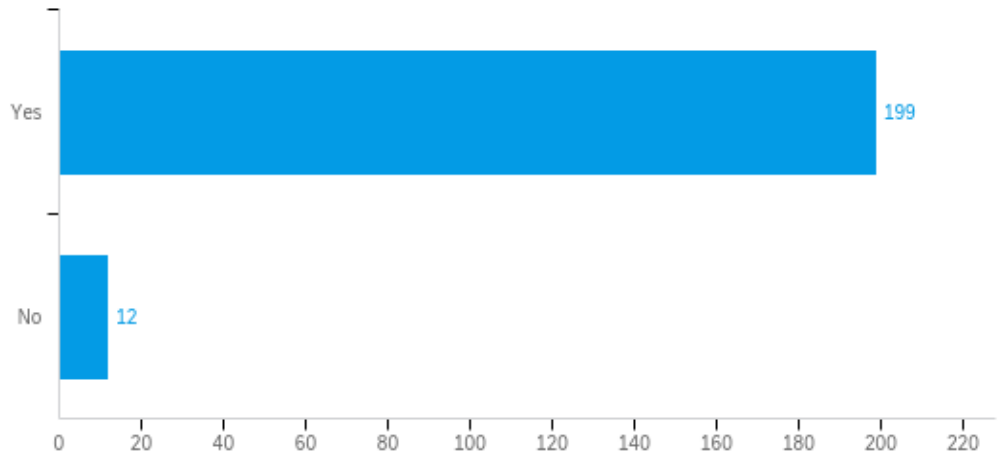


Figure 13: - Describe the participants pursuing or have completed their higher education

The table 8, present total 211 people answered this question. 199 people answered yes which means they are pursuing or have completed their education, which is 94.31% of total responses. 12 people, 5.69% people answered No.

#	Answer	%	Count
1	Yes	94.31%	199
2	No	5.69%	12
	Total	100%	211

Table 8: - Describe the participants pursuing or have completed their higher education

SQ5: Do you have access to devices such as laptops, mobile phones, and tablets, and internet connection for accessing your learning material online?

The following table 9 and pie 14 shows the data of participants who have access to the devices such as laptops, mobile phones, and tablets, and internet connection for accessing your learning material online, with two option Yes or No. So, 96.62% of people answered Yes and 3.38% answered No.

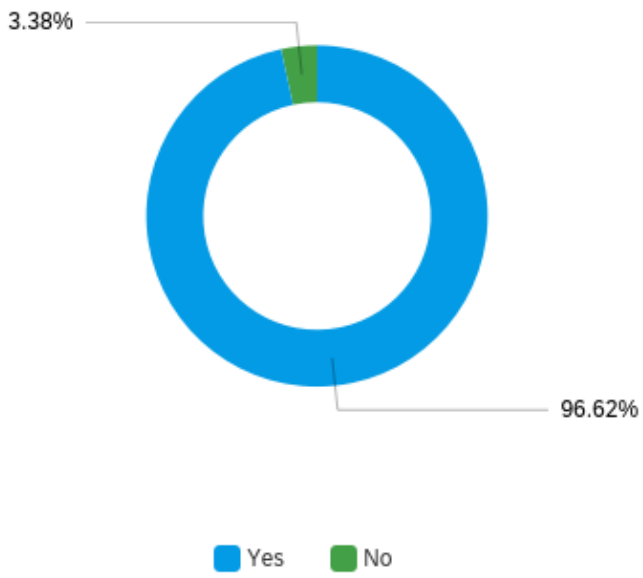


Figure 14: - Access of technology for accessing learning material online

Given table 9 shows, a total of 207 participants respond to this survey question. The participants who select Yes were 200 and the rest of the participants select No.

#	Answer	%	Count
1	Yes	96.62%	200
2	No	3.38%	7
	Total	100%	207

Table 9: - Access of technology for accessing learning material online

SQ 6 How long have you been using devices for accessing your learning material online?

The graph given below describes the data about the period of the people who used devices such as laptops, mobiles, computers etc to access online learning material for their study. The data shows from 195 participants, 64 people are using devices for 1-3 years. 54 are using 0-1 years and 47 are using it for 5 years. Less number of people which is 30 are using it for 3-5 years.

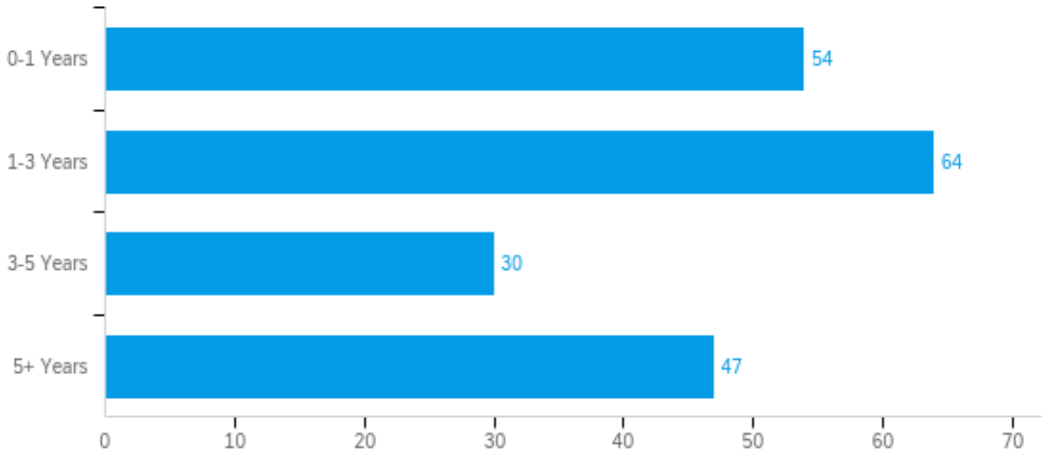


Figure 15: - People using devices for accessing your learning material online

Also, table 10 given below shows the data recorded from the survey. The above question is answered by 195 people. Out of the total numbers, 64 is the highest which is 32.82% of the total. 64 from 1-3 years, people are using devices for accessing online learning material to study. The next highest number is 54 which is 27.69% of the total and 54 people answered that they are using devices from 0-1 years. The lowest figure is 30 people which is only 15.38% of the total.

#	Answer	%	Count
1	0-1 Years	27.69%	54
2	1-3 Years	32.82%	64
3	3-5 Years	15.38%	30
4	5+ Years	24.10%	47
	Total	100%	195

Table 10: - People using devices for accessing your learning material online

SQ 7 How satisfied were you while learning online?

The purpose of this question is to find out, how satisfied people with online learning. The graph and table show, 187 participants answered this question successfully. The recorded data reveals that 106 people are satisfied with online learning which is a positive result for this question. Extremely satisfied people from online learning are 50 only. 8 out of the total are dissatisfied and only 3 are extremely dissatisfied.

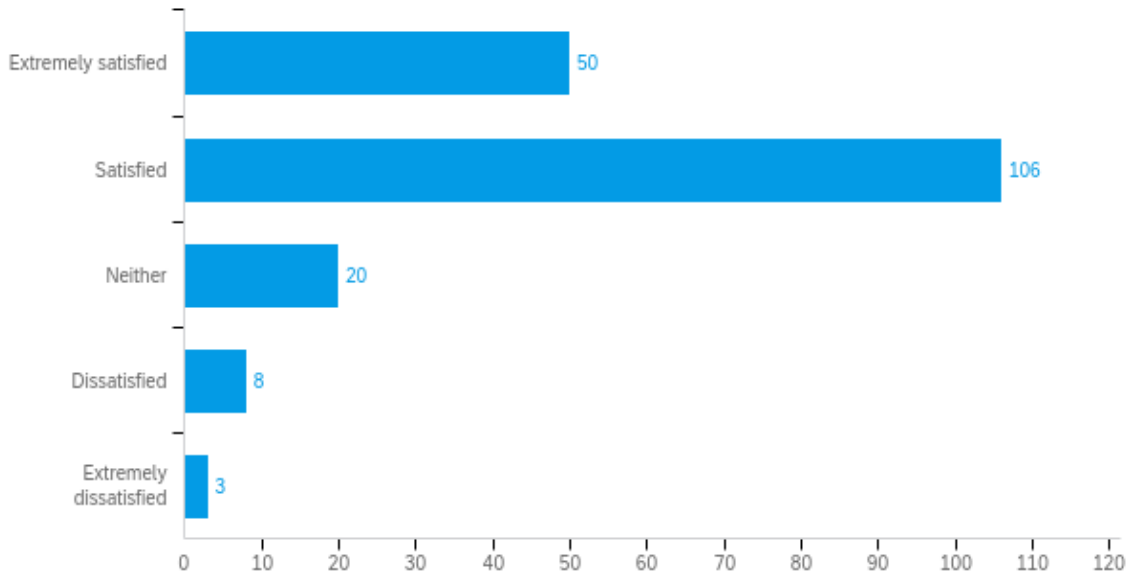


Figure 16: - People satisfaction from online learning

The given table 11 shows answer's options, percentages and the count of participants who answered this question, which is collected from the survey. 106 participants are satisfied and only three are extremely dissatisfied with this learning technology.

#	Answer	%	Count
1	Extremely	26.74%	50
2	Satisfied	56.68%	106
3	Neither	10.70%	20
4	Dissatisfie	4.28%	8
5	Extremely	1.60%	3
	Total	100%	187

Table 11: - People satisfaction from online learning

SQ 8 How do you feel overall about online learning?

The above survey question is linked with SQ 7. This question also gives multiple choices to select. This question aims to find out how students who are studying online, feel about online learning overall. It can be about the institute, teacher, learning material, other students etc. according to the data in the graph below, 187 participants have answered this question and out of total number 105 participants are satisfied with online learning. 48 are extremely satisfied and 2 are dissatisfied. 7 participants have found online learning is useless and 25 select neither so cannot reach a particular decision.

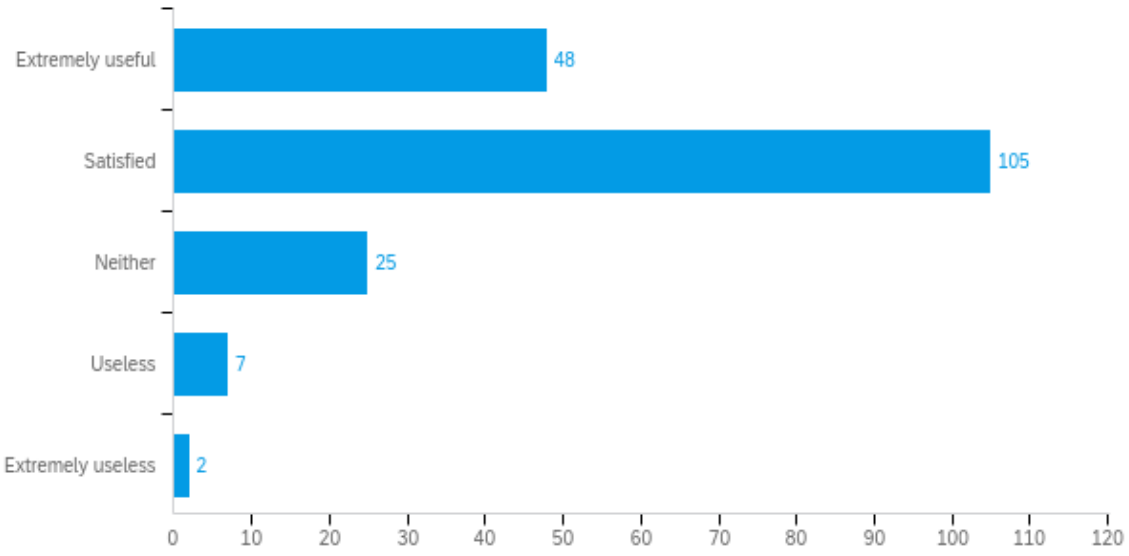


Figure 17: - Participant's overall opinion about online learning

Table 12 as following describes the data related to the overall feeling of students about online learning. Out of 187, 105 select the satisfying option which is 56.15% of total participants. People who select extremely dissatisfied is very less which is only 1.07%.

#	Answer	%	Count
1	Extremely	25.67%	48
2	Satisfied	56.15%	105
3	Neither	13.37%	25
4	Useless	3.74%	7
5	Extremely	1.07%	2
	Total	100%	187

Table 12: - Participant's overall opinion about online learning

SQ 9 On average, how much time do you spend on online learning per day?

This survey question asking to the participants about their average time spending on online learning per day. According to the graph below, 84 people out of 109 are spending 3-6 hours per day on online learning and 76 people are spending 0-2 hours per day while studying online. The same number of people (3) select 9-12 and more than 12 hours per day to study online.

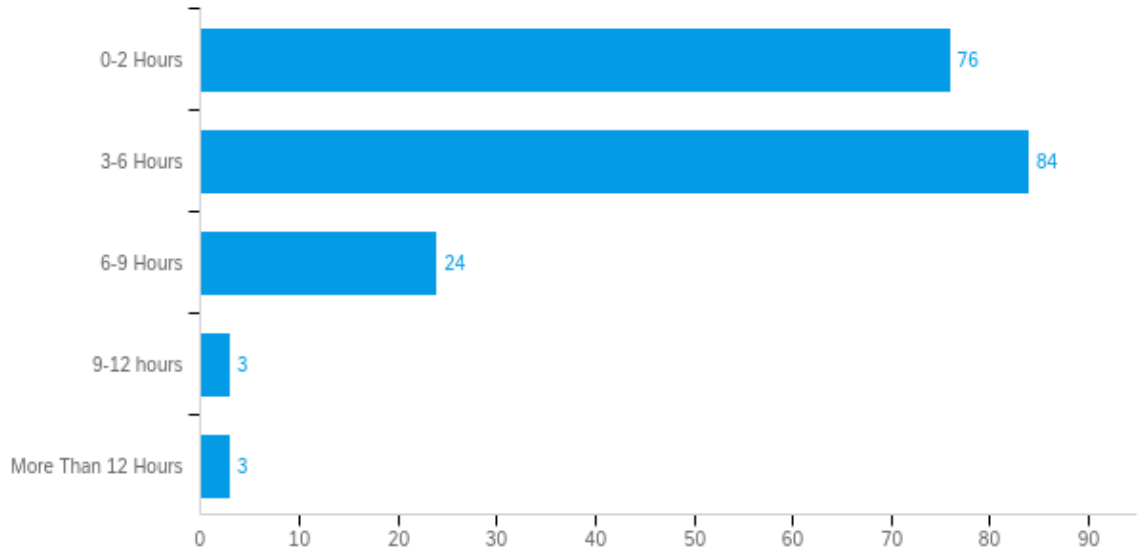


Figure 18: - Average time spent on online learning per day

Based on table 13 below, there is a very minor difference between people who choose 0-2 and 3-6 hours per day to study online. Very few numbers are recorded here who are spending 12 or more hours studying online. 24 participants appeared who spending 6-9 hours per day studying online.

#	Answer	%	Count
1	0-2 Hours	40.00%	76
2	3-6 Hours	44.21%	84
3	6-9 Hours	12.63%	24
4	9-12 hours	1.58%	3
5	More Thar	1.58%	3
	Total	100%	190

Table 13: - Average time spent on online learning per day

SQ 10 Do you think online learning supports your learning requirements?

The researcher's motive behind the survey question, is to determine the information from the participants, is online learning support their learning requirement for example online learning students are getting learning material, they can get their answers, they have sufficient interaction with a teacher or other students etc. the data captured in the graph below, indicates that 154 participants answered yes which means they are in favour of online learning to support their learning requirements. 12 participants were found online learning is not supporting their learning requirements. 31 participants were not sure, is online learning supporting their requirements or not.

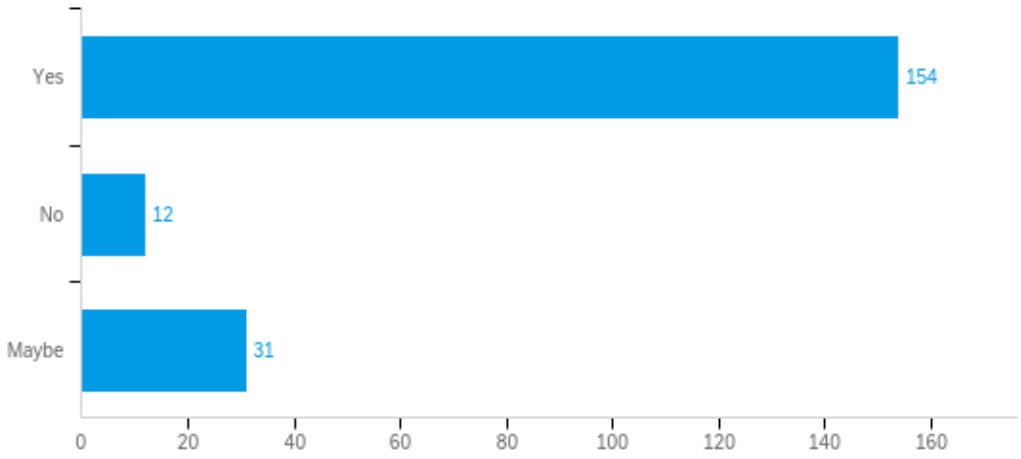


Figure 19: - Is online learning supports your learning requirements?

The following table 14 conveys the results of SQ 10. Total 197 people answered this question, 154(78.17%) are in favour that online learning is supporting learning requirements and 12 (6.09%) are not in the favor of online learning. 31 (15.74%) are not sure about this.

#	Answer	%	Count
1	Yes	78.17%	154
2	No	6.09%	12
3	Maybe	15.74%	31
	Total	100%	197

Table14: - Is online learning supports your learning requirements?

SQ 11 Is online learning helpful in interaction with your instructor or teachers?

According to the previous researches about online learning, indicated student-teacher interaction is affecting online learning. To ascertain this point, this research question was added to the survey questionnaire. The gathered data is shown in graph 20. Out of the combined 198 people, 136 select Yes which indicates that they found better interaction with teachers and 8 candidates found there is no or fewer student-teacher during the online study.

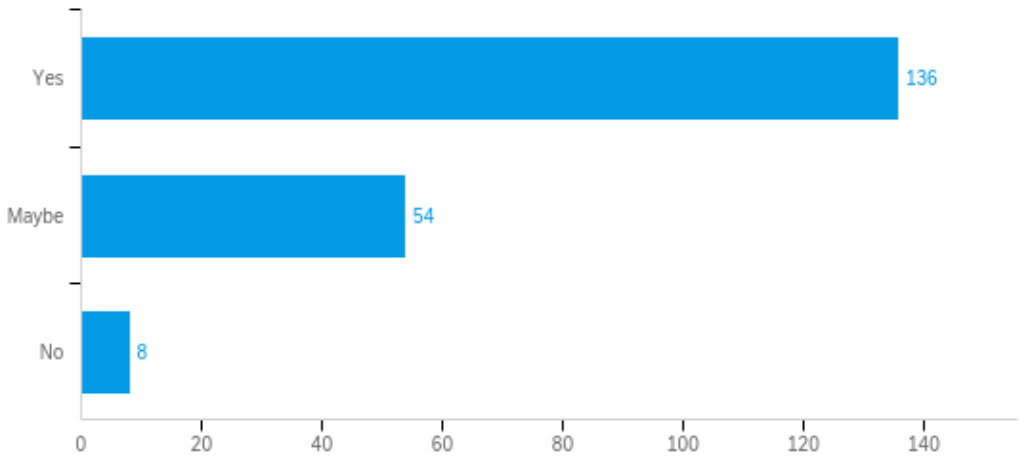


Figure 20: - Online learning helpful in interaction with your instructor or teachers

Table 15 describes the recorded data from SQ 11. Total 198 contestants answered this question. 136 contestants answered yes which is 68.69% of the total numbers. Out of 198, 8 answered no which is 4.04% of the total recorded data.

#	Answer	%	Count
1	Yes	68.69%	136
2	Maybe	27.27%	54
3	No	4.04%	8
	Total	100%	198

Table 15: - online learning helpful in interaction with your instructor or teachers

SQ 12 Is online learning helpful in completing your assessments and evaluations?

Graph 21 reveals that 187 responses are recorded for this question. 108 participants selected the option helpful, so they found learning online helpful to complete their assessments and evaluations. The same number of participants found learning online is useless and extremely useless. On the other hand, 47 candidates disclose that learning online is extremely helpful to complete assessments and evaluations. 25 candidates were chosen neither option which means they are not sure if online learning is helpful or not to complete assessments and evaluations.

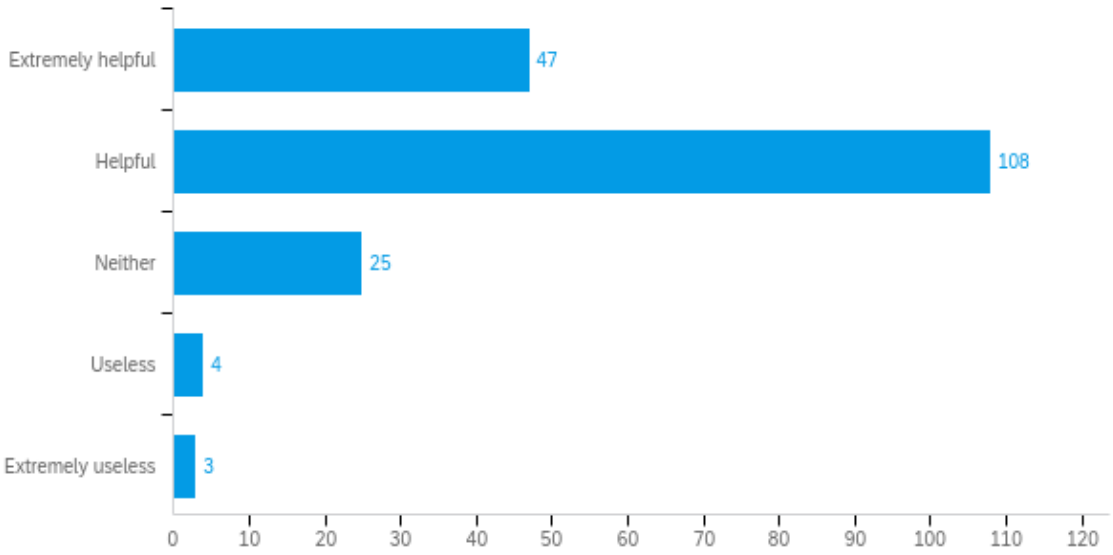


Figure 21: - Online learning helps complete your assessments and evaluations

#	Answer	%	Count
1	Extremely	25.13%	47
2	Helpful	57.75%	108
3	Neither	13.37%	25
4	Useless	2.14%	4
5	Extremely	1.60%	3
	Total	100%	187

Table 16: - Online learning helps complete your assessments and evaluations

SQ 14 Does online learning help in collecting information and conducting research?

The purpose of the survey question is to get information regarding that is online learning helping the students to collect the information and conduct research. From the collected data 193 people answered this question according to their experience. Out of a total number of people, 149 participants found it helpful to collect information and conduct research online. Only 6 select the No option which means they did not think it's helpful to conduct research and collect information while study online. 38 participants were not sure about it.

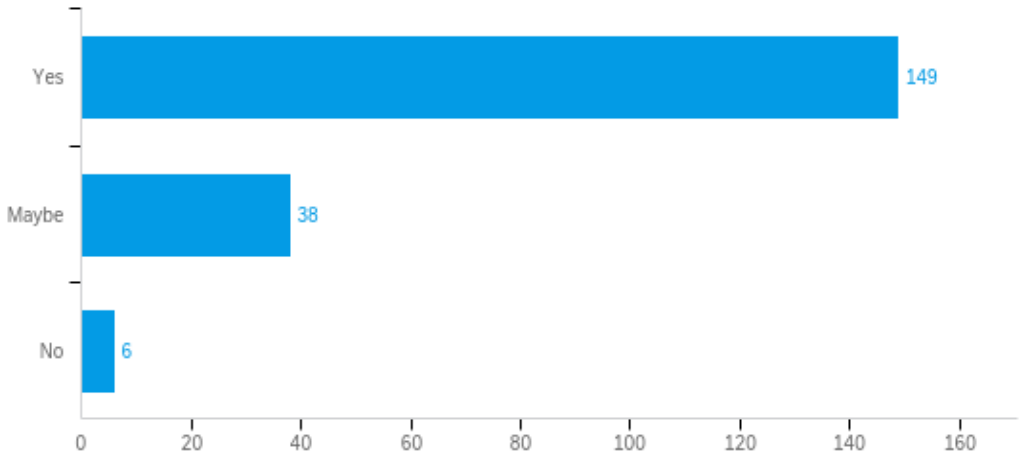


Figure 22: - Online learning help in collecting information and conducting research

Given table 17 describes the information captured from the survey question 14, is that 193 people answered this question. 149 participants select yes which is 77.20% of the total answers. Other 6 participants select No to show their disagreement on the question which is 19.69%. 38 participants cannot decide Yes or No.

#	Answer	%	Count
1	Yes	77.20%	149
2	Maybe	19.69%	38
3	No	3.11%	6
	Total	100%	193

Table 17: - online learning help in collecting information and conducting research

SQ 15 What are the positive impacts of online learning, if any?

This question is asking positive impact of online learning on the participants with multiple choices. There are six options related with the positive impact of online learning and others option is also added if there is any positive impact which is not included but participants know about that. One more option is for those who think there is no positive impact of online learning.

This question is answered by 186 participants, from these 59 are selected better interaction with teachers. Students can easily interact with the teachers. The flexibility of devices option was selected by 28 participants. 11 participants thought there is improved corporation between the teachers. The user-friendly devices option is chosen by 22 participants. The next highest selected option is the accessibility of study material anywhere and anytime, 42 people choose this option. 10 people select others which means there are other positive impacts are as well. Only 2 participants select no positive impact option.

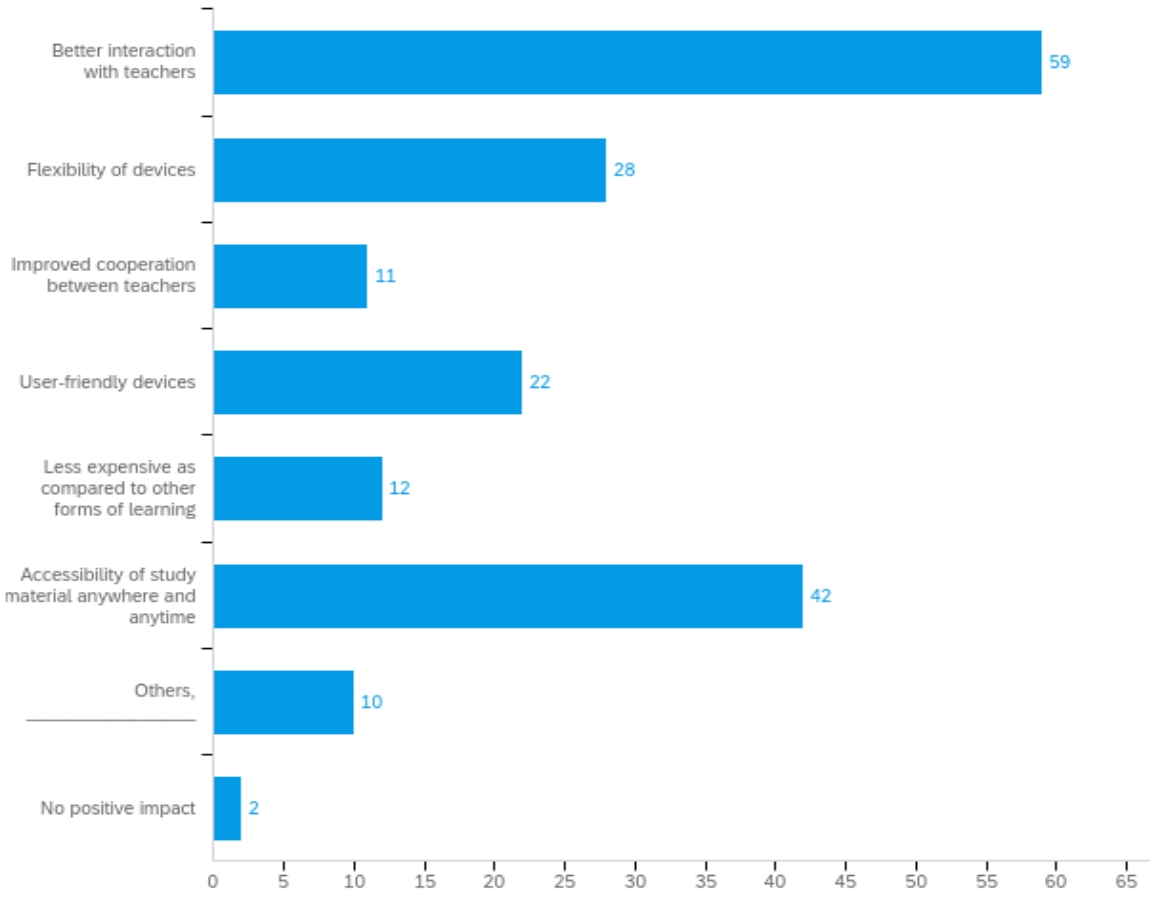


Figure 23: - Positive impacts of online learning

Table 18 demonstrated the SQ 15 options, percentage and count of people who answered this question by choosing one of the options and total of participants. 186 people attended this question, from this 59 select better interaction with teachers which is 31.72% of the total. Students can easily interact with the teachers. The flexibility of devices option selected by 28 participants make 15.05%. 11 participants thought there is improved corporation between the teachers with the help of online learning and its 5.91%. The user-friendly devices option is chosen by 22 (11.83%) participants. The next highest selected option is the accessibility of study material anywhere and anytime, 42 (22.58%) people choose this option. 10 people select others which means there are other positive impacts are as well. Only 2 participants select no positive impact option.

#	Answer	%	Count
1	Better int	31.72%	59
2	Flexibility	15.05%	28
3	Improved	5.91%	11
4	User-frien	11.83%	22
5	Less expe	6.45%	12
6	Accessibil	22.58%	42
7	Others, __	5.38%	10
8	No positiv	1.08%	2
	Total	100%	186

Table 18: - Positive impacts of online learning

SQ 16 What are the negative impacts of online learning, if any?

Survey Question 16 is linked with SQ 15, this question presents few negative impacts of online learning. There are three negative impacts are added by the researcher which is health-related concerns, technical issues and no self-discipline. The next option is others if the participant thinks about others negative impacts. One more option for those who thought there is no negative impact of online learning.

From the collected data, 83 people found online learning is not good for health, so they choose health-related concerns options. For 51 participants technical issues are the negative impact of online learning. There is no self-discipline for the other 28 people by studying online. 8 people could not find any negative impact. There are additional 12 people who found some other negative impact which is not listed in the survey.

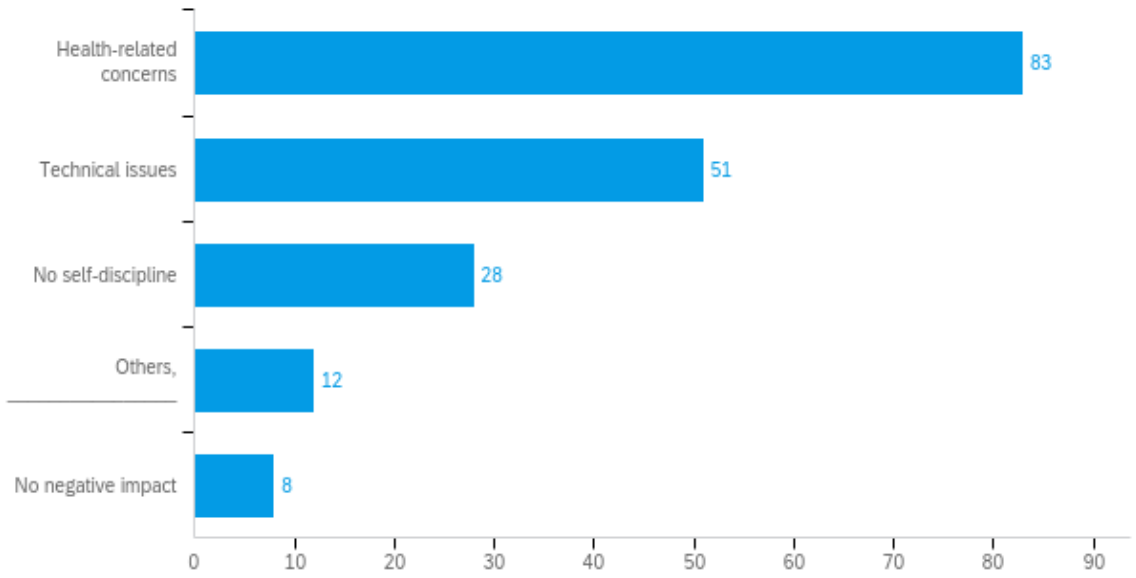


Figure 24: - The negative impacts of online learning

The following table 19 demonstrates the captured data from survey question 16. It shows given options for participants with the total number of participants and percentage of data. 182 participants counted as a total of this question. 83 participants are thinking online learning causing health-related issues that are 45.60% of the total count. Other 51 found technical issues are the negative impact of this technology. No self-discipline is selected by 28 (15.38%) participants. 8 participants, 4.40% notify no negative impact of online learning.

#	Answer	%	Count
1	Health-rel	45.60%	83
2	Technical	28.02%	51
3	No self-di	15.38%	28
5	Others, __	6.59%	12
7	No negati	4.40%	8
	Total	100%	182

Table 19: - The negative impacts of online learning

SQ 17 How would you rate your student performance while studying online?

The above question is added into the survey to find out the view of the participants about their performance as a student while study online. 74 out of 186 participants are rating themselves brilliantly and 71 above average. 35 participants rate themselves average. The same number of people rate their performance as a student below average and poor.

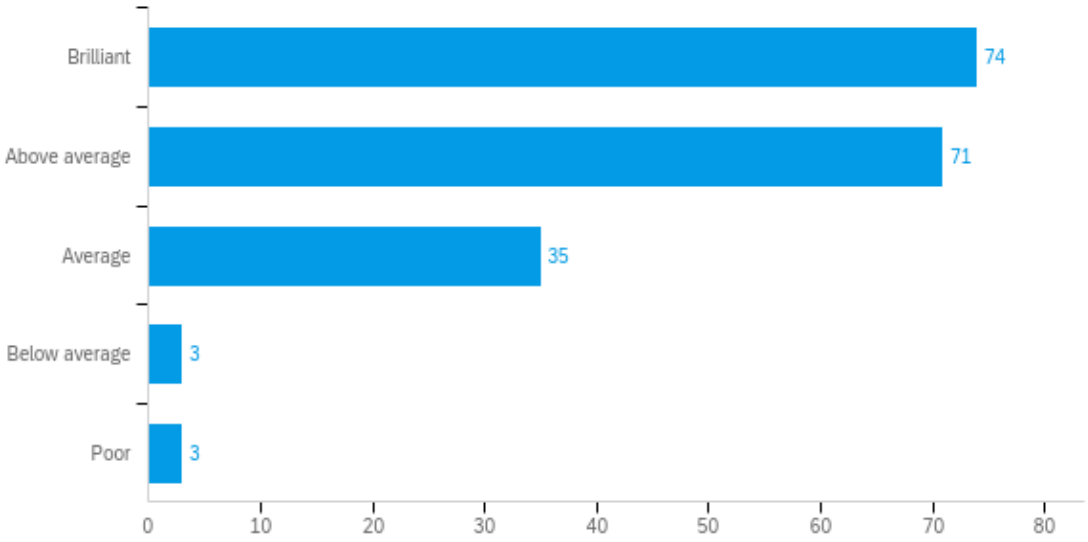


Figure 25: - Student performance

The given table20 below is shown the question's brilliant option, above average, average, below average and poor to rate performance as a student. The brilliant and above-average option is selected by almost several participants which are 39.78% and 38.17% respectively. Also, the same number of people selected below average and poor option to rate their performance which 3 (1.61%). 36 (18.82%) participants rate their student performance while studying online.

#	Answer	%	Count
1	Brilliant	39.78%	74
2	Above ave	38.17%	71
3	Average	18.82%	35
4	Below ave	1.61%	3
5	Poor	1.61%	3
	Total	100%	186

Table 20: - Student performance

SQ 18 Has online learning helped you enhance your achievement?

Given graph shows the data to find out that has online learning helped the student to enhance your achievement? The graph shown below represents the division of the total number of participants who responded to the Survey question by selecting one answer. The total number of respondents who came to the question is 194. Out of 139 respondents, 140, which is 71.65%

of the total, have answered the question Yes, while other remaining 51, which makes up 26.29 % of the total respondents, select No.

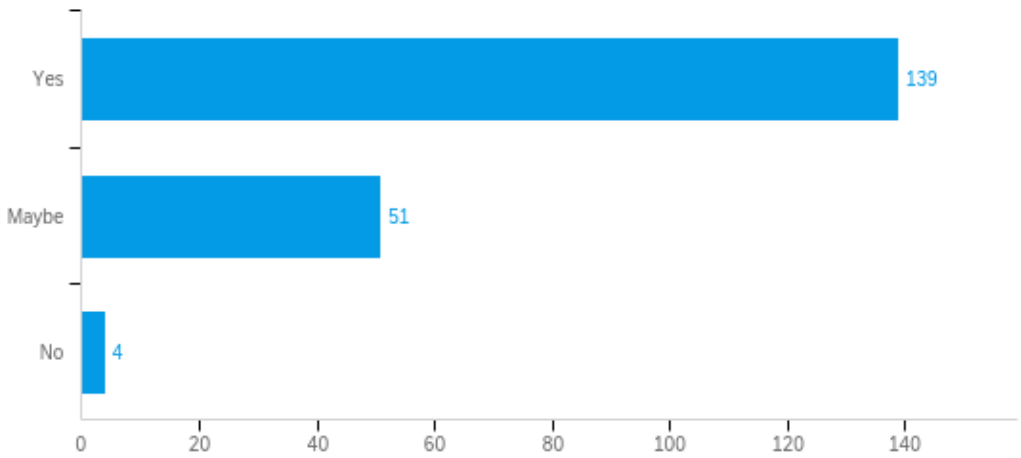


Figure 26: - Online learning helped to enhance your achievement

In the following table 21 shows, 194 total respondents are the combination of people who responded as Yes, No, or Maybe to Online learning helped to enhance your achievement

#	Answer	%	Count
1	Yes	71.65%	139
2	Maybe	26.29%	51
3	No	2.06%	4
	Total	100%	194

Table 21: - Online learning helped to enhance your achievement

SQ 19 Is online learning cheaper than other learning methods?

The graph below illustrates the data recorded from the above survey question. 192 responses are recorded for this question. From these responses, 129 participants state that online learning is cheaper than other learning methods. 46 participants are not confident about this so they select the Maybe option to answer this question. On the other hand, 17 participants state that online learning is not cheaper than other learning methods.

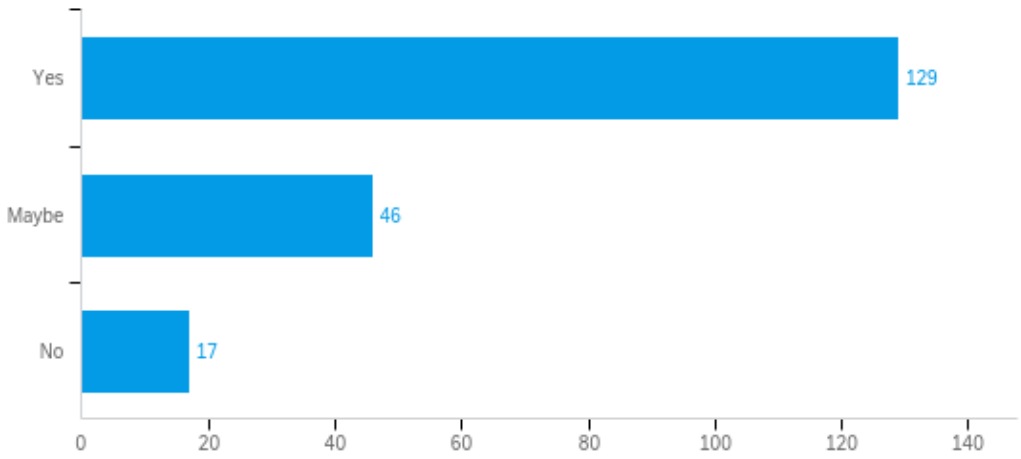


Figure 27: - Online learning cheaper than other learning methods

The following table 21 is also showing the data related to SQ 19. There are three sets of answers Yes, No and Maybe. 192 participants recorded who attend this question, 129 (67.19%) participants are in favour of that online learning is cheaper than other learning methods and only 17(8.85%) are thinking learning is not cheaper than other learning methods. Other 46(23.96%) are neutral to answer this question.

#	Answer	%	Count
1	Yes	67.19%	129
2	Maybe	23.96%	46
3	No	8.85%	17
	Total	100%	192

Table 22: - Online learning cheaper than other learning methods

SQ 20 Do you enjoy online learning?

The graph as shown below is presenting the data about participants responses. 193 responses are collected here. 142 participants answer yes which means they are enjoying online learning and 14 stated that they are not enjoying online learning. 37 are neutral to answer this question.

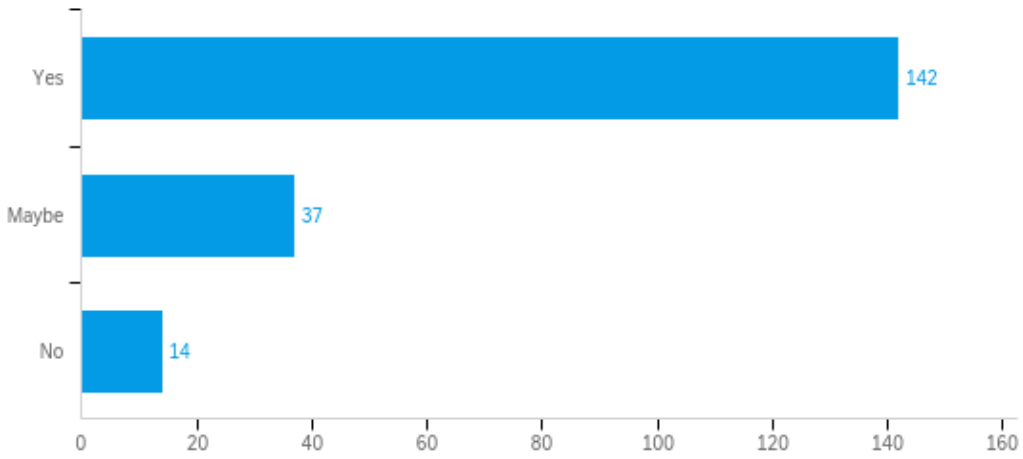


Figure 28: - Do you enjoy online learning?

Table 23 presents the information about SQ 12. 193 participants attend this question and 142 is answer Yes so, they are in favour of that studying online is enjoyable. It is 73.58% of total responses. 14 people believe that learning online is not enjoyable.

#	Answer	%	Count
1	Yes	73.58%	142
2	Maybe	19.17%	37
3	No	7.25%	14
	Total	100%	193

Table 23: - Do you enjoy online learning?

SQ 21 Will you consider online learning for others in the future?

The graph shown below represents the division of the total number of participants who responded to the Survey question by selecting one answer. The total number of respondents who came to the question is 195. Out of 195 respondents, 140, which is 71.79% of the total, have answered the question Yes, while other remaining 38, which makes up 19.49% of the total respondents, select No.

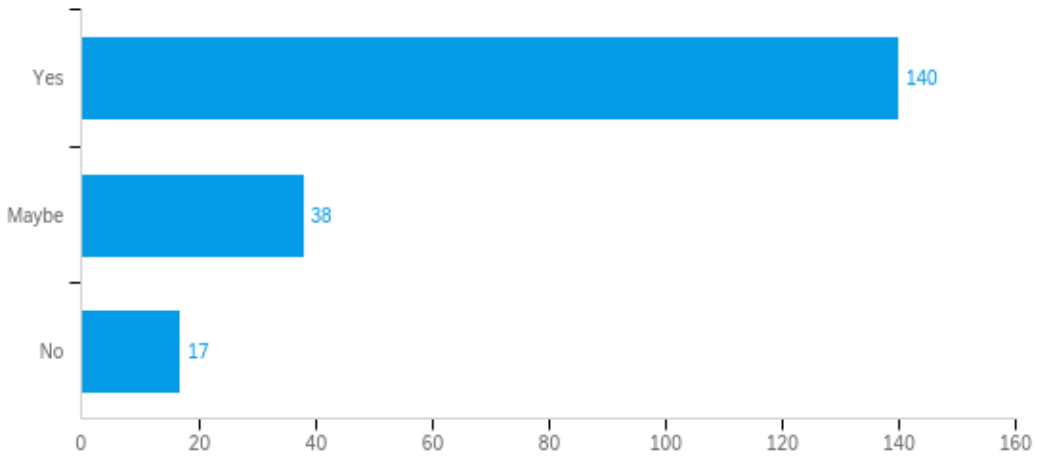


Figure 29: - consider online learning for others in the future

Below table 24 is the combination of people who responded Yes, No and Maybe to respond to SQ 21.

#	Answer	%	Count
1	Yes	71.79%	140
2	Maybe	19.49%	38
3	No	8.72%	17
	Total	100%	195

Table 24: - consider online learning for others in the future

SQ 22 Do you prefer mobile learning over other methods of learning?

The graph given below represents the division of the total number of participants who have responded to the question by selecting one answer. The total number of respondents who select Yes is 129 out of 199 which is 64.82% of the total responses. Out of 199 respondents, 42, which is 21.11% of the total, have answered maybe to this question. While other remaining 28, which makes up 14.07% of the total respondents.

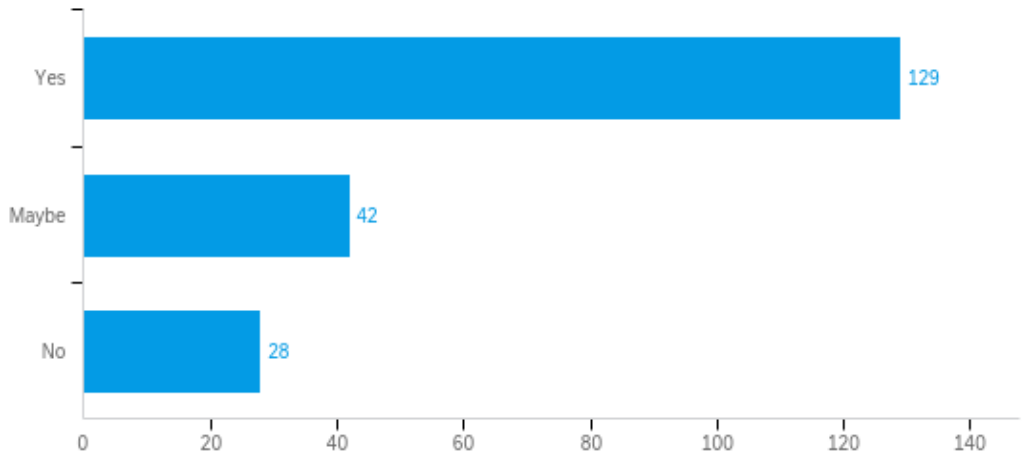


Figure 30: - prefer mobile learning over other methods of learning

The following table 25 shows, the total number of the respondent is the combination of people who responded as Yes, No, or Maybe to prefer mobile learning over other methods of learning.

#	Answer	%	Count
1	Yes	64.82%	129
2	Maybe	21.11%	42
3	No	14.07%	28
	Total	100%	199

Table 25: - prefer mobile learning over other methods of learning

Relationship between Hypothesis and survey questions, finding from data analysis

H1: Age has a positive impact on behavioural intention to use online learning.

There is a relationship between age and behavioural intention to use online learning. According to survey questions 1and 2 findings, a particular age group is appearing as the highest number of times which is the 26-30 age group. This age group is higher education students who choose online learning for their higher education because of multiple reasons. This data from the survey also proofs that young people have more experience with technology as compare to the older age group. The older age group preferred the traditional learning method instead of online learning (Fleming, Becker, & Newton, 2017).

H2: Gender has a positive impact on behavioural intention to use online learning.

Several types of research examined the influence of the population background of learners on online learning results. Various research has studied the effect on online learning outcomes of gender and education. Online learning results can be quite predictable at the educational levels, whereas the impact of gender on online learning results is debatable (Yu, 2021). Women might acquire greater learning results than men since they were more persistent and determined than men. Having higher self-regulation than men, females also had far more positive results in online learning than men (Tarhini, Hone, & Liu, 2014). According to finding through an online survey, more male participants take part in the survey. There is a relationship between gender and behavioural intention to use online learning. According to survey question 3 findings, males are appearing as the highest number of times.

H3: Perceived usefulness has a positive impact on behavioural intention to use online learning

There is a relationship between Perceived usefulness and behavioural intention. The research explores the impacts on two TAM components of two external factors: Perceived usefulness and Perceived Ease of Use. The research assesses also the impact of behavioural intent to utilize online learning on perceived ease of use and perceived use (Khan & Zainuddin, 2020). According to Survey questions 4,5,6, 8,9, 12,13,14 and 19 collected data, H3 Perceived usefulness has a positive impact on behavioural intention to use online learning.

H4: Experience of technology has a positive impact on behavioural intention to use online learning. Online learning means electronic learning. In simple terms, the online learning concepts uses multiple resources of information & communication technologies (ICT). ICT includes several communication technologies that provide access to information (Gupta & Gupta, 2020). With the experience of technology, students have a positive impact on behavioural intention to use online learning. H4 has a relationship with survey questions 5, 6, 9, 15, 16 and 18. As recorded data from this SQ, Experience of technology has a positive impact on behavioural intention to use online.

H5: Perceived Ease of Use has a positive impact on behavioural intention to use online learning.

Davis described this as "to what extent a person feels that it would be free from effort utilizing a given system" (Davis 1989). The obstacles have vanquished if technology is straightforward to use. Nobody has a good attitude towards it if it isn't easy to use and the interface is difficult (Shaqrah, 2015). Hypotheses 5 represents that perceived ease of use has positive impacts on behavioural intention to use. H5 predicts that online learning perceived ease of use has a positive impact on behavioural intention to use online learning for study. Survey Questions 6, 9, 12, 13 and 14 responses show that Perceived Ease of Use has a positive impact on behavioural intention to use online learning.

H6: Willingness to do has a positive impact on behavioural intention to use online learning.

Behavioural Willingness represents the openness of an individual to change, that is, his/her readiness to conduct specific behaviours under settings favourable to such (Pomery, Gibbons, & Bergan, 2009). The data analysis based on survey questions 4, 9, 15, 16 and 18 suggest that Willingness to do has a positive impact on behavioural intention to use online learning.

H7: Personal motivation had a positive impact on behavioural intention to use online learning.

The definition of motivation concerning psychological principles, motivation, the elements directing and energizing people's and other bodies' actions. Motivation is extremely significant since it is the key element of action that impacts the everyday emotions of a person directly and impacts long-term ambitions and goals. It might have a positive or negative impact on human behaviour due to a lack of motivation (Bui, 2019). According to the data analysis based on the survey questions 8,10, 14, 15, 16, 17,18 and 20, it is visible that there is a relationship between Personal motivation and behavioural intention. So, it shows that Personal motivation had a positive impact on behavioural intention to use online learning.

H8: Satisfaction had a positive impact on behavioural intention to use the online method of learning.

Perceived self-efficacy is an important aspect influencing learners' satisfaction with the online learning system. Both perceived usefulness and perceived satisfaction influence learners'

behavioural intention to utilize the online learning system. Furthermore, the effectiveness of online learning may be influenced by instructional media, collaborative learning activities, and the quality of the online learning system (Liaw, 2008). The data analysis based on the survey questions 7, 8, 10,14,15,16 17, 18, 20, 21 and 22 shows the relationship between satisfaction and behavioural intention.

H9: Perceived Usefulness had a positive impact on Perceived Ease of Use.

Fred Davis described this as "the degree to which a person feels that his/her work performance may be improved utilizing a certain system." It implies whether someone sees it as valuable to what they want to achieve (Mailizar, Burg, & Maulina, 2021). According to data analysis based on the survey questions 5, 8, 12, 13 and 14, Perceived Usefulness had a positive impact on Perceived Ease of Use

H10: Perceived ease of Use had a positive impact on Perceived Usefulness.

Davis described this as "to what extent a person feels that it would be free from effort utilizing a given system" (Davis 1989). The obstacles have vanquished if technology is straightforward to use. Nobody has a good attitude towards it if it isn't easy to use and the interface is difficult (Shaqrah, 2015). Data analysis results gathered from survey questions 8, 12, 13 and 14, describe that Perceived ease of Use had a positive impact on Perceived Usefulness.

H11: Behavioural intention to use online learning methods has a positive impact on actual Use.

Hypotheses 11 shows the relationship between behavioural intention to use has positive impacts on actual system use. H11 forecast that the behavioural intention to use online learning has a positive impact on the actual system to use online learning methods. Data analysis based on the survey questions 8, 12,13,14,15,16,18 and 19, presents the relationship between these. This shows Behavioural intention to use online learning methods has a positive impact on actual Use.

4.1 Summary of Data Analysis

This chapter aims to discover the different factors of online learning which has an impact on the student outcomes while studying online, by getting the views of people through the online survey and after analysing the recorded data. Initially, the answers to the objective questions are compiled and represented on graphs and pie charts. Following that, the descriptive questions are analyzed, cleaned, and plotted on graphs. By analysing the data from the survey, it can be seen the majority of the participants are favouring online learning. Based on the data analysis better interaction with teachers, accessibility of study material anywhere and anytime and flexibility of devices are the most selected advantages of online learning in the survey. On the other hand, health-related issues and technical issues are the most chosen disadvantage of online learning in the survey. The second part of this chapter is Relationship between Hypothesis and survey questions, finding from data analysis. All the eleven hypotheses are related to the research question and survey question.

5. Discussion

5.1 Introduction

The objective of the discussion is to grasp and explain the relevance of the results about what has already been understood about the investigation problem and, after taking account of the findings, to convey any new knowledge or insight into the situation (Bavdekar, 2016). Due to the development of the entire educational arena, the area of online learning developed. The research prior outlined the necessity for online learning, the evolution of online learning and the direction it has followed. During the literature review and the research carried on as part of this report, it was seen that there was no structured presentation of the factors of online learning which influence the learning results of students by existing research, leading to the absence of a screen to compare existing learning modes.

A quantitative analysis was used in the preceding section to find the significance of the findings. In this part, the researchers discuss the significance of the findings (literature and survey data). The purpose of the part of the discussion was to share an understanding of the results by the researcher and what the prior knowledge and comprehension of the study issue and new ideas have been gained

5.2 The relationship between Literatures and Research Questions

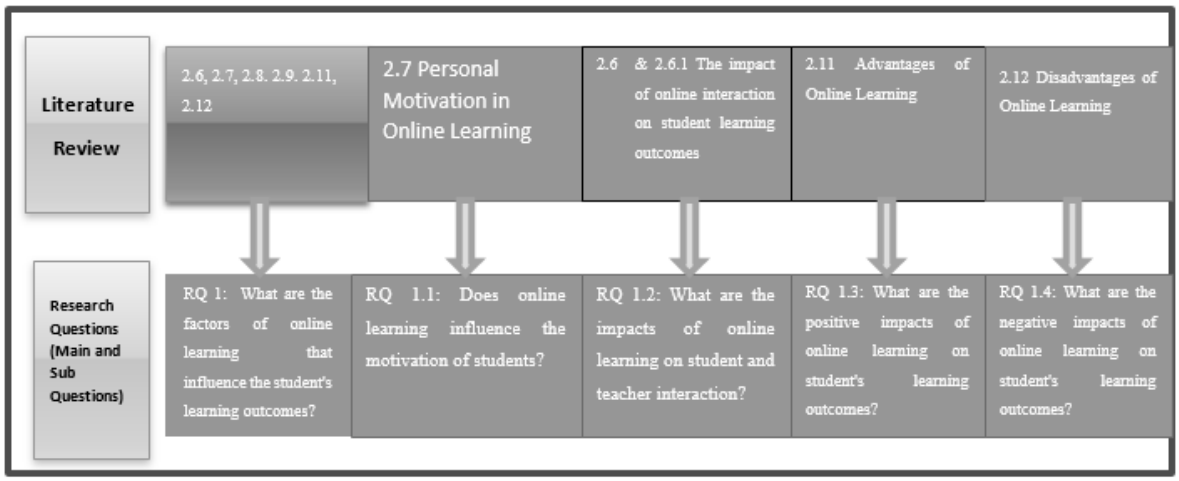


Figure 31: - The link between Literatures and Research Main and Sub Questions

The above figure illustrates the connection between research questions and the literature review. The first column of the above figure presents the literature review from the literature map. The second column shows the main research question and sub-questions.

The following subsections are presenting the link between the research question and literature. The purpose of the next sub-section is to define the function of literature in creating the hypothesis. The literature and research questions and sub-questions are illustrated in the figure

5.2.1 The impact of online interaction on student learning outcomes

Learning and teaching require numerous sorts of interaction between diverse actors. An interaction is described as "a reciprocal action or impact of two objects, two people." There are several sorts of contact between professors and students in online learning. This leads to successful learning after graduation. The key to this is for instructors' social presence to emerge. This implies that they work on the web platform to project themselves and their teaching approaches and knowledge. There are four main interactions in online learning such as The student-teacher interaction, Student-student interaction, student-technology interaction, student-content interaction (Salmi, 2013). This part of the literature review is linked with the main research question RQ1 and survey question 2,3,4,7,10,11,12. Findings show that there is a huge impact of online interaction on students learning outcomes. In literature review chapter, section 2.6,2.7,2.8.2.9,2.11,212 described it in detail.

5.2.2 The student-teacher interaction

Typical student-teacher interaction in online learning includes (1) asynchronous or synchronous student-teacher talks, (2) collaborative student-teacher interactions, and (3) teaching-on-one teachers on course materials, such as class notes, housework tasks, notices, etc. The idea is to efficiently arrange these interactions so that students may engage and study the courses and the teacher has abundant possibilities for interacting with students, stimulating their critical thinking, making their learning easier and achieving the goals of the course (Alhih, Ossiannilsson, & Berigel, 2017). The student-teacher interaction is linked with RQ1.2 and SQ 11,12,13,14. According to analysis, student-teacher interaction is very important to achieve desire goals. In the literature review chapter, sections 2.6 and 2.6.1 described it in detail.

5.2.3 Personal Motivation in Online Learning

Motivation is one of the important aspects affecting the success and performance of learners during the online learning process, which is why teachers and researchers are heavily involved. Researchers and educators have a long-standing interest in motivating learners, as they are strongly linked to accomplishment and desired results. Motivation is the willingness of students to participate in the learning process. According to previous researches, the student will not work, even if they are prepared with the most remarkable capabilities and a solid drive, for the tough task of online learning. Motivation is the initial prerequisite for a learning activity and the motor that drives the process (Meşe & Sevilen, 2021). RQ 1.1 is related to the personal motivational influence of online learning and it is also added in the survey by SQ 7,8,10,20. This report indicates that online influences student motivation. In the literature review chapter, section 2.7 described it in detail.

5.2.4 Advantages of Online Learning

Online learning provides teachers with an effective technique of teaching pupils. Another advantage of online learning is that students may take classes from anywhere they want. Online learning also has the advantage of cutting financial expenditures. Compared to physical learning, online education is far cheaper. Since online classes may be attended from home or the right place, students are less likely to miss lectures. The online learning system may be tailored in various ways with its range of options and resources. It is the finest technique to create a flawless student-friendly learning environment (Gautam, 2020). In the literature review chapter, section 2.11 described a few advantages of online learning in detail. To highlight RQ 1.3 in more detail and collect more information and people views this question is also added to the survey. Most people in the survey according to the analysis support online learning because of better interaction with teachers and its accessibility of study material anytime, anywhere.

5.2.5 Disadvantages of Online Learning

For some students, the fight to concentrate on the computer for extended durations is one of the greatest problems of online learning. There is also a larger opportunity for pupils to get side-tracked easily through social media or elsewhere through online learning. Internet connectivity is another major problem with online education. There might be a loss of continuity in teaching and learning without a regular internet connection for students or

teachers. The educational process is damaging. Students may learn a great deal from being around their classmates. However, physical contacts between students and lecturers are rare in an online class. Often this leads to the students becoming isolated. Teachers have a very fundamental technological grasp. Sometimes the information and technologies essential for conducting online classes are not even available (Arkorful, 2014). In the literature review chapter, section 2.12 described few disadvantages of online learning as well in detail. To highlight RQ 1.4 in more detail and collect more information and people views this question is also added to the survey. Most people in the survey according to the analysis do not support online learning because of health-related concerns and technical issues.

5.3 Summary

In a summary, it can be seen that the online learning factors influence the student's learning outcomes. These factors are the combination of online interactions which are student-teacher, student-student, student-technology and student-content, student satisfaction in online learning, personal motivation in online learning, advantages and disadvantages of online learning. These all factors are influences student's learning outcomes. Data based on the online survey, also show has all these factors have an impact on students outcomes. The survey questions are also based on the literature and research questions to find out the factors of online learning and its influence.

According to data analysis based on the online survey, the majority of the people are in the favor of online learning and researcher got positive results. From the data analysis, it can be seen online learning has a positive impact on the students learning outcomes. It helps students to achieve their desire goal by providing study material.

6. Conclusion

During this research, significant progress has been made in the domain of online learning. Online learning is different from face-to-face learning, and students need to think about goals, needs, and desires before committing themselves to it. They will need to consider their available resources, the level of comfort in the Use of technology, and the equipment at their disposal. All know all about technology and internet connectivity these days. There are some factors of online learning which may affect the student's learning outcome. All the factors are discussed in the literature review and throughout the research. These factors are student motivation, student satisfaction, student's interaction (with teachers, other students and technology), online learning methods, learning designs, advantages and disadvantages of online learning. If the students will utilise all these factors in a good way and concentrate on their study, they can get the desire results. While analysing the gathered data from the online survey, it's shown that online learning has a positive impact on student's learning outcomes. Throughout the lives of students and working people, online education has had a positive impact. While online learning has many challenges, such as lack of input from students and lack of enough technology for successful online learning, these limitations can be overcome by updating e-learning systems and using online discussion forums and modern web-based software. In conclusion, online learning supports students, tutors, and the institution by offering various courses. It would also suggest that online learning be carried out at all learning institutions and that studies be carried out on how to enhance this learning process.

6.1 Contribution

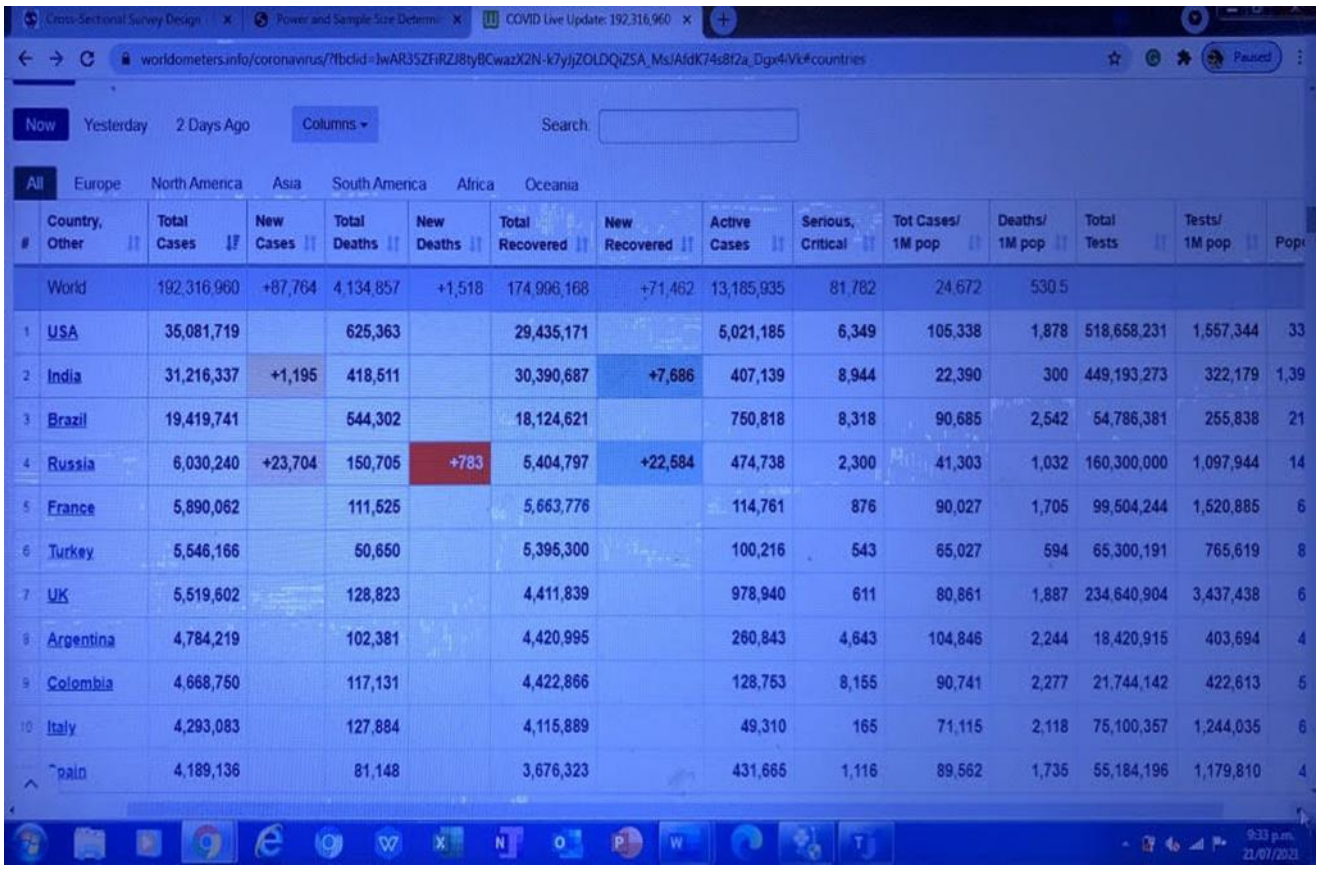
This research indicates that Online learning is an ideal opportunity for students to extend their educational options and remain successful in the ever-expanding field of education. Students entering higher education by online coursework must be self-motivated, independent, and responsible learners. Overall, online learning encourages learning to take place in a community. This is not constrained by time or place. Online learning has the potential to disassemble obstacles that have been created by poverty, place, disability, and other influences.

6.2 Limitations of research

While doing this research, certain limitations have been occurred and need to address here. The limitation of this research is related to the online survey. One of the most serious problems for

this research endeavour was a lack of time for data collection. Because this study relied on an online survey to obtain data, a four-week time would be insufficient to obtain reliable results from a larger audience. For a greater than four-week effect, the research report and researcher must finish the research report within the time frame specified. If the four-week duration is extended, it could affect the data analysis part. As mentioned in the timeline, the researcher got only four weeks to circulate the survey in six months semester. If the time extended, then the researcher could not have much time to analyse the data collected from the survey and complete the report. According to the timeline, there was only four-week can to be given to the survey responses. Due to time constraints, the researcher was unable to collect enough replies to be statistically significant. Consequently, the researcher's methods for assessing the small sample size were restricted.

There was a reason for short responses may be the pandemic situation due to COVID-19 worldwide. According to Worldmeter.info, (2021) figure, 32 shows the worldwide coronavirus cases and deaths due to this virus.



#	Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	New Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Deaths/ 1M pop	Total Tests	Tests/ 1M pop	Pop
	World	192,316,960	+87,764	4,134,857	+1,518	174,996,168	+71,462	13,185,935	81,782	24,672	530.5			
1	USA	35,081,719		625,363		29,435,171		5,021,185	6,349	105,338	1,878	518,658,231	1,557,344	33
2	India	31,216,337	+1,195	418,511		30,390,687	+7,686	407,139	8,944	22,390	300	449,193,273	322,179	1,39
3	Brazil	19,419,741		544,302		18,124,621		750,818	8,318	90,685	2,542	54,786,381	255,838	21
4	Russia	6,030,240	+23,704	150,705	+783	5,404,797	+22,584	474,738	2,300	41,303	1,032	160,300,000	1,097,944	14
5	France	5,890,062		111,525		5,663,776		114,761	876	90,027	1,705	99,504,244	1,520,885	6
6	Turkey	5,546,166		50,650		5,395,300		100,216	543	65,027	594	65,300,191	765,619	8
7	UK	5,519,602		128,823		4,411,839		978,940	611	80,861	1,887	234,640,904	3,437,438	6
8	Argentina	4,784,219		102,381		4,420,995		260,843	4,643	104,846	2,244	18,420,915	403,694	4
9	Colombia	4,668,750		117,131		4,422,866		128,753	8,155	90,741	2,277	21,744,142	422,613	5
10	Italy	4,293,083		127,884		4,115,889		49,310	165	71,115	2,118	75,100,357	1,244,035	6
	Spain	4,189,136		81,148		3,676,323		431,665	1,116	89,562	1,735	55,184,196	1,179,810	4

Figure 32: - Coronavirus cases and deaths Worldmeter.info, (2021).

According to World Health Organization (WHO) recent report, 176,531,710 confirmed cases of the deadly virus are reported, and 3,826,181 deaths are recorded worldwide. In the last year 2020 WHO declared a worldwide pandemic due to coronavirus (WHO, 2021). Figure 33 shows the data from the WHO report which includes new cases, confirmed cases and deaths in the pandemic.

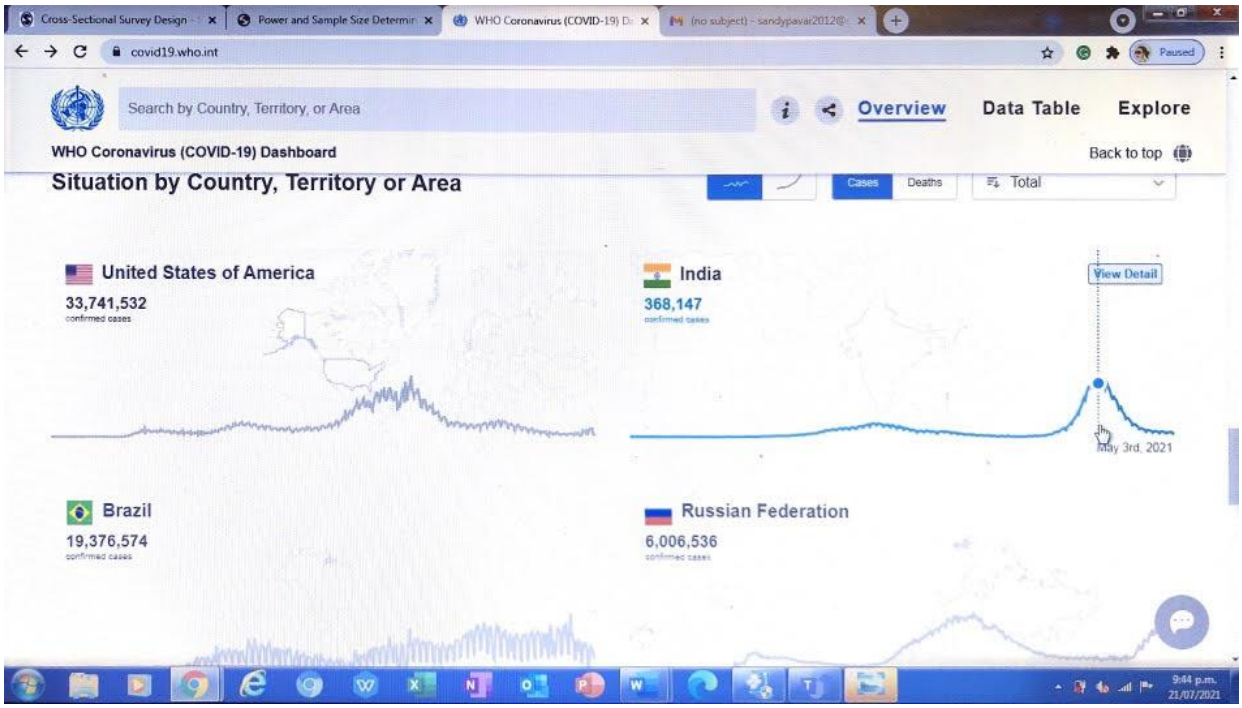


Figure 33: - WHO latest report on corona cases (WHO, 2021).

Worldwide people are very scared and fighting with the different situations in their daily lives. This pandemic affects them health-wise, mentally and financially. So, people did not have must interest in participating in any survey that they are getting on their social media account. Fewer people respond to the survey. Inadequate to follow trends, Unfair results, Unexpected Reactions and Distinctions in Interpretation are other limitations of this research related to the survey. Covid-19 pandemic gives a boost to online learning but for this research, the researcher found it very difficult to get the survey responses.

6.3 Further research

Based on the findings of this research, concerns have been expressed about plagiarism, cheating, the need for cutting-edge technology, and the lack of an acceptable monitoring system and an effective help structure. It is critical to creating a complete framework for the joint deployment of online learning. While study online, there is a high chance of plagiarism and

cheating have occurred. Teachers physical cannot monitor the student while their exams or assessments, they are monitoring them through the screen so it's hard to say that the student is not cheating while examinations or assessments. There should be more work related to this concern how institutes are preventing cheating, plagiarism while studying online and what are methods is been used.

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8. Appendix

A1: Ethics Forms

Wintec WAIKATO INSTITUTE OF TECHNOLOGY Te Kuratini o Waikato	Research and Postgraduate Office (RPGO) Human Ethics in Research Group (HERG)

LOW-RISK HUMAN ETHICS IN RESEARCH APPLICATION FORM

Please refer to the Ethics Guidelines prior to completing this application.

The RPGO is located at the City Campus, D-Block (Offices D2.22 – D2.24), e-mail research@wintec.ac.nz or phone Megan Allardice on Ext. 3582 for more information.

Please see the last page of this document for detailed instructions for completing this form.

1.0 PROJECT TITLE	

	Online learning factors that influence the student's learning outcomes

2.0 RESEARCHER(S)		
2.1	Primary researcher's name	Sandeep Kaur
2.2	School//Centre/Unit	Centre of Business and Information Technology
2.3	Contact Details (Telephone and E-mail)	Mobile Number: 0220876255 E-mail: sankau02@student.wintec.ac.nz
2.4	Is this application a:	☒ Student Application ☐ Staff Application
2.5	If this is a student application, please provide the Module code here	INFO901
2.6	Is this project a staff application that utilizes work partially or wholly undertaken by students who are not participants (e.g. data collection undertaken by a researcher's class)?	No
2.7	If so, please clearly describe what the role of these students is to be in this research, what the work will be used for explicitly (including any issues regarding authorship of research outputs such as journal articles), and what steps have been taken to ensure students are aware of this.	Not applicable
2.8	Name of other Researcher(s) and positions. (If this is a student application please provide the name(s) of the project supervisor(s) and indicate that they are supervisors here.)	Dr.Monjur Ahmed and Prashant Khanna

2.9	Contact Details of other researchers and/or supervisors (Telephone and E-mail)	E-mail: Monjur.Ahmed@wintec.ac.nz E-mail: Prashant.Khanna@wintec.ac.nz
2.10	Is this application:	☒ A new application ☐ A subsequent approval request following a significant change to an already approved application

3.0 PROJECT TIMELINE

	The project start date for **data collection** *(once this ethics application is approved. Please note, projects can only begin once applications have been approved, regardless of the level of risk)*: Projected end date: End of the semester

4.0 PROJECT SUMMARY (please include your research purpose and objectives, methodology will be dealt with in Section 6)

The prime object of this research is to identify the impact of online learning on student outcomes and some aspect which can affect student outcomes. This research will analysis how online learning is influencing the student's outcomes. Quantitative Research Methodology and Chi-Square test method will be used for analysis data, which will be collected by an online survey. A research model based on Davis' Technology Acceptance Model would be used to measure the findings and to retrieve responses to research questions (https:/www.surveysystem.com)

5.0 PROJECT METHODOLOGY (including methods for data collection)

For this study, a population size of 1.75 billion would be assumed, with a confidence interval of 4 and a confidence level of 95 percent, thereby producing a sample size of 600 (Source: Creative Research System, n.d.). The data will be evaluated using mathematical tests. A study model based on Davis' Technology Acceptance Model will also be used to classify variables that affect how data is used for predictive analyzing social media marketing. This study will use online resources to interpret the findings and find responses to research questions.

6.0 CONSIDERATON OF ETHICAL ISSUES AND PROCESSES

Please describe below the process that you have undergone in order to discuss and analyze the ethical issues present in this project. (For example, who have you consulted in regards to ethical issues or in completing the screening questionnaire and this Low Risk application)

All points from screening questions

Risk of harm

This research's primary objective is to identify the impact of online learning on student outcomes, and some aspect that can affect student outcomes shall involve literature reviews. The surveys shall be conducted to collect the data from participants. The surveys shall only include questions related to users experience with online learning.

Informed and voluntary consent

In this research, the consent shall be taken from students, and all the required information shall be provided to users before beginning the Survey. All participants shall be informed about the topic and objective of the research before the research questions. The research would only allow participants who are above 18 years of age

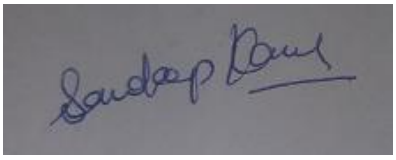
Privacy and confidentiality

The Survey is designed in such a manner that none of the questions reveals the identity of a user or any personal information. the collected responses shall be stored in a password protected machine and shall be deleted after 3 months of the research.

Conflict of interest

For the writer, there are no conflicts of interest.

Researcher(s) signature(s) (the <u>name and signature</u> of all researcher(s) are to be included):

Name	Signature	Date
Sandeep Kaur		

Primary Supervisor's signature (if this is a student application):

Name	Signature	Date

Dr.Monjur Ahmed		

Research Leader's signature:		
Name	**Signature**	**Date**
Dr. Prashant Khanna		

HERG Chairperson or delegated representative's signature (RPGO use only):		
Name	**Signature**	**Date**

COMPLETING THIS FORM

Please note: A low risk research project is one in which the nature of the potential/actual risk of harm to participants or the researcher is minimal and no more than is normally encountered in daily life. If, as a staff member, you are new to research or are in any doubt as to which application to submit, please consult with your Research Leader. If you are a student, your supervisor will be able to give you advice. If you are still in any doubt, don't hesitate to consult the RPGO.

Specific Instructions

- All questions are to be answered. Note the questions within require a mix of descriptions, yes/no answers and cross the box (**Double-click on check boxes with your mouse and select 'Checked' from the options under 'Default Value'**).
- Research Leaders need to review the information in this form and sign it off prior to application being made to the RPGO.
- Please forward one signed original copy to the RPGO, together with an electronic version to research@wintec.ac.nz.

- Low Risk Human Ethics in Research Applications also need to be accompanied by a copy of the Information Sheet, Consent Form, and any Questionnaires or Interview Schedules for consideration. If Questionnaires/ Schedules are not yet confirmed, please supply the latest draft.
- No questions are to be deleted, even those that you feel you are not required to answer.
- No part of the research requiring ethical approval should commence prior to approval being confirmed.
- Applicants will receive an official confirmation of submission via e-mail from the RPGO once all conditions of this form have been completed.
- If you want to apply for an extension on a previously approved project, please contact the RPGO, as you will probably not need to submit a separate application.
- Applicants will be advised of the outcome of their application to the Human Ethics in Research Committee **no later than ten working days** after the completed and confirmed submission of this application.

HUMAN ETHICS IN RESEARCH LOW RISK APPLICATION FORM - CHECK LIST	
Research project title:	**Online learning factors that influence the student's learning outcomes.**
Name of primary researcher:	**Sandeep Kaur**

Attached please find (as applicable) in the order listed below	
Completed HERG Low Risk Application Form	☒Yes ☐ No

Information Sheet for participants	☒ Yes ☐ No
Copy of Focus Group Questions, Interview Schedule, or similar	☒ Yes ☐ No

A3: Participant Information Sheet

Participant Information Sheet

Project Title: Online learning factors that influence the student's learning outcomes.

Institution: Wintec, Hamilton City Campus

Researcher: Sandeep Kaur

Contact Details: 0220876255, email: sankau02@student.wintec.ac.nz

About Survey

I would like to encourage you to participate in this research analysis by completing the online Survey. Please take a moment to read the following data before you go further, which will make you understand the intent of this study and what it will consist of. You should explore it with others, and please do ask questions if it's something you can't be sure about. Thank you so much for reading this.

About the Researcher

This research is being conducted by Sandeep Kaur, a Wintec student at the Hamilton City Campus, as a key component of her Master of Applied Information Technology Research proposal. This is self-funded research and the researcher will not gain any personal economic profit from your participation in this research study.

Purpose of Research

The prime object of this research is to identify the impact of online learning on student outcomes and some aspect which can affect student outcomes. This research will analysis how online learning is influencing the student's outcomes. An online survey will be used to gather the information for this project.

Expectation from participants

You were invited to participate in the Survey because you are 18 years old and older and are pursuing or have completed your education through online learning. You have the knowledge and skills that may prove to be relevant in this study.

Duration of Online Survey

This online Survey won't take longer than 15 minutes to complete.

Describe where the information will be collected

The details will be obtained from an online survey.

Describe what happens to the details provided

The feedback you provide will be used to produce findings for this research study.

Clarify if it is mandatory to attend

If you are pursuing or have completed your education and are 18 years old and above, you are invited to take part in this Survey. Participation will be voluntary in this online Survey. It is your decision whether you wish to participate or not. However, if you want to participate, you can retain a copy of this information sheet and show your approval in the online consent form.

Describe whether participants can withdrawal and how

You are entitled to withdraw from your involvement at any time without giving any explanation. Just

click on the cancel button you can withdraw.

Clarify how the privacy of a participant is to be secured

The information obtained from you during the process of your study will be kept secure. You will not be mentioned anywhere.

Clarify where the findings of the study will be made available

The records of each participant will be kept private. The findings of this study will only be made available to the participants upon request.

Supply information for participants who have more inquiries

The findings of the study will be released in the research paper. Your details will still be kept private. However, if you would like to receive a copy of this article, please send an e-mail to the researcher.

A2: Survey Questions

The following section will list all the survey questions which will be used in this research to gather all the information.

Survey Question No	**Survey Question**					
SQ1	Are you over the age of 18 years?					
	☐ Yes	☐ No				
SQ2	Which age group do you belong to?					
	☐ 18-20	☐ 21-25	☐ 26-30	☐ 31-40	☐ 41-60	☐ 60+
SQ3	What is your gender?					
	☐ Male	☐ Female	☐ Others			
SQ4	Are you pursuing or have completed your higher education?					
	☐ Yes	☐ No				
SQ5	Do you have access to devices such as laptops, mobile phones, and tablets, and internet connection for accessing your learning material online?					
	☐ Yes	☐ No				
SQ6	How long have you been using devices for accessing your learning material online?					
	☐ 0-1 years	☐ 1-3 years	☐ 3-5 years	☐ 5+ years		
SQ7	How satisfied were you while learning online?					
	☐ Extremely satisfied	☐ Satisfied	☐ Neither	☐ Dissatisfied	☐ Extremely dissatisfied	
SQ8	How do you feel overall about online learning?					

	☐ Extremely useful	☐ Useful	☐ Neither	☐ Useless	☐ Extremely useless

Survey question No	**Survey Question**				
SQ9	On average, how much time do you spend on online learning per day?				
	☐ 0-2 hours	☐ 3-6 hours	☐ 6-9 hours	☐ 9-12 hours	☐ More than 12 hours
SQ10	Do you think online learning supports your learning requirements?				
	☐ Yes	☐ No	☐ Maybe		
SQ11	Is online learning helpful in interaction with your instructor or teachers?				
	☐ Yes	☐ No	☐ Maybe		
SQ12	Is online learning helpful in completing your assessments and evaluations?				
	☐ Extremely helpful	☐ Helpful	☐ Neither	☐ Useless	☐ Extremely useless
SQ13	How helpful is/was your educational institution has/had been in offering you the resources to learn from home?				
	☐ Extremely helpful	☐ Helpful	☐ Neither	☐ Useless	☐ Extremely useless
SQ14	Does online learning help in collecting information and conducting research?				
	☐ Yes	☐ No	☐ Maybe		
SQ15	What are the positive impacts of online learning, if any?				
	☐ Better interaction with teachers	☐ Flexibility of devices	☐ Improved cooperation between teachers	☐ User-friendly devices	☐ Less expensive as compared to other
	☐ Accessibility of study material anywhere	Others, ____ ____ ____ ____			

					forms of learning	and anytime	
SQ16	What are the negative impacts of online learning, if any?						
	☐ Health-related concerns	☐ Technical issues	☐ No self-discipline	☐ Time demand	Others, _____ _____ _____ _____		

Survey question No	**Survey Question**				
SQ17	How would you rate your student performance?				
	☐ Brilliant	☐ Above average	☐ Average	☐ Below average	☐ Poor
SQ18	Has online learning helped you enhance your achievement?				
	☐ Yes	☐ No	☐ Maybe		
SQ19	Is online learning cheaper than other learning methods?				
	☐ Yes	☐ No	☐ Maybe		
SQ20	Do you enjoy online learning?				
	☐ Yes	☐ No	☐ Maybe		
SQ21	Will you consider online learning for others in the future?				

	☐ Yes	☐ No	☐ Maybe
SQ22	Do you prefer mobile learning over other methods of learning?		
	☐ Yes	☐ No	☐ Maybe