The Instructors' Perception toward Implementing ICTs in Teaching and Learning Process: A Case Study at Alrefak University in Libya

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ABSTRACT

This research study was conducted to measure the instructors' perception toward implementing Information and Communication Technologies (ICT) in teaching and learning process: A case study at Alrefak University in Libya based on their gender, age, and field of study in terms of three sub-dimensions; instructors' perception in ICT use, ICT usage in classroom, and ICT selection criteria. This study employed quantitative research method with the use of survey approach that had a Perception of Teachers on the Usage of ICT scale that was used for data collection tool. 84 participants were reached who agreed to participate voluntarily at Alrefak University in Fall 2020-2021semester. The data was analyzed by using descriptive analysis techniques. Mean (x), Frequency (f), Percentage (%), One-Way ANOVA, and an independent sample T-test were used for analyzing the data.

As a result, the study revealed that Alrefak University instructors are positive on ICT integration toward teaching and learning process with no clear difference among males and females. Nevertheless, instructors from educational fields showed high level of perception towards ICT implementations whereas the instructors from business fields showed the lowest level of perception towards ICT implementations. Furthermore, 20-29 age group of instructors showed the highest level of perception towards ICT implementation when it compared to other age groups. Therefore, both instructors' ages and Fields of study are considered as major determinant of their perception toward ICT usage in teaching and learning process at Alrefak University in Libya.

Keywords: ICT, ICT in Teaching and Learning, Perception, Instructor's Perceptions, Libya

ÖZ

Bu araştırmanın temel amacı, öğretim elemanlarının öğretme ve öğrenme sürecinde Bilgi ve İletişim Teknolojilerini (BİT) uygulamaya yönelik algılarını ölçmektir. Çalışma, Libya Alrefak Üniversitesi'nde görev almakta olan öğretim elemanlarının cinsiyet, yaş ve çalışma alanlarına göre üç alt boyutta incelenmesi ile gerçekleştirilen bir durum çalışmasıdır. Ayrıca, bu çalışmada, eğitmenlerin BİT kullanımındaki algısı, sınıfta BİT kullanımı ve BİT seçim kriterlerini de ele alınmıştır. Araştırmada, veri toplama aracı olarak 'BİT Kullanımına İlişkin Öğretmen Algısı' ölçeği kullanılmıştır. Araştırma nicel bir araştırma olarak tasarlanmış ve tarama yönteminde gerçekleştirilmiştir. Çalışma grubu, Alrefak Üniversitesi'nin 2020-2021 sonbahar döneminde görev almakta olan öğretim elemanlarından oluşmuştur. Veriler, tanımlayıcı analiz teknikleri kullanılarak analiz edilmiştir. Verilerin analizinde Ortalama (x), Sıklık (f), Yüzdelik (%), Tek Yönlü ANOVA ve bağımsız örneklem T testi kullanılmıştır.

Çalışma sonucunda Alrefak Üniversitesi öğretim elemanlarının, kadın ve erkekler arasında net bir fark olmaksızın, öğretme ve öğrenme sürecinde BİT uygulamasına yönelik olumlu bir algıya sahip olduğu ortaya çıkmıştır. Bununla birlikte, eğitim alanlarından öğretim elemanlarının BİT uygulamalarına yönelik yüksek düzeyde algı gösterdiği, işletme alanlarında görev yapan öğretim elemanlarının ise BİT uygulamalarına yönelik en düşük algı düzeyinde olduğu belirlenmiştir. Ek olarak, 20-29 yaş grubu öğretim elemanlarının, diğer yaş gruplarında olan öğretim elemanlarına göre, BİT uygulamasına yönelik en yüksek algı seviyesine sahip oldukları belirlenmiştir. Bu nedenle hem eğitmenlerin yaşları hem de çalışma alanları,

Libya'daki Alrefak Üniversitesi'nde öğretim ve öğrenim sürecinde BİT kullanımına yönelik algılarının ana belirleyicisi olduğu düşünülmektedir.

Anahtar Sözcükler: BİT, BİT'nin Eğitim ve Öğretimde kullanılması, Algı, Öğretim Elemanlarının Algıları, Libya

DEDICATION

I dedicate this work to my loving Mother “Amal Alfetori”, my precious Father, Ismail Enfes, my beloved sisters and brothers, and Dr. Yahya who supported me to achieve this success.

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ICT	Information & Communication Technologies
IT	Information Technology
SPSS	Statistical Packages for Social Science

Chapter 1

INTRODUCTION

The fast innovations of Information and Communication Technologies (ICTs) in education have brought remarkable changes in the 21st century that has enabled teaching and learning process to be more creative, active, interactive, and flexible (Baş, Kubiatko & Sünbül, 2016). These innovations which have evolved and transformed for over centuries into what it currently is through the help of newer emerging technologies is considered as a catalyst for the rapid growing forms of current technological tools that can be used in communication (Majumdar, 2015).

ICT is a main term that refers to different kind of devices networking components, systems and applications that provide communication, displaying, storing, collaborating and managing information. For example, video conferencing, computers, multi-media tools and emailing and so on (Akarowhe, 2017). ICT is usually used interchangeably with Information Technology (IT). However, ICT is an integration of both IT and communication technologies used for educational purposes and facilitating pedagogical activities (Ratheeswari, 2018). Additionally, ICT plays a crucial role in changing the society by promoting productivity and economic developments. For instance, The United Nation's 2030 Agenda demands the UN member to implement ICT for assisting national improvements. Particularly, in goal 17 of the UN international policy framework, the UN supports the significance of implementing ICT as a tool for national developments. By effectively integrating ICT,

the UN aims to increase the global collaboration and get access to science, technology, and innovation (STI). Hence, the UN agenda aims to provide various technological tools for the least developed countries by 2030 (Jatileni & Jatileni, 2018).

Nowadays, there is a growing demand for the integration of ICTs into education which is referred to as technology-based teaching and learning. A technology-based teaching and learning offers many services to be used in the class such as storing information, brainstorming, TV broadcasting, teleconferencing, online chat, World Wide Web (WWW) that will promote meaningful learning environment (Ghavifekr & Rosdy, 2015). Many researchers such as Fu (2013) and Oliver (2002) claimed that, these services enhance better academic performance for students that will direct to high quality education system. Moreover, ICTs provide students with many services that traditional methods cannot. For example, it facilitates modern forms of interaction among pupils and teachers, it makes education more accessible to all people around the world, it provides learning programs at any time and place, it provides variety of teaching and learning sources, it engages the learner in active form of learning and so on (Das, 2019).

There are many benefits of applying technology-based teaching and learning method, but only some are mentioned. By using ICTs, students have access to digital technologies and internet in the classrooms which will aid them to be active and autonomous learners. They will have the potential to choose when and what information they need to learn. As mentioned by Suryani (2010), remote learners will have the chance to learn and acquire new knowledge in an autonomous and constructive way that will aid to achieve better academic performance. Also, ICTs provide an opportunity for students to choose which information they need to know

and in which way they can learn it, which will lead to meta-cognitive way of learning (Suryani, 2010). This way of learning, will promote students to solve their real-life problems on their own in the future. Hence, various educational institutes around the world start to integrate ICTs in teaching and learning process.

There are many research studies that discussed about the major factors that influence the use of ICTs into teaching and learning processes. One example of these studies is written by Mumtaz (2000), who stated a list of factors that prevent using ICT for educational purposes. Firstly, educators' limited teaching experiences with ICT which means, the teachers are not qualified enough to teach with technology in the class and if they used it, it will affect negatively on the students' academic performance. Secondly, lack of motivation and support from colleagues is considered as a vital factor in the teachers' perceptions for integrating technology into their teaching process. Thirdly, lack of availability of materials that instructors and students can use in the classrooms. For instance, if there are not enough computers in the class, the teacher will face many challenges that may cause for lesson cancellation. Another factor that influences successful integration of ICT into teaching is stated by Hey and Brush (2007), together with Keengwe, Onchwari, and Wachira (2008), which is the teachers' attitudes and beliefs toward the usage of ICTs. They pointed out that whenever the instructors' attitude is positive, they can easily provide and keep valuable adaptation of ICTs for teaching and learning purposes which shows that the instructors' beliefs are vital for effective usefulness, integration and adaptation of ICTs into teaching and learning process.

On contrary, for the few lecturers who have negative beliefs and attitudes towards using ICT in the class, Christensen (2002) mentioned, some major factors that might

be the reason; computer anxiety, not understand its importance and time constraints to learn modern ICT tools. In order to reduce the effect of anxiety on the teachers' perceptions, Takayama (1993) stated that, daily use of computers for teachers training can indirectly reduce the anxiety and shift it towards a positive attitude. For instance, the more knowledge and experience teachers have toward the usage of computers, the more positive they will be towards it (Rozell & Gardner, 1999). Furthermore, by providing strong leaderships and personal advisors that help all the instructors and staffs equally and professionally, the teachers' perceptions will be positive toward the usage of technology in the teaching and learning contexts (Kim, Kim, Lee, Spector & DeMeester,2013). Thus, there is a strong correlation among instructors' perception and the success of ICT integrations toward teaching process.

In addition to that, ICT selection criteria is also considered as a major factor for successful implementation of ICT in education. Successful selection of ICT tools in teaching and learning process will aid for effective integration of ICT and enhance teaching process, as well as promote students' academic performance. ICT selection criteria, aid instructors to select the most proper technological tool that suits a particular content and students (Jatileni & Jatileni, 2018). ICT selection criteria can be based on many aspects such as specific instructions, teacher's or student's familiarity, school availability, students' needs, and aims of the course content. As stated by Cha, Park and Seo (2020), ICT tools can be chosen according to the teaching method and learning activities that the teacher implements in the teaching process, students' and teachers' competencies, and availability and accessibility of ICT tools. Moreover, based on the results that Thuy and Qalati (2020) conducted, ICT selection is based on the lesson objectives, availability of ICT tools, student's needs, and level of ICT familiarity. Also, Ajlouni and Aijarrah (2011) concluded that teachers selected the

tools they were trained to use which was KidSmart software in teaching to avoid other technological tools they were not trained to use. Therefore, instructors utilize different kind of ICT selection criteria in their teaching process.

Nikian, Nor, and Aziz (2013) conducted a research on Masters teachers' perceptions towards ICT implementations but only specified seven local English teachers in Malaysia. The age range of teachers were 20-29 years old with 3 to 5 years of teaching experience. Questionnaires were used as a tool for collecting the data. The results of the study showed that Malaysian English teachers are optimistic toward ICT implementations in teaching and learning process. However, they asked for training to be provided and stated that time consumption and technology availability in class as a main challenge toward ICT integrations in the teaching process (Nikian et al. 2013).

Moreover, Muslem, Yusuf, and Juliana (2018) also conducted a research with the aim of measuring the teachers' perceptions towards ICT implementation and the difficulties that ELT teachers face while integrating ICT into the teaching process. The participants were teaching English from 16 different state senior high schools in Banda Aceh located in Indonesia, and were from different ages but most of them were females with 7-10 years of instructional experience. For conducting the data, quantitative methods (questionnaires) was applied initially, however, qualitative method was applied via interviews for only the five instructors who responded negatively to the original survey questions. At the end of their research, the researchers concluded that time, tools constrain, poor internet connection, and lack of experience were all mentioned as barriers for ICT integration. Nevertheless, teachers believe that ICT enhances the teaching process with English teachers. Thus, for using ICT in class

effectively, all the barriers mentioned above should be reduced (Muslem,Yusuf, & Juliana 2018).

Researchers and academicians have carried out various research and written multiple articles in Libya with focus on instructors' perceptions on ICT use and ICT usage in classroom, however there is little information on the instructors' perception towards implementing ICT in teaching and learning process while focusing on ICT utilizations in educational environments and ICT selection techniques. Also, very little researches in Libya has been conducted to measure the relationship between teachers' perceptions and age which is a vital factor for determining whether different ages have an impact on the teachers' perceptions.

Furthermore, conducting a research on instructors' perception towards using ICT in teaching and learning process with the focus on their perception toward ICT implementations, ICT implementation in learning contexts, and ICT selection techniques are important factors for effective integration of ICT in education. These three sub-dimensions are essential factors for integrating ICT into the educational system because once teachers' perceptions are positively determined, higher quality of education at the University will be expected.

1.1 Purpose of the Study

This study aims to examine the teachers' perception on the utilization of ICT toward teaching and learning process.

1.2Research Questions

The study ends to answer the following research questions:

1. What perception do Alrefak University instructors' hold on the implementation of ICT in teaching and learning progress in respect to their perception towards ICT use, ICT usage in the classroom, and ICT selection criteria?
2. Is there any relationship between the instructors' perception towards the usage of ICTs and gender?
3. Is there any relationship between the instructors' perception towards the usage of ICTs and age?
4. Is there any relationship between the instructors' perception towards the usage of ICTs and their Field of study?

1.3 Significance of the Study

Due to the widespread of technology, the education needs to alter from only supplying ICTs in educational contexts to a comprehensive usage of ICT in teaching and learning process. Hence, the findings of this study will build a knowledge base of perceptions' that instructors hold toward the usage of ICT tools at Alrefak University. Also, this knowledge might decrease the overcoming issues that teachers encounter while integrating ICTs in the class. Additionally, this thesis provides information about the amount of time they are spending on ICTs in the classroom which is vital to ensure its effectiveness on the learners' performance. Moreover, it shows various techniques that Alrefak University instructors' use in order to select the most suitable technological tools for their students which can be beneficial for other colleges. Furthermore, curriculum developers and policy makers will be beneficial for them in choosing and creating the right decisions. Thus, this study will be used as a reference for teachers or future researchers that can be helpful in constructing and using new concepts in the field of ICTs in education.

1.4 Limitation of the Study

This study is limited to only the instructors at Alrefak University in Libya during the 2020-2021 Fall semester.

1.5 Definition of Terms

Clarifications on some of the terms used in this thesis are shown below:

1.5.1 Technology

Technology in terms of its artifacts are laptops, tools, machines, mobiles and so on. It also means the process that people adapt and alter to achieve their needs and goals (Ayas, 2006).

1.5.2 Instructor

A teacher who provides instructions and knowledge to students in different educational contexts such as universities and schools (Aguilar & Rodriguez, 2012).

1.5.3 ICT

The acronym ICT stands for Information and Communication Technologies that refers to all technological tools used for several purposes such as storing and managing information, systems or applications for communication or educational aims, and so on (Akarowhe, 2017). It is an umbrella term that covers all tools that can be used for several aims (Fu, 2013).

1.5.4 Instructors' Perceptions

Persons' perception refers to his/her belief towards a particular situation which is usually derived from the surrounding environment (Jatileni & Jatileni, 2018). So, instructors' perception is the teachers believe regarding the teaching process which come from her/his teaching experiences and educational background.

Chapter 2

LITERATURE

2.1 Teachers Perceptions on ICT Usage

According to Mahdum, Hadriana and Safriyanti (2019) the term perception refers to human's mechanism in gathering information from their surrounding environment, and proceeding to classify and categorize the knowledge obtained from the environment accordingly. In other words, the term perceptions refer to the person's attitude, behavior and belief that develops toward any situation (Abidin, Mohammadi & Alzwari, 2012). According to this particular research study, the perception relates to the instructors' attitude, behavior and belief towards the usage of ICTs in teaching and learning process. Therefore, instructors' perceptions show the belief that instructors hold on ICTs usage which is a major role in accepting or rejecting ICT implementation in education (Hutchison & Reinking, 2011). Qasem and Nathappa (2016) claimed that teachers' perception is a tendency that aids them to be favorable or not towards implementing the new trends of ICTs into teaching and learning process.

In order to implement ICTs into teaching and learning process effectively, many recent studies have proved that the instructor's perception and belief determines the way ICT is used in educational contexts (Albirini, 2006). This means that when the teachers' perception is positive toward the usage of ICTs, they can easily provide useful insight about the integration of ICTs for education purposes. Hew & Brush (2007) together

with Keengwe et al. (2008) also support the idea that teachers' perception and belief toward implementing technology has a large influence on ICTs integration at schools. Similarly, Mahdum et al. (2019) study concluded that effective and efficient ICT implementation in teaching and learning process requires a positive perception from instructors. Moreover, Silviyanti and Yusuf (2015) mentioned that instructors who believe in the positive impacts of integrating ICT such as enhancing teaching process and directing student's attention, tend to use ICT tools in class confidently. Hismanoglu (2012) also stated that the instructor's subjective perception towards ICT has a direct influence towards implementing ICT in teaching and learning process.

In addition to that, Baş et al. (2016) proved that the teachers who reported negative or neutral attitude towards ICTs integrations for teaching and learning processes lacked the necessary skills, ICT facilities, time, motivation and knowledge that would allow them to use ICTs for educational purposes. On the other hand, Instructors who hold positive perceptions toward ICT implementations, shows that they are well trained and experienced in using ICT in class, open to new trends of ICT, believe that ICT has positive impact on the students' learning process, and enhances teaching process (Silviyanti et al., 2015). Hence, it is important for policy makers to foster instructors' perceptions as a main factor for increasing the advantages of using ICT in education (Albirini, 2006). He supported the idea that positive attitudes toward ICT will support further ICT integration into teaching and learning process.

In line with the aforementioned factor that influences the usage of ICT into teaching and learning process, Buabeng-Andoh (2012) mentioned that the user's characteristics such as age, gender, educational level and year of experience with ICTs integrations for pedagogical purposes and so on play a fundamental role in determining the extend

of using ICT tools in the class. For instance, the fewer experienced teachers are expected to use variety of technological tools better than the teachers with more experience (Afshari, Bakar, Luan, Samah & Fooi, 2009). This is most probably because of the fact that the new teachers have been exposed to ICT tools during their training programs, so they have more experience with using ICT tools for educational purposes. On contrary, Mahdi and Al-Dera (2013) conducted a study on the impact of teachers' experience toward ICT usage into teaching and learning process among 46 instructors at Najran University in Saudi Arabia. Their findings revealed that there is no significant difference between new teachers and already established teachers regarding the usage of ICT in English language teaching. Furthermore, according to the study conducted by Van Braak (2001) it was determined that older adults show less confidence while integrating ICTs in their teaching process than younger adults, which may be due to the lack of technological trainings in the past generations.

ICT competence is stated as another factor that influence ICT integrations which is defined as a person's ability to use different kind of technological tools and applications for several purposes (Buabeng-Andoh, 2012). It can be seen as the degree of ICT usage by teachers in the class. This usage of ICT is not only related to change from traditional ways of teaching, but demands instructors to be more creative in integrating ICT for educational purposes. The result of a case study that has been conducted by Lawrence and Tar (2018) shows that ICT competence is an important factor for integrating ICT into the education process.

Many studies have been done to identify the impact of teachers' gender toward implementing ICT in teaching and learning process which is also considered as a factor. In a study by Mahdi and Al-Dera (2013), their study concluded that there is a

significant difference between instructors' males and females regarding ICTs adaptations in the teaching and learning process which may be due to the lack of ICT training for female teachers. Moreover, Ghavifekr, Kunjappan, Ramasamy and Anthony (2016) stated that there is a significant different between female and male teachers in implementing ICT into teaching and learning process in which male teachers are higher in using ICTs than female teachers. Nevertheless, there are some studies which are in contrast with the previous studies that have been mentioned above. For example, in a study that is conducted in Australia at Chung Yuan Christian University by Yuan and Lee (2012), the results prove that there is not any significant difference among male and female teachers towards ICT usage during the mathematics lectures.

Furthermore, the teachers' professional training is considered as a factor because many teachers try integrating ICT into their teaching process, However, the problem lies in choosing the most suitable ICT tool for their particular lessons. This issue is caused by the lack of teachers' training on how to use ICT and how to adopt it in a proper way (Cetin, 2016). According to the study conducted by Cetin (2016) on examining science teachers' level of using computers in the teaching process at Gazi University, his results show that most of the teachers lack the proper training and knowledge which is important for more effective and efficient usage of computers in their teaching process which can be considered a major factor limiting school teachers in using ICT for teaching purposes. The works of Sandholtz and Reilly (2004) mention that the teachers' training shouldn't concentrate on the technical issues rather than pedagogical training of ICT. They claimed that teachers must be trained in a constructivist environment where they can discover, collaborate, reflect, participate, and hands on

ICT tools which will improve their motivation and creativity towards using and adapting ICT in teaching and learning process.

Moreover, providing all the ICT infrastructure and resources in educational settings is a vital factor for ICT adaptions into teaching and learning process. In order to have an effective educational setting with ICT integrations, schools should be provided with up-to-date hardware and software ICT tools (Afshari et al., 2009). Obviously, without the accessibility of ICT tools, educators will not be able to implement them for educational purposes (Buabeng-Andoh, 2012). So, in order to use and integrate ICT tools successfully, teachers should be provided with different ICT tools such as smart boards and computers access in the class. One of the research studies that has proved this factor was conducted and analyzed by Usluel, Aşkar and Baş (2008) to investigate the faculty members' usage of ICT and their reason of implementing ICT. The analysis was about 834 faculty members within 22 different Universities in Turkey. It was discovered that most of the faculty members use ICT to communicate, search about the course and prepare for the lectures. Thus, they claimed that the reason for this is as a result of the Universities ability to provide access to applications needed for courses. Also, Albirini (2006) measured the level of access to computers in Syrian high school for EFL teachers during 2003-2004 school year. He concluded that all teachers had access to computers at homes more than at schools which indicates that there is lack of computers at Syrian schools which can affect the ICT integration into the educational process.

2.2 ICT Usage in the Class

The acronyms ICT refers to all technological tools and applications that is used for education and communicational purposes such as Moodle, computers, smartboards,

and so on. According to the way educational system is today, it is completely different when compared to the past due to the fast improvements of ICT in education (Gebremedhin and Fenta, 2015). The educational environments and systems have become more learner-centered with the usage of technology in the class (Mollaei and Riasati, 2013).

ICT integrations into the teaching process is an important factor in the 21st century skills that consist of interpersonal and intrapersonal skills, interpersonal skills refer to the capacity of working collaboratively in groups whereas intrapersonal skills refer to the capacity self-regulation and having meta cognitive insights, so ICT can be used as a tool for both self-regulation and support for collaborative work (Willis, Lynch, Fradale and Yeigh, 2019). Moreover, Azmi (2017) concluded five benefits of using ICT in the class which are; enhancing students' motivations and engagements, fostering students' autonomy and centeredness, promoting interactions among students, providing authentic environment, and enhancing students' performance. Firstly, students get more motivated when ICT tools are used in class because it is connected to their real life, also, various activities can be used that can't be done without the existence of ICT tools in the class such as using blogs or podcasts as a class content will increase the student's engagement (Gebremedhin and Fenta, 2015). Secondly, integrating ICT will change the role of the teachers to act as facilitators in the class, and students become more aware of their learning styles and needs of educations with access to vast information easily from the internet without asking the teachers (Mollaei and Riasati, 2013). Additionally, by incorporating ICT into teaching and learning process, students are provided with various tasks that foster interaction and communication among other students with the guidance of the teacher. Furthermore, by using ICT for educational purposes, it aids to promote tasks and

activities that are correlated with their life outside the school. Gulbahar and Guven (2008) have a similar point of view which technology bring real-life situations into the class settings to promote critical thinking skills. Conclusively, it has also been proved that ICT can enhance students' progress and performance during and after the class. Gulbahar and Guven (2008) also mentioned that technological tools improve the quality of the education for all aspects.

2.3 ICT Selection Techniques in Teaching and Learning

For choosing the most appropriate ICT tools for a particular lesson, teachers should be aware of some selection criteria that will enable them understand which tool fits into their aim. As Jatileni and Jatileni (2018) claimed that ICT tools selection depends mainly on how well these tools fit into the educational process and its ease of use for both teachers and students. There are many factors that might influence ICT selection criteria. For example, Wu et al. (2013) stated that teachers' instructions such as online collaborative platforms that provide both teacher to student, and student to student interactions. Feeling safe toward a specific ICT material is another factor that influence the teachers' selection criteria because teachers will choose the materials they are more familiar with and avoid others (Shin, 2015). Also, curriculum reforms are considered as an attributing factor according to a research study by Bergstrom, Marell-Olsson and Jahnke (2015). They believe that curriculum reforms help in the transformation from traditional way of teaching and learning to blended learning. An example of such educational system changes is the switch from traditional pencil and paper style of learning to ICT integrations by using iPads during the class. Furthermore, teachers choose ICT tools they are familiar with and well trained to use so that it can increase the lesson effectiveness and efficiency. As mentioned by Ajlouni and Aijarrah (2011), their research shows that teachers' chose the tools they are trained to use which is

KidSmart software in teaching. Moreover, the human factors such as teachers' skills, happiness, attitude and level of interactivity are all other factors that might influence the teachers' selection criteria (Schulz, Isabwe & Reichert 2015). It shows that whenever the teacher has negative feelings toward any particular ICT tool, the teacher will most probably avoid using it during the lecture times. Also, the subject that a teacher teaches can influence their selection choice of ICT tools that can be used for educational process. This was proved by a research study carried out by Bolton (2008). In his study, he concluded that ICT plays a fundamental role in teaching and learning process especially music classes because it increases students' motivation and confidence to become autonomous learners. Hence, music teachers might use ICT compared to others with different subjects.

2.4 Education in Libya

Hamdy (2007) stated that Libya is considered as the biggest country in North Africa that offers both public and private institutions for all educational levels. The first nine years are compulsory for all citizens and after passing the first basic educational levels, the students can decide whether to continue with the same educational system, attend vocational training or stop going to school. For those students who decided to continue with secondary school education, they have the ability to enter either public or private University which takes at least four years to complete (Salem, 2019). When the students are at University level, they have the chance to choose their discipline according to their preference, which is mostly decided from the second year of high school years as they specialize in science or literature subjects (Salem, 2019).

Over the years, the number of Universities in Libya have improved. Between the years 1980-1981, there were 19,300 Universities in the country, which increased to 280,000

in 2006-2007, up to 300,000 in 2008-2009, and as predicted by Rhema (2013), it will increase in 2025. Moreover, most of the Universities are free. However, there are many private institutes with approval from the Centre for Quality Assurance and Accreditation (CQAA) such as Alrefak University, Africa Nations University, Libyan International Medical University and University of Tripoli (Abod-her, 2013). Hence, this research study is focusing only in the education system at Alrefak private higher institute which is located in the capital city of Libya.

2.5 Related Studies

A research study on evaluating teachers' perceptions on using ICT for teaching and learning purposes. This study was aimed at measuring the technological materials that Adwa teachers use in teaching and learning process, the support they need, the perception they hold, and the barriers they encounter in ICT usage. Also, the study investigated relation between the teachers' perception with both their productivity and factors that motivate ICT usage. This study used both type of methods for collecting the data which are qualitative and quantitative methods, these surveys were distributed to all teachers in Adwa college (74 teachers). The data was collected within the time span of a month and analyzed using SPSS, descriptive analysis by using percentage, frequency, and correlation analysis to analyze the relationships. The findings collected from the survey showed 55.6% of teachers are not able to implement ICT tools in class which shows that the majority are not integrating ICT in teaching and learning process. Also, there is no equal support technological services among teachers due to their lack of training at the University. However, they hold strong positive perception toward ICT integration and they proved that motivation factors increase the teachers' perception in implementing ICT tools and when the teachers' perception is positive, it promotes productivity and therefore increase the course quality. They also mentioned

that absence of teachers' technical knowledge is one of the essential barriers with ICT integration, which proves that tools availability is not enough for ICT effective usage in teaching and learning process (Gebremedhin and Fenta, 2015).

Another related study that measures the teachers' perception, skills, and practices on ICT usage at several institutions in Ghana was conducted by Buabeng-Andoh (2012). The data collection tool was only based on survey questionnaires that were distributed to 273 instructors from different fields, however only 241 responded while only 231 were valid for the analysis. The findings of the analysis show that there is strong correlation between ICT implementation for teachers' competencies and teachers' perceptions. However, there was a significant difference between instructors' usage, age and teaching experience (Buabeng-Andoh, 2012).

A research was done at two public Universities in Indonesia which involved only EFL teachers and aimed to identify their perception and barriers on ICT implementations in teaching process in ELT department. 42 teachers participated in this study and responded to both questionnaires and online interviews. The survey was based on Technology Acceptance Model. During the analysis and according to their responses, the participants were separated into two groups: users of ICT in class and non-users of ICT. The authors found out that most teachers have high motivation in implementing ICT in ELT class where as 11 teachers who never used ICT in class because of their low motivation. They also mentioned that teachers should be ready to deal with all the challenges that may encounter while using ICT (Silviyanti & Yusuf, 2015).

85 distance prospective EFL teachers (23 male and 62 female) in various Universities in Turkey responded to questionnaires and interviews for measuring their perceptions.

The majority age between teachers were 23-24 with majority of them using ICT. SPSS 16 and content analysis were used for analyzing the data. The results showed that teachers hold negative perception and don't feel sufficiently competent to integrate ICT into their prospect subject without ICT previous knowledge, therefore training is considered as an important factor for positive teachers' perception (Hismanoglu, 2012).

Based on the literature review that many researchers have done to investigate the teachers' perceptions on ICT usage in different countries, the barriers that may occur while trying to integrate ICT in class are age, gender and year of experience on ICT implementation in teaching and learning process. Therefore, most of the results were positive towards ICT integration in the class because they believe that ICT enhances teaching and learning process but considered time constraints and ICT availability as the main barriers of ICT integrations. ICT selection criteria is stated as a lack in the previous results. Thus, the recent study aims to fill the literature gap and implement it in one particular place with one specific group of people. So, this study is only for the teachers at Alrefak University in Libya.

Chapter 3

METHODOLOGY

This chapter contains the methodology process of this thesis which concentrates on outlining the research methods, sampling techniques of the study, participants, and data collection from the aimed study. Furthermore, the research approach, research question validity and reliability will be shown in this chapter as well.

3.1 Research Method

In order to conduct the investigation to explore the instructors' perceptions regarding the utilization of ICTs in educational process, this study employed quantitative research method with the use of survey approach. Queirós, Faria and Almeida (2017) mentioned that quantitative research method is a formal instrument for large data collection and it is suitable for quantifiable measures of variables. It is used as a sample to represent the whole population. Additionally, by using quantitative method, the data is collected objectively, systematically and through statistical procedures via using software such as SPSS, R and so on (Queirós et al. 2017). Moreover, Mathiyazhagan and Nandan (2010) defined survey approach as a collection of data from a sample of chosen people who are necessary for the research study. The survey can be done as a questionnaire or interview that can be analyzed and used as a result for a particular research study. In this research study, the researcher used questionnaire survey method to measure Alrefak University instructors' perceptions towards ICT usage in teaching and learning process.

3.2 Sampling Technique

The data was gathered from most of Alrefak University instructors in Libya in a period of one month which is December. Initially, the researcher distributed 100 survey, however only 84 participants were reached who agreed to participate voluntarily due to the use of convenience sampling technique. Moreover, the used questionnaire was in English Language because it is the common language used at the University.

It seems impossible to include the whole population in the survey that is why this particular study uses Convenience sampling technique which is known as Haphazard or Accidental Sampling (Etikan, Musa & Alkassim 2016). In this technique, the participants are not chosen randomly and its related to the subject and purpose of the study. The main objctive of this technique is the ability to choose the participants that are available or can easily be reached (Etikan, Musa & Alkassim 2016). Specifically, the researchers' participants of this study are only instructors at Alrefak University.

3.3 Participants

This analysis includes instructors from different fields, gender, nationalities, and ages who are teaching during the 2020-2021 Fall semester at Alrefak University in Libya.

Table 3.1: Age range of participants

Age Range	Frequency (n)	Percent (%)
From 20 to 29	28	33.3
From 30 to 39	18	21.4
From 40 to 49	21	25.0
50 or more	17	20.2
Total	84	100

As indicated in Table 3.1 a total of 84 instructors participated were 33.3% (28 instructors) belonged to the age range of 20-29 which seems the highest age bracket,

21.4% (18 instructors) were in the 30-39 years age range, 25.0% (21 instructors) were in the 40-49 years age range and 20.2% (17 instructors) were + 50 years which is considered as the lowest age bracket.

Table 3.2: Gender of participants

Gender	Frequency (n)	Percent (%)
Male	26	31.0
Female	58	69.0
Total	84	100

As shown in Table 3.2, a total of 84 instructors from Alrefak University in Libya. 31% (26 instructors) of the participants were males whereas 69% (58 instructors) were female which shows that the majority of participants belonged to the female gender.

Table 3.3: Field of the study

Field	Frequency (n)	Percent (%)
Education department	22	26.2
Engineering	32	38.1
Business	11	13.1
Other	19	22.6
Total	84	100

As illustrated in Table 3.3, the survey contains instructors from different educational fields and as shown, 26.2% (22 instructors) were from education department, 38.1% (32 instructors) belonged to engineering department, 13.1% (11 instructors) belonged to business department and 22.6 (19 instructors) belonged to other fields.

Table 3.4: ICT pedagogical training

Pedagogical Training received	Frequency (n)	Percent (%)
None	47	56.0

Less than one year	17	20.2
1 to 2 years	17	20.2
3 to 4 years	2	2.4
More than 4 years	1	1.2
Total	84	100

Table 3.4 above shows the pedagogical training received by instructors. According to the analysis, majority of instructors had no pedagogical training in the usage of ICT which is represented as 56% (47 instructors), 20.2 % (17 instructors) received less than one year of training which shows same percentage of instructors who had training between 1 to 2 years. However, only 2.4% (2 instructors) received ICT training within 3 to 4 years and 1.2% (1 instructor) received training for more than 4 years.

Table 3.5: ICT usage in teaching

Years of ICT Usage	Frequency (n)	Percentage (%)
None	25	29.8
1 to 5 years	30	35.7
6 to 10 years	23	27.4
11 to 15 years	6	7.1
Total	84	100

Table 3.5, shows the period that instructors used ICT in teaching process. The results of the analysis presented that 29.8% (25 instructors) don't use any kind of ICT tools in their teachings, 35.7% (30 instructors) have been implementing ICT for 1 to 5 years, 27.4% (23 instructors) have been implementing ICT for 6 to 10 years and only 7.1% (6 instructors) have been using ICT for 11 to 15 years.

Table 3.6: ICT tools that are frequently used in teaching and learning process

ICT tools	Frequency (n)	Percentage (%)	Mean	SD
Smartboard	10	11.9%	.00	.00
Projector	50	59.5%	.60	.49

Television	2	2.4%	.02	.15
Smart phone	10	11.9%	.12	.33
Tablet	11	13.1%	.13	.34
Mobile phone	19	22.6%	.23	.42
Laptop	18	21.4%	.21	.41
Desktop computer	50	59.5%	.60	.49

Table 3.6 is a multiple-selection question that shows the ICT tools which are frequently used in teaching and learning process with possibility of multiple selections by each instructor. The results show that majority of instructors use computers and projectors as technological tools in the class, which is represented as 59.5% (50 instructors for desktop computers) and (50 instructors for projects). Whereas 21.4% (18 instructors) were using laptops, 22.6% (19 instructors) were using mobile phones for educational purposes, 13.1% (11 instructors) were using tablets, 11.9% (10 instructors) were using smartphones, 11.9% (10 instructors) were using smartboards, and 2.4% (2instructors) were using televisions. These results indicate that instructors' hold positive perception towards using projectors and computer desktops for their lesson. Also, it shows that the teachers are aware of using these devices in class. However, the results also show that the instructors do not make use of other technologies such as television, smartboards, and smart phone as often.

3.4 Data Collection Tools

In this research study, the selected survey contained two main sections. In the first section of the questionnaire, the participants encountered demographic questions such as age, gender, years of experience in using ICT in teaching, educational background and so on. This first section was developed by the researcher. The second section is about measuring the perception of teachers on ICT usage. The second section of the questionnaire was originally established by Jatileni and Jatileni (2018) that includes

both Likert type scale and open- ended questions. The Likert scale consists of 27-items that include only one reverse type question which is stated in item-10 in the scale. Moreover, this survey also consists of three sub-dimensions that has been established by Jatileni and Jatileni (2018) which are: instructor's perception in utilizing ICT, ICT utilization in class and ICT selection techniques. The instructors' perception in ICT section contains of 11-items in the Likert scale and two open-ended items which aimed to measure the instructors' perceptions on the usage of ICT. ICT usage in classroom sub-dimension contains only a Likert scale which includes 9-items to measure the amount of time they use ICT in the class and how they use it. The last sub-dimension is the ICT selection criteria that contains 4 open-ended questions, 1 multiple selection item and 7 items in the Likert scale to specify the criteria teachers use in order to choose the most suitable ICT tools for teaching.

3.5 Data Analysis

According to this survey, the gathered data were analyzed by using a descriptive analysis technique with the help of SPSS 24.0 software, Frequency, Percentage, One-Way ANOVA and an independent sample T-test. ANOVA was used to compare the means between three or more groups while independent sample T-test was used to compare the means between two variables.

3.6 Validity and Reliability

The certain survey for this research study was originally established by Jatileni and Jatileni, (2018) whose calculated Cronbach alpha value for each sub-dimension in the study was 0.709, 0.724 and 0.794. As a result, the overall reliability for their study was 0.831which shows high reliability and consistency.

Moreover, the Cronbach alpha value for all the 27-items in the Likert scale for this research was determined as 0.980 which is considered as a significantly high value because it is close to the Ideal value which is 1. In addition to this, Cronbach alpha values for each sub-dimension was determined as 0.975 for instructors' perceptions on ICT use, while 0.895 for ICT usage in the class, and 0.929 for ICT selection criteria. As Tavakol and Dennick (2011) mentioned, a high Cronbach alpha value is a key factor for the research reliability and validity.

Chapter 4

FINDINGS AND DISCUSSIONS

The purpose of this chapter is to analyze the results gotten from the data collection. Additionally, this chapter will show the instructors' perceptions on ICT implementation for teaching and learning purposes and its relation to age, gender and field of study.

4.1 Perception of Instructors on ICT Usage in Relation to their Perception on Implementing ICT Tools, Implementation of ICT in Class Settings, and ICT Selection Technique

Table 4.1 presents the mean and standard deviation of the 3 sub-dimensions needed for instructors' perceptions towards implementing ICT tools in education.

Table 4.1: Perception of instructors on the use of ICT in teaching and learning process

Sub-Dimensions	N	Mean	SD
Instructors' perception in implementing ICT tools	84	3.38	1.33
ICT implementations in class settings	84	2.79	0.92
ICT selection techniques	84	3.07	1.15

As indicated in Table 4.1, the three sub-dimensions presented which are Instructors' perception in implementing ICT tools, ICT implementations in class settings and ICT selection techniques. These three sub-dimensions consists of 34 items in which 27

items are in the Likert scale consisting of 5 choices where 5-Strongly agree, 4-Agree, 3-Neutral, 2-Disagree,1-Strongly disagree. Moreover, 6 items are open ended questions and 1 multiple selection question.

The first sub-dimension consists of 11 items in the Likert scale and 2 open-ended questions. However, item 10 was a reverse type question and therefore, was the only converted item in the scale, the second sub-dimension consists of only 9 items in the Likert scale, and the last sub-dimension consists of 7 items in the Likert scale, a multiple- selection item, and 4 open-ended items.

Each sub-dimension has got different average mean. According to the first sub-dimension which is the instructors' perception in ICT usage, the average mean was calculated as 3.38 whereas the second sub-dimension which is the ICT usage in classroom, the average mean was calculated as 2.79, and 3.07 for the last sub-dimension which is ICT selection criteria.

Moreover, the standard deviation of the three sub-dimensions are 1.33, 0.92 and 1.15 which shows that instructors' perception in ICT use has the highest mean and standard deviation value when it compared to the second and third sub-dimension.

4.1.1 Instructor's Perception on Implementing ICT Tools for Teaching and Learning Purposes

Based on instructor's perception towards implementing ICT in the teaching and learning process, the perception of instructor's ICT usage demonstrated the instructor's knowledge on the usage of ICT in education which is based on 13 items (11 in the Likert scale and 2 open ended questions).

Table 4.2: Instructors' perceptions on implementing ICT to make the teaching process easier

	Statement	(N)	%	X	SD
ITEM1	Strongly Disagree	7	8.3	3.58	1.43
	Disagree	16	19.0		
	Neutral	20	23.8		
	Agree	3	3.6		
	Strongly Agree	38	45.2		

Table 4.2 shows that 48.8% (41 teachers) have positive feelings toward ICT usage in education which indicates higher level when it is compared to the instructors who disagrees and strongly disagrees with a percentage of 27.3% for only 23 participated instructors. Also, there are 23.8% which represents 20 instructors who responded neutrally for this particular item. Therefore, the mean estimation for the 5 options in the Likert scale of the first sub-dimension is 3.58 and a standard deviation of 1.43 which shows high positive perception towards ICT usage to facilitate teaching process and this indicates that most instructors who have participated in this study are optimistic toward using ICT in class.

In line with this particular item, one of the participants supported this item with their response for the open-ended question in item 12 towards the benefits of integrating ICT in teaching;

"As a clear benefit of using ICT in class, it facilitates teaching process by presenting information in class, collecting the information needed for the class, illustrating with videos, diagrams and photos".

Similarly, same results were achieved by Silviyanti et al. (2015) study which shows that most teachers' perceptions are positive towards ICT usage. Also, they believe that ICT enhances teaching performance.

Table 4.3: Instructors' opinions on using ICT tools for enhancing students' critical thinking

	Statement	Frequency (N)	Percent %	Mean X	Standard Deviation SD
ITEM2	Strongly Disagree	7	8.3	3.49	1.50
	Disagree	25	29.8		
	Neutral	9	10.7		
	Agree	6	7.1		
	Strongly Agree	37	44.0		

According to Table 4.3, most of the participants agreed that ICT tools play important role in enhancing students' critical thinking, as a result, 51.1% (43 teachers) showed that ICT tools have positive impact towards students' critical thinking. Nevertheless, 38.1% (32 teachers) reacted negatively to this statement and believe that the use of ICT doesn't enhance students' critical thinking and they are only tools, and only 10.7% (9 teachers) who responded as neutral. Hence, 3.49 as an overall mean estimation for this 5 Likert scale with a standard deviation of 1.50 were achieved. This result directs that most instructors are aware of the benefits of using ICT tools in class and are able to integrate it with various critical thinking tasks to enhance students' critical thinking skills.

In line with this particular item, the response gotten from various participants support the use of ICT for enhancing critical thinking with their response in form of an open ended question in item 12. The response states that;

"ICT tools help me to provide unlimited number of tasks and activities for my course especially tasks that require thinking for students".

In a similar context, Çakici (2016) examined the ICT usage in EFL classes, the finding reveals that ICT usage in EFL environments can develop students' critical thinking skills.

Table 4.4: Instructors' perceptions on utilizing ICT for fostering innovation and students' problem-solving skills

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM3	Strongly Disagree	8	9.5	3.36	1.49
	Disagree	25	29.8		
	Neutral	14	16.7		
	Agree	3	3.6		
	Strongly Agree	34	40.5		

In reference to Table 4.4, 44.1% (37 instructors) believe that ICT tools promote innovations and problem-solving skills for learners, whereas 39.3 (33 instructors) have opposite point of view and 16.7% were not sure on whether ICT can foster innovation and problem-solving skills or not (14 instructors). Consequently, the mean of 3.36 and a SD of 1.49 were obtained, which indicates that most instructors believe that ICT usage can be used for enhancing innovation and promoting students' problem-solving skills.

Additionally, in respect to this particular item, the response gotten from various participants support the utilization of ICT tool to foster innovations and problem-

solving skills for learners with their response in form of an open-ended question in item 12. The response states that;

"I use ICT in class to provide students with real life issues that will help them in the future such as using real photos in the projector for showing pollution".

Karyotaki and Drigas (2016) conducted another research study that supports the same results. They concluded that ICT devices provide students with more opportunities to develop cognitive and meta-cognitive skills such as problem-solving and critical thinking skills.

Table 4.5: Instructors' perceptions on ICT usage for enhancing collaborative tasks

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM4	Strongly Disagree	13	15.5	3.46	1.55
	Disagree	15	17.9		
	No idea	11	13.1		
	Agree	10	11.9		
	Strongly Agree	35	41.7		

As shown in table 4.5, most of the instructors' responses are positive toward ICT usage for enhancing collaborative tasks. 45 of participants with a percentage of 53.6% have agreed on the statement above. However, 33.4% (28 instructors) were in opposition of the idea and 13.1% had a neutral point of view of using ICT for collaborative tasks. Also, the mean estimation of this item is 3.46 and SD value of 1.55 which indicates that the number of instructors who are interested in using ICT for collaborative tasks at Alrefak University are more than the instructors who aren't. It can be concluded that

ICT help and motivate instructors to provide more collaborative tasks due to its effectiveness in the learning process.

Ghavifekr et al. (2016) have also shown the same results of this survey with their results indicating that most of educators agreed on utilizing ICT to enhance collaboration tasks and hold positive perceptions toward it.

Table 4.6: Instructors' perceptions on the use of ICT to promote research-based teaching and learning

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM5	Strongly Disagree	14	16.7	3.42	1.59
	Disagree	18	21.4		
	No idea	6	7.1		
	Agree	11	13.1		
	Strongly Agree	35	41.7		

As shown in Table 4.6, 54.8% (46 instructors) believe that ICT foster research-based teaching and learning because it provides unlimited number of information in different sources. However, 38.1% (32 instructors) do not believe in using ICT implementations for research-based teaching and learning, while 7.1% (6 instructors) responded as neutral in the survey. According to the mean estimation for this particular item, its 3.42 with a SD of 1.592 which illustrates that many instructors believe that ICT can be used to encourage research for teaching and learning.

In line with this particular item, one of the participants supported this item with their response for the open-ended question in item 12 towards the benefits of integrating ICT in teaching;

"I use technology for searching about the topic and I usually provide research tasks for the students as a project".

Table 4.7: Instructors' perception on using ICT for ensuring quality education

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM6	Strongly Disagree	12	14.3	3.35	1.60
	Disagree	26	31.0		
	Neutral	2	2.4		
	Agree	9	10.7		
	Strongly Agree	35	41.7		

As shown in Table 4.7, the majority of participants agreed that ICT ensures quality education which is stated by 52.4% (44 instructors). On the other hand, many instructors disagreed on the statement and specified that instructors' performances in class is the responsible factor for ensuring high quality education and not ICT tools which is indicated as 45.3% (38 instructors), while only 2.4% (2 instructors) responded as neutral for this item. The table also presented the mean estimation as 3.35 and a SD of 1.602 which illustrates that ICT plays an essential role in the quality of education and most instructors are aware of this benefit.

In line with this particular item, one of the participants supported this item with their response for the open-ended question in item 12 towards the benefits of integrating ICT in teaching;

"Technological tools provide the best and up to date educational system".

This result is similar to Umar and Hassan (2015) findings where they concluded that most teachers within 212 secondary schools in Malaysia agree that ICT implementations helped to improve their teaching practice in classes, which shows that effective use of ICT promotes high educational quality.

Table 4.8: Instructors' perceptions toward the lack of ICT tools make it hard to keep up with the new trends for educational purposes

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM7	Strongly Disagree	11	13.1	3.37	1.61
	Disagree	27	32.1		
	Neutral	4	4.8		
	Agree	4	4.8		
	Strongly Agree	38	45.2		

As shown in Table 4.8, 50% (42 instructors) of participants supported the idea that lack of ICT makes it difficult for educators to keep up-to-date with the new trends in teaching process. However, 45.2% of 38 instructors have different point of view in which they believe that ICT availability is not an issue for keeping up-to-date with the new trends of the educational process, while only 4.8% (4 instructors) have neutral point of view. In addition to that, the mean estimation is stated as 3.37 with a SD of 1.61 which shows that in order to follow the current trends in education, ICT availability is a real issue for instructors. As one of the responses in the open-ended item 13 mentioned;

"Some of the technological tools are not available in some classes at the University therefore it creates learning difficulty and it becomes hard to stay up to date".

This result is supported by Mahdum et al. (2019) research study about examining the availability of ICT in providing a choice for teachers and students to follow the latest information, they concluded a positive perception from teachers towards the use of ICT.

Table 4.9: Instructors' perceptions on ICT pedagogical training in schools

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM8	Strongly Disagree	12	14.3	3.55	1.64
	Disagree	21	25.0		
	Neutral	4	4.8		
	Agree	3	3.6		
	Strongly Agree	44	52.4		

Subsequently, as stated in table 4.9, majority of participants hold positive perceptions on providing ICT pedagogical training at schools which is stated as 55.95% (47 instructors), whereas 39.3% (33 instructors) believe that instructors do not need any pedagogical training for ICT usage and are able to implement it without any guidance, and 4.8% (4 instructors) respondent as neutral. As mentioned above, the mean estimation for this particular statement is stated as 3.55 with a SD of 1.64 which indicates that schools should provide ICT pedagogical training for teachers in order to use ICT more effectively. Furthermore, it shows that instructors believe that training should be required for better usage of ICT in education. This result is supported by the research of Agbo (2015) which he concluded that ICT training positively affects performances toward ICT integration into teaching and learning process. In his research study, 150 over 210 teachers' respondents positively toward ICT pedagogical training availability in schools.

Table 4.10: Instructors' perceptions on the needs to be encouraged for ICT usage in teaching

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM9	Strongly Disagree	13	15.5	3.49	1.65
	Disagree	22	26.2		
	In between	2	2.4		
	Agree	5	6.0		
	Strongly Agree	42	50.0		

Moreover, as stated in Table 4.10, 47 of instructors need to be encouraged toward ICT usage with a percentage of 56%, which shows that instructors need to be motivated for effective use of ICT. However, 41.7% (35 instructors) disagrees with the statement and stated that there is no need for instructors' motivation for ICT usage, and 2.4% (2 instructors) choose the neutral option. Thus, the mean estimation for the five Likert scale for this specific statement is 3.49 with a SD of 1.65 which proves that most instructors think that motivation play a vital role for promoting effective integration of ICT in the class. As one of the research studies concluded, it was believed that teachers needed more motivation in order to increase the quality level of ICT usage in class where they established a relationship between teacher motivation and better use of ICT (Uluyol & Sahin, 2016).

Table 4.11: Instructors' believe that the usage of ICT is a wasting of time

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM10	Strongly Agree	7	8.3	3.23	1.05
	Agree	16	19.0		
	Neutral	13	15.5		
	Disagree	47	56.0		

	Strongly disagree	1	1.2		

Initially, item 10 was a reverse type question, however, after recoding the results to what can be seen in Table 4.11. 57.2% (48 instructors) believe that ICT usage in class is not time consuming while 27.3% support ICT usage in class and believe that ICT is a wastage of time (23 instructors). On the other hand, 15.5% have a neutral point of view (13 instructors). As a result of the five Likert scale, the mean estimation is stated as 3.23 with a SD of 1.045 which illustrates that most instructors believe that ICT is not a wastage of time in this particular University.

Additionally, in respect to this particular item, one of the participants supported this item with their response for the open-ended question in item 12 towards the benefits of integrating ICT in teaching. The response states that;

"Using ICT aids to organize and manage the time of the class".

However, Ghavifekr et al. (2016) concluded a different result for the same statement, most of the participants believe that ICT is not time consuming with a total mean of 2.93 which shows that teachers in this environment are using ICT effectively and efficiently.

Table 4.12: Instructors' perceptions on the use of ICT to facilitate problem-based learning

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM11	Strongly Disagree	11	13.1	2.94	1.08
	Disagree	17	20.2		
	Neutral	23	27.4		

Agree	32	38.1
Strongly Agree	1	1.2

As indicated in Table 4.12, 39.3% (33 instructors) support the idea that using ICT facilitates problem-based learning while 33.3% (28 instructors) have different point of view which they believe ICT does not enhance problem-based learning, and 27.4% (23 instructors) have neutral point of view. The mean estimation stated as 2.94 with a SD of 1.08 shows that ICT plays an important role in providing real- life problems that require students' thinking.

These findings of this item are similar with that of the research conducted by Mahdum et al. (2019), where they found out that most instructors hold positive perspectives in using ICT to participate in providing problem-based tasks.

According to the results gotten from the data in the first sub-dimension which is teacher's perception in ICT use, it can be concluded that Alrefak University teachers hold high level of perception towards ICT usage. However, in spite of the high positivity in this particular sub dimension, teachers need to be educated on how to implement ICT for promoting innovation and providing problem-solving skills to the students. In addition, teachers should be aware that ICT can be used in facilitating problem-based learning.

The result of the finding in this particular sub-dimension is similar to Gebremedhin and Fenta (2015) result, where they discovered that Adwa College teachers have a strong positive perception toward ICT usage.

4.1.2 Instructors' ICT Utilization in the Class

The second sub-dimension measures the amount of ICT usage in class which is based on 9 items in the Likert scale.

Table 4.13: Instructors' perceptions on ICT implementations (computer/ laptop with internet) for searching, planning and preparation (ITEM 14)

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM14	Strongly Disagree	9	10.7	3.64	1.46
	Disagree	15	17.9		
	Neutral	10	11.9		
	Agree	13	15.5		
	Strongly Agree	9	10.7		

As stated in Table 4.13, the percentages of people who agreed and disagreed are mostly close, where 28.6% (24 instructors) represents instructors who do not use ICT tools for searching, planning and preparation for the lesson, while 26.2% (22 instructors) agreed on the usage of ICT tools for searching, planning and preparation, while11.9% (10 instructors) have neutral point of view. Moreover, the mean estimation for item 14 is 3.64 with a SD of 1.46 which illustrates that most instructors are not confident enough in using ICT tools for planning, searching and preparation. However, as indicated from the results, the percentages for teachers who use ICT and those who do not use are very close. As one of the participants mentioned in the open-ended item 12;

"Internet helps me to search about relevant topics for lesson planning because it includes unlimited number of information".

Table 4.14: Instructors' perceptions on ICT usage to arouse and direct students' attention

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM15	Strongly Disagree	11	13.1	3.13	1.47
	Disagree	27	32.1		
	Neutral	11	13.1		
	Agree	10	11.9		
	Strongly Agree	25	29.8		

Table 4.14 presents close percentages between people who support and those who do not support ICT usage for arousing and directing students' attention. It shows that 45.2% (38 instructors) do not use ICT to arouse and direct students' attention. Nonetheless, 41.7% (35 instructors) show positive perception toward the use of ICT in enhancing student's attention, which is a high percentage as well, while 13.1% (11 instructors) have a neutral opinion. This Table also covers the mean estimation of the values which is stated as 3.13 with a SD of 1.47. Therefore, these results illustrate that the percentage of instructors who disagree on the statement are more than the instructors who agree on the use of ICT for directing and arousing students' attention. Furthermore, instructors believe that students can be motivated or directed even without the usage of ICT but also there are many instructors in this specific environment who use ICT as a tool for directing students' attention. As illustrated by a respondent in the open-ended item 12;

"I use ICT tools in my lesson to motivate and grab the attention of my students by showing a video or photos".

These findings are dissimilar with Ghavifek and Rosdy (2016) findings which indicated that ICT helps students concentrate more on their studies and that will affect positively on their learning process.

Table 4.15: Instructors' perceptions on utilizing ICT in collaborative tasks for students' motivation

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM16	Strongly Disagree	11	13.1	3.33	1.62
	Disagree	29	34.5		
	Neutral	3	3.6		
	Agree	3	3.6		
	Strongly Agree	38	45.2		

In Table 4.15, 48.8% (41 instructors) are optimistic towards using ICT in collaborative tasks for students' motivation purposes whereas 47.6% (40 instructors) have opposite point of view, and only 3.6% (3 instructors) for neutral responses. Moreover, the mean estimation for this item is stated as 3.33 with a SD of 1.62 which can be explained as instructors have the ability to use ICT for collaborative tasks. However, there is mixed perception on the idea of ICT motivating students for better educational performances. As one of the instructors mentioned in the open-ended item 12;

"One of the benefits of using ICT in class is to promote collaborative tasks that help the students work and communicate together during and after the class time".

Furthermore, Umar and Hassan (2015) findings is similar to the findings of this research where they concluded that ICTs foster collaborative learning skills among students to achieve a common learning goal because ICTs help students share

information via different sources and facilitate learning by providing visuals and videos.

Table 4.16: Instructors' perceptions on utilizing E-reader during the lesson

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 17	Strongly Disagree	11	13.1	2.14	0.79
	Disagree	59	70.2		
	Neutral	6	7.1		
	Agree	7	8.3		
	Strongly Agree	1	1.2		

As shown in Table 4.16, most teachers do not use E-readers during the class which is illustrated as 83.3% (70 instructors). However, only 9.5% (8 instructors) make use of E-readers in the class, while 7.1% (6 instructors) were neutral. Thus, the mean estimation of this statement was 2.14 with a SD of 0.79, which clearly indicates that instructors do not make use of E-readers in their teaching process, which is mainly because of their subjects or content.

Table 4.17: Instructors' access and availability of desktop computers in the class

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 18	Strongly Disagree	7	8.3	3.14	1.17
	Disagree	25	29.8		
	Neutral	7	8.3		
	Agree	39	46.4		
	Strongly Agree	6	7.1		

Table 4.17 shows that most instructors have access and make use of desktop computers while teaching with a percentage of 53.5% (45 instructors), while 38.1% (32 instructors) don't have access and availability to this device in the class, and 8.3% (7 instructors) have neutral point of view. Additionally, the mean estimation for the five Likert scale is 3.14 with a SD of 1.17 which indicates that majority of instructors have access and feel confident in using desktop computers in class. Moreover, the results indicate that teachers are aware of the positive effects on using computers in class. As one of the participants commented in the open-ended item 12;

"I use PowerPoint to present information needed for the lesson". On the other hand, another participant mentioned in the open-ended item 13; "internet connection and electricity issues affect the usage of computers during the lectures".

Furthermore, a similar result to this study is that of Iskrenovic-Momcilovic (2018) who concluded that most teachers and students especially in higher education have positive views towards using computers in the class for various reasons such as presenting data and searching for information.

Table 4.18: Instructors' have access to computers only in computer laboratory

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 19	Strongly Disagree	8	9.5	2.21	0.78
	Disagree	59	70.2		
	Neutral	9	10.7		
	Agree	7	8.3		
	Strongly Agree	1	1.2		

As illustrated in Table 4.18, majority of instructors indicated as 79.7% (67 instructors) have access to computers in different places at the educational environment, whereas 9.5% (8 instructors) indicated that they can use computers only in the computer laboratory at the university. On the other hand, 10.7% (9 instructors) responded neutrally to this statement. In addition, the mean estimation for this item was 2.21 with a SD of 0.78 which indicates that most instructors in this environment have access to computers in different places not only constrained to computer laboratories.

Table 4.19: Instructors' perceptions on allowing students to utilize ICT in the class

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 20	Strongly Disagree	17	20.2	2.93	1.50
	Disagree	26	31.0		
	Neutral	7	8.3		
	Agree	14	16.7		
	Strongly Agree	20	23.8		

As demonstrated in Table 4.19, most instructors do not allow students to implement ICT in the class, which was calculated as 51.2% for 43 teachers. Nevertheless, 40.5% (34 instructors) believe that students learn better by using ICT in class, while 8.3% (7 instructors) have a neutral point of view. Furthermore, the mean estimation of this statement was 2.93 with a SD of 1.50, which shows that most teachers in this environment do not believe that students need to use ICT in class for better learning performance. However, one of the participants expressed their viewpoint in item 12;

"I like to use ICT tool to let my students participate in class and help me to solve any technical problem that might occur. I prefer letting students learn by doing".

On contrary, Ghavifekr et al. (2016) conducted a different result for allowing students to use ICT in class which 94.1% of teachers agree that students learn more effectively with ICT usage in class.

Table 4.20: Instructors' perceptions on using ICT on their own while making mistakes

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 21	Strongly Disagree	28	33.3	1.83	0.74
	Disagree	45	53.6		
	Neutral	8	9.5		
	Agree	3	3.6		
	Strongly Agree	0	0		

Table 4.20 illustrates that, a very low percentage of instructors 3.6% (3 instructors) prefer to implement ICT on their own while making mistakes. However, most of the instructors have opposite perceptions, which is shown as 86.9% (73 instructors), while 9.5% (8 instructors) have neutral point of view. Hence, the mean estimation of 1.83 with a SD of 0.74 indicates that most teachers are not afraid of making mistakes in front of colleagues and are confident in using ICT tools in class.

Table 4.21: Instructors' confidence on utilizing different kind of ICT devices (ITEM 22)

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 22	Strongly Disagree	17	20.2	2.74	1.29
	Disagree	18	21.4		
	Neutral	33	39.3		
	Agree	2	2.4		
	Strongly Agree	14	16.7		

As described in Table 4.21, a high percentage of 41.6% (35 instructors) indicates that instructors are not confident in using different kind of ICT devices. However only 19.1% are confident enough in using various kind of ICT tools, while 39.3% (33 instructors) selected the neutral option in the scale. Furthermore, the mean estimation was calculated as 2.74 with a SD of 1.29, which shows that most instructors are not confident enough in implementing different kind of devices.

The result of this finding is dissimilar to the findings of the research conducted by Umar and Hassan (2015) which shows that majority of teachers hold high level of positivity and confidence in implementing various ICT tools in education.

As described in the result gotten from the ICT usage in classrooms sub-dimension, it can be concluded that instructors at Alrefak University show a high percentage of ICT implementations for educational purposes. However, despite this high level of positivity in this sub-dimension, instructors need to be aware of the benefits on allowing students to implement ICT tools in the class, be more aware of the benefits of using E-readers during the lesson, and they should be able to use ICT for arousing and directing student's attention.

4.1.3 Instructors' ICT Selection Techniques

The third sub-dimension shows different ICT selection criteria that instructors usually have while choosing the most suitable ICT tools for a specific goal.

Table 4.22: The instructors' perceptions on selecting the type of ICT based on the lesson objectives and activities

Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
Strongly Disagree	15	17.9		

ITEM 23	Disagree	12	14.3	3.07	1.29
	Neutral	18	21.4		
	Agree	30	35.7		
	Strongly Agree	9	10.7		

As illustrated in Table 4.22, majority of the respondents demonstrate high levels of optimism toward selecting the type of ICT according to lessons objectives and activities with a percentage of 46.4% (39 instructors). Nevertheless, 32.2% (27 instructors) do not consider the lesson's objectives and activities as a criterion for ICT selection, while 21.4% (18 instructors) of the respondents were unbiased in their decision. Additionally, the mean estimation of this finding is 3.07 with a SD of 1.29 which reveals that instructors are considering their lesson aims and activities while selecting ICT devices for their lessons which demonstrates that lessons' aims and objectives is one of the criteria in selecting the appropriate type of ICT tools based on most instructors. Furthermore, one of the participants supported this item by their response;

"based on the aims and objectives of my lesson, I choose the tools that I will use in class".

In addition to that, Jatileni and Jatileni (2018) concluded a similar result which indicates that majority of teachers agreed on selecting the lesson objectives and tasks as a criterion for choosing the best ICT tool for the class.

Table 4.23: The instructors' perceptions on selecting ICT tools based on its availability and accessibility at school

Statement	Frequency N	Percent %	Mean X	Standard Deviation SD

ITEM 24	Strongly Disagree	13	15.5	3.13	1.53
	Disagree	26	31.0		
	Neutral	9	10.7		
	Agree	9	10.7		
	Strongly Agree	27	32.1		

As described in Table 4.23, the responses in this statement are closely similar in which 46.5% (39 instructors) don't consider the availability and accessibility of ICT devices at school as a selection criterion of using it in class, while 42.8% (36 instructors) of instructors have opposite view on the criteria of choosing ICT devices. On the other hand, 10.7% (9 instructors) of the respondents were of a neutral opinion. Conclusively, 3.13 stated as a mean estimation with a SD of 1.53 which illuminates that ICT accessibility and availability is not an issue for choosing ICT devices for their classes and believe that instructors' can afford to provide the devices needed in order to achieve the aim.

Moreover, Agbo (2015) concluded a different result related to the accessibility of ICT equipment at schools in which 120 over 200 teachers agreed on the importance of ICT accessibility and believe that it affects ICT usage and selection.

Table 4.24: The instructors' perceptions on selecting ICT tools based on the students' needs

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 25	Strongly Disagree	11	13.1	3.33	1.52
	Disagree	22	26.2		
	Neutral	11	13.1		
	Agree	8	9.5		
	Strongly Agree	32	38.1		

Table 4.24 shows that majority of the respondents hold positive perception toward selecting ICT tools according to the learners needs and interest which is stated as 47.6% (40 instructors). On the other hand, 39.3% (33 instructors) do not care about the students' needs for ICT selection criteria, while 13.1% (11 instructors) responded neutrally to this statement. Hence, the mean estimation for the five Likert scale is 3.33 with a SD of 1.52, which indicates that instructors are aware of students' needs, consider them while selecting ICT devices, and believe in students' needs for selecting the appropriate types of ICT for the class. Moreover, one of the participants responded in item 33;

"I ask my students which technological tool and platform they prefer to use in the class".

Jatileni and Jatileni (2018) concluded a similar finding which indicates that majority of teachers agreed on choosing ICT tools based on the diverse learners needs.

Table 4.25: The instructors' perceptions on choosing only the ICT devices they are familiar with

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 26	Strongly Disagree	12	14.3	3.38	1.49
	Disagree	20	23.8		
	Neutral	2	2.4		
	Agree	24	28.6		
	Strongly Agree	26	31.0		

In Table 4.25, 59.6% (50 instructors) which is more than half of the instructors select ICT devices they have used before and are familiar with. On the other hand, 38.1% (32 instructors) do not only select ICT tools they are familiar with, they prefer to learn

and use different new ICT tools regularly, while 2.4% (2 instructors) of respondents were of a neutral opinion. Conclusively, a calculated mean value of 3.38 with a SD of 1.49 denotes that instructors are choosing ICT devices they are most familiar with to avoid mistakes.

Additionally, one of the respondents in item 33 states that;

"I choose the type of ICT based on my personal experience in using it. I do not like to use new technological tools that I have no previous experience with".

Table 4.26: The instructors' perceptions on choosing the latest ICT tools for their teaching

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 27	Strongly Disagree	19	22.6	2.40	1.12
	Disagree	32	38.1		
	Neutral	16	19.0		
	Agree	14	16.7		
	Strongly Agree	3	3.6		

As indicated in Table 4.26, most respondents were negative toward choosing the latest ICT tools for teaching purposes which is stated as 60.7% (51 instructors), while 20.3% (17 teachers) select the latest ICT tools and believe that instructors should be up-to-date to and learn the new things that are related to teaching. Moreover, 19.0% (16 instructors) had a neutral point of view. In addition to that, the mean estimation was 2.40 with a SD of 1.12 which indicates that instructors prefer to use technological tools they were familiar with and not importantly the latest devices. Nonetheless, this result is different from the result of the research conducted by Strutynska and Umryk (2017)

where they found out that Ukrainian educators and scholars were ready and able to use new trends of ICT in the class.

Table 4.27: The instructors' perceptions on choosing the type of ICT to increase student's confidence of learning

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 28	Strongly Disagree	14	16.7	2.83	1.24
	Disagree	25	29.8		
	Neutral	11	13.1		
	Agree	29	34.5		
	Strongly Agree	5	6.0		

As demonstrated in Table 4.27, 46.5% (39 instructors) hold negative perceptions towards selecting ICT tools with the aim of increasing students' confidence in the learning process, hence, they do not believe that ICT plays a role in increasing students' confident. However, 40.5% (34 instructors) of respondents were positive toward selecting ICT tools for increasing students' motivation and confidence in the learning process, while 13.1% (11 instructors) had neutral point of view. Moreover, the mean estimation was 2.83 with a SD of 1.24, which illustrates that instructors are not selecting ICT tools with the aim of increasing students' confidence.

On contrary, Jatileni and Jatileni (2018) discovered a dissimilar result, which indicates that majority of teachers, agreed on selecting ICT tools for the purpose of increasing student's motivation and self-confidence, hence, they hold positive perceptions toward choosing ICT tools with the purpose of increasing student's confidence for educational aims.

Table 4.28: The instructors' perceptions on choosing the type of ICT according to the curriculum or subject policies

	Statement	Frequency N	Percent %	Mean X	Standard Deviation SD
ITEM 29	Strongly Disagree	12	14.3	3.32	1.39
	Disagree	14	16.7		
	Neutral	14	16.7		
	Agree	23	27.4		
	Strongly Agree	21	25.0		

As indicated in Table 4.28, it shows that majority of the respondents demonstrate high level of perception towards choosing the curriculum and subject policies as a selection criterion of selecting ICT tools which is stated as 52.4% (44 instructors). Nonetheless, 31% (26 instructors) of participants disagreed and do not choose ICT tools based on the curriculum, while 16.7% (14 instructors) of the respondents were unbiased in their decision. Additionally, 3.32 is stated as the mean estimation with a SD of 1.39, which illustrates that instructors are focusing on the curriculum in order to select the ICT devices. Moreover, one of the instructors responded in item 33;

"Based on the content that I have, I choose the tools that are needed".

Furthermore, a similar finding was discovered from the research conducted by Jatileni and Jatileni (2018) which concluded that majority of teachers agreed on selecting ICT tools based on the curriculum, hence, they hold positive perspective toward choosing ICT tools based on the subject policies or curriculum.

The findings gotten from the ICT selection criteria sub-dimension shows that, instructors at Alrefak University demonstrate high levels of positivity towards different kind of criteria for choosing the ICT types. However, despite this high level

of positivity in this sub-dimension, the level of choosing the latest ICT tools for teaching ranked the least which means that even though teachers are aware of the different kind of ICT selection criteria, they are still not confident in using the current ICT tools in class. In addition to that, the results of this sub-dimension is similar to the results of Jatileni and Jatileni (2018) which they deduced from their findings that the instructors reacted positively toward certain selection criteria on choosing ICT tools for teaching and learning process.

Conclusively, as a result of the high level of positivity toward the three sub-dimensions which are instructors' perceptions, ICT utilizations in class settings, and ICT selection techniques, it can be concluded that Alrefak University instructors have significantly high levels of perception towards ICT usage in teaching and learning process. This shows that they are ready to integrate ICT into the teaching process, which is similar to the findings conducted by (Jatileni & Jatileni, 2018).

4.2 The Relationship between the Instructors' Perceptions on the Utilization of ICT toward Teaching and Learning Process and Gender

For measuring the relationship between gender and its effect on the instructor's perception towards ICT usage, an independent sample T-test was conducted to evaluate the instructor's perception toward ICT usage for both genders.

As a result of the independent sample t-test, it indicates that gender is not seen as a major determinant of their perception toward ICT usage in teaching and learning process for all 27 items. Hence, gender does not have any effect on the instructors' perceptions towards ICT usage for teaching and learning process. Furthermore, the

result of this research question is similar to the findings of Shah and Udgaonkar (2018), where they discovered that there is no significant difference among instructors' gender toward their perceptions in ICT usage. However, the research study that was conducted by Ghavifekr et al. (2016) proved a different result whereby gender differences affects teachers' perceptions, and stated that male teachers hold higher perception than female teachers towards ICT usage in teaching and learning process.

4.3 The Relationship between the Instructors' Perceptions on the Implementation of ICT Tools in Teaching and Learning Process and Age

For measuring the relation between instructors' age and the perception they hold toward ICT usage at Alrefak University in Libya, One-Way ANOVA and Post Hoc test was conducted. It shows that out of 27 items, 18 items had a significant difference regarding the age of instructors and their perceptions toward ICT usage for teaching and learning purposes.

Table 4.29: Descriptive statistics table, which includes frequency, mean and SD value for item 1. It shows the relation between instructors' ages and their perceptions toward ICT usage.

Table 4.29: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 1

Teachers' ages	Frequency (n)	Mean	SD
From 20-29	28	4.29	1.05
From 30-39	18	3.89	1.37
From 40-49	21	3.33	1.19
50 and more	17	2.41	1.58

As illustrated in Table 4.30, the consequences of one-way ANOVA table for item one that contains sum of squares, Standard deviation, f and p value, significant difference, which displays the correlation among instructors' ages with the perceptions they hold toward ICT usage for educational purposes.

Table 4.30: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 1

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	40.14	3	13.38	8.22	0.000	20-29 &40-49
	Within groups	130.28	80	1.63			20-29 &50+
	Total	170.42	83				30-39 &50+
							40-49 &50+

To discover the relationship between instructors' perceptions toward ICT usage and instructors' ages. One-Way ANOVA test was conducted to measure the effect of instructors' ages on instructors' perceptions toward ICT usage in respect to various age groups (20-29, 30-39, 40-49, 50+).

Moreover, as illustrated in Table 4.29, the mean estimation of item 1 varied for the different ages (20-29, 30-39, 40-49, 50+). Additionally, as shown in p value of Table 4.30, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) = 8.22$, $P=0.000$].

Furthermore, the outcomes for item 1 post hoc test presents the mean value of the instructors between 20-29 age groups (X= 4.29, SD=1.05) is similar to that of 30-39 age groups (X= 3.89, SD=1.37), however, it is significantly different from that of 40-49 age groups (X=3.33, SD=1.19) and 50+ ages (X= 2.41, SD=1.58). Moreover, the 30-39 age groups (X= 3.89, SD=1.37) is similar with that of 40-49 ages, although it is significantly different from that 50+. Conclusively, it is seen that 40-49 ages (X=3.33, SD=1.19) is significantly different from that 50+.

Table 4.31 presents the Descriptive statistics table, that contains F, X and SD value for the second item. It displays the relation between instructors' ages and their perceptions on ICT utilizations.

Table 4.31: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 2

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.14	1.30
From 30-39	18	3.72	1.53
From 40-49	21	3.00	1.45
50 and more	17	2.76	1.45

As shown in Table 4.32, the results of One-Way ANOVA table for the second item that involve sum of squares, Standard deviation, f and p value, significant difference, which demonstrates the relationship among the instructors' ages and the perceptions they hold toward ICT usage for educational purposes.

Table 4.32: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 2

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors'	Between groups	26.89	3	8.96	4.48	0.006	20-29 &40-49

	Within groups	160.10	80	2.00	20-29 &50+
	Total	186.99	83		30-39 &50+

For determining the relationship between instructors' perceptions toward ICT usage and instructors' ages, One-Way ANOVA test was conducted to measure the impact of instructors' ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Furthermore, as demonstrated in Table 4.31, the mean estimation of item 2 varied for the different ages (20-29, 30-39, 40-49, 50+). Also, as shown in p value of Table 4.32, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) = 4.48$, $P=0.006$].

Additionally, the consequences of post hoc test for the second item shows that the mean value of the instructors between 20-29 age groups ($X= 4.14$, $SD= 1.30$) is similar to that of 30-39 ($X=3.72$, $SD=1.53$), nevertheless, it is significantly different from that of 40-49 ($X=3.00$, $SD=1.45$) and 50+ ($X= 2.76$, $SD= 1.45$). Furthermore, the 30-39 ($X=3.72$, $SD=1.53$) age groups are identical with that of 40-49 but significantly different from that of 50+ age groups. Finally, 40-49 ($X=3.00$, $SD=1.45$) is similar to that of 50+ age groups.

Table 4.33 presents the Descriptive statistics table, that contains frequency, mean and SD value for item 3. It shows the relation between instructors' ages and their perceptions toward ICT usage.

Table 4.33: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 3

Instructors' ages	(n)	X	SD
From 20-29	28	4.11	1.34
From 30-39	18	3.56	1.58
From 40-49	21	2.67	1.28
50 and more	17	2.76	1.35

Table 4.34 shows the consequences of one-way anova test, specifically for item 3 than covers sum of squares, Standard deviation, f and p value, significant difference, which presents the relation between the instructors' ages and the perceptions they hold toward ICT usage in teaching and learning process.

Table 4.34: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 3

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	32.44	3	10.81	5.66	0.001	20-29 &40-49
	Within groups	152.85	80	1.91			20-29 &50+
	Total	185.29	83				30-39 &40-49

In order to find the relation between instructors' ages and their perceptions toward ICT usage, One-Way ANOVA test was conducted to calculate the impact of instructors'

ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Moreover, Table 4.33 demonstrates the mean estimation of item 3 varied for the different ages (20-29, 30-39, 40-49, 50+). Also, as shown in p value of Table 4.34, a significant difference was revealed in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) =5.66$, $P=0.001$].

Furthermore, the consequences of item 3 conducted from post hoc test reveals the mean value of the instructors between 20-29 ($X=4.11$, $SD=1.34$) age groups is similar to that of 30-39 ($X=3.56$, $SD=1.580$), whereas, it is significantly different from that of 40-49 ($X=2.67$, $SD=1.28$) and 50+ ($X=2.76$, $SD=1.35$). In addition, the 30-39 ($X=3.56$, $SD=1.580$) age groups are similar with that of 50+, however, it is significantly different from that of 40-49. Subsequently, 50+ ($X=2.76$, $SD=1.35$) is similar to that of 40-49 age groups.

Table 4.35 presents the results of descriptive statistics which involves frequency, mean and SD value for item 4. It shows the relation between instructors' ages and their perceptions toward ICT usage.

Table 4.35: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 4

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.14	1.33
From 30-39	18	3.67	1.46
From 40-49	21	2.67	1.67
50 and more	17	3.00	1.41

Table 4.36 demonstrates a One-Way ANOVA table for the fourth item, with sum of squares, Standard deviation, significant difference, f and p value which presents the correlation among the instructors' ages with the perceptions they hold toward ICT usage in teaching and learning process.

Table 4.36: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 4

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perception toward ICT Usage	Between groups	27.66	3	9.22	4.31	0.007	
	Within groups	171.24	80	2.14			20-29 &40-49
	Total	198.89	83				20-29 &50+

In order to find the relation between instructors' ages and their perceptions toward ICT usage, One-Way ANOVA test was conducted to calculate the impact of instructors' ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Moreover, Table 4.35 demonstrates the mean estimation of item 4 varied for the different ages (20-29, 30-39, 40-49, 50+). Also, as shown in p value of Table 4.36, a significant difference was revealed in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) = 4.31$, $P=0.007$].

Furthermore, the consequences of item 4 that was conducted from post hoc test reveals the mean value of the instructors between 20-29 age groups (X=4.14, SD=1.33) is similar to that of 30-39 (X=3.67, SD=1.46), nonetheless, it is significantly different from that of 40-49 (X=2.67, SD=1.67) and 50+ (X=3.00, SD=1.41). Moreover, 30-39(X=3.67, SD=1.46) age groups are identical with that of 40-49 and 50+. Conclusively, 50+(X=3.00, SD=1.41) is similar to that of 40-49 age groups.

Table 4.37 presents the results of descriptive statistics which involves frequency, mean and SD value for item 5. It shows the relation between instructors' ages and their perceptions toward ICT usage.

Table 4.37: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 5

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.14	1.27
From 30-39	18	3.33	1.85
From 40-49	21	2.95	1.56
50 and more	17	2.88	1.50

Table 4.38 shows the one-way ANOVA table, particularly for item 5 with sum of squares, Standard deviation, significant difference, f and p value, which presents the relationship between instructors' ages and the perceptions they hold toward ICT usage in teaching and learning process.

Table 4.38: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 5

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors'	Between groups	24.27	3	8.09	3.48	0.020	

	Within groups	186.15	80	2.33	20-29 &40-49 20-29 &50+
	Total	210.42	83		

For finding the relation between instructors' ages and their perceptions toward ICT usage, One-Way ANOVA test was conducted to measure the influence of instructors' ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Moreover, Table 4.37 displays the mean estimation of item 5 varied for the different ages (20-29, 30-39, 40-49, 50+). Additionally, as shown in p value of Table 4.38, a significant difference was revealed in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3, 80) = 3.48$, $P=0.020$].

Furthermore, the consequences of item 5 that was conducted from post hoc test reveals the mean value of the instructors between 20-29 age groups ($X=4.14$, $SD=1.27$) is parallel to that of 30-39 ($X=3.33$, $SD=1.85$) , but it is significantly different from that of 40-49 ($X=2.95$, $SD=1.56$) and 50+($X=2.88$, $SD=1.50$). Moreover, 30-39($X=3.33$, $SD=1.85$) age groups are similar to that of 40-49 and 50+. Conclusively, 40-49 ($X=2.95$, $SD=1.56$) age groups are same with that of 50+ age groups.

Table 4.39 shows the results of descriptive statistics which includes frequency, mean and SD value for item 6. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.39: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 6

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.18	1.25
From 30-39	18	3.44	1.72
From 40-49	21	2.81	1.37
50 and more	17	2.53	1.70

Table 4.40 clarifies One-Way ANOVA table for item 6 with sum of squares, Standard deviation (SD), significant difference, f value and p value, that indicates the correlation between instructors' ages and the perceptions they hold toward ICT implementations for educational purposes.

Table 4.40: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 6

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	36.96	3	12.32	5.60	0.002	
	Within groups	176.03	80	2.20			20-29 &40-49
	Total	212.99	83				20-29 &50+

For finding the relation between instructors' ages and their perceptions toward ICT usage, One-Way ANOVA test was conducted to measure the influence of instructors'

ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Moreover, Table 4.39 shows the mean estimation of item 6 varied for the different ages (20-29, 30-39, 40-49, 50+). Additionally, as shown in p value of Table 4.40, a significant difference was revealed in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) =5.60$, $P=0.002$].

In addition to that, the results of item 6 that was conducted from post hoc test reveals the mean value of the instructors between 20-29 age groups ($X=4.18$, $SD=1.25$) is similar to that of 30-39 ($X=3.44$, $SD=1.72$), however, it is significantly different from that of 40-49 ($X=2.81$, $SD=1.37$) and 50+ ($X=2.53$, $SD=1.70$). Moreover, 30-39 ($X=3.44$, $SD=1.72$) age groups are identical with that of 40-49 and 50+. In addition, the 40-49 ($X=2.81$, $SD=1.37$) age groups are same to that of 50+.

Table 4.41 shows the results of descriptive statistics which includes frequency, mean and SD value for item 7. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.41: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 7

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.14	1.38
From 30-39	18	3.50	1.69
From 40-49	21	2.81	1.60
50 and more	17	2.65	1.41

Table 4.42 demonstrates One-Way ANOVA table with sum of squares, Standard deviation (SD), significant difference, f value and p value, for item 7, which presents the relation between instructors' ages and the perceptions they hold toward ICT utilization in teaching and learning purposes.

Table 4.42: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 7

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perception toward ICT Usage	Between groups	32.51	3	10.84	4.74	0.004	
	Within groups	183.05	80	2.29			20-29 &40-49
	Total	215.56	83				20-29 &50+

For outlining the relation between instructors' ages and their perceptions toward ICT usage, One-Way ANOVA test was conducted to measure the influence of instructors' ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Moreover, Table 4.41 shows the mean estimation of item 7 varied for the different ages (20-29, 30-39, 40-49, 50+). Also, as shown in p value of Table 4.42, a significant difference was revealed in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) = 4.74$, $P=0.004$.].

Furthermore, the results of post hoc test for item 7 demonstrates the mean value of the instructors between 20-29 age groups (X=4.14, SD=1.38) is similar to that of 30-39 age groups (X=3.50, SD=1.69), however, it is significantly different from that of 40-49 age groups (X=2.81, SD=1.60) and 50+ ages (X=2.65, SD=1.41). Moreover, the 30-39 age groups (X=3.50, SD=1.69) are similar with that of 40-49 ages and 50+. Conclusively, it is seen that 40-49 ages (X=2.81, SD=1.60) are identical with that of 50+.

Table 4.43 shows the results of descriptive statistics which includes frequency, mean and SD value for item 8. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.43: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 8

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.32	1.34
From 30-39	18	3.67	1.58
From 40-49	21	2.76	1.73
50 and more	17	3.12	1.58

Table 4.44 displays One-Way ANOVA table with sum of squares, Standard deviation (SD), significant difference, f value and p value, for item 8, which presents the relationship between instructors' ages and the perceptions they hold toward ICT use in teaching and learning process.

Table 4.44: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 8

Variable source	Sum of square	SD	Mean square	F	P	Sig. Difference

Instructors' Perceptions toward ICT Usage	Between groups	33.13	3	11.04	4.66	0.005	20-29&40-49
	Within groups	189.68	80	2.37			20-29 &50+
	Total	222.81	83				

For conducting the relation between instructors' ages and their perceptions toward ICT usage, One-Way ANOVA test was conducted to measure the impact of instructors' ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Table 4.43 illustrate the mean estimation of item 8 varied for the different ages (20-29, 30-39, 40-49, 50+). Furthermore, as shown in p value of Table 4.44, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) = 4.66$, $P=0.005$.].

Furthermore, the results of item 8 post hoc test indicates that the mean value of the instructors between 20-29 age groups (X=4.32, SD=1.34) is similar to that of 30-39 age groups (X=3.67, SD=1.57), however, it is significantly different from that of 40-49 age groups (X=2.67, SD=1.73) and 50+ ages (X=3.12, SD=1.58). Moreover, the 30-39 age groups (X=3.67, SD=1.57) are similar with that of 40-49 ages and 50+. Conclusively, it is seen that 50+(X=3.12, SD=1.58) ages are similar with that of 40-49.

Table 4.45 shows the results of descriptive statistics which includes frequency, mean and SD value for item 9. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.45: Descriptive statistics table of instructors' perceptions toward ICT utilization depending on their ages for item 9

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.32	1.34
From 30-39	18	3.56	1.69
From 40-49	21	2.67	1.65
50 and more	17	3.06	1.56

Table 4.46 demonstrates One-Way ANOVA table particularly for the 9th item with sum of squares, Standard deviation (SD), significant difference, f value and p value, which presents the relationship between instructors' ages and the perceptions they hold toward ICT utilization for teaching and learning process.

Table 4.46: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 9

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	36.83	3	12.28	5.17	0.003	20-29 &40-49
	Within groups	190.16	80	2.38			20-29 &50+
	Total	226.99	83				

For measuring the relation between instructors' ages and their perceptions toward ICT usage, One-Way ANOVA test was conducted to analyze the impact of instructors'

ages on instructors' perceptions toward ICT usage based on various age groups (20-29, 30-39, 40-49, 50+).

Table 4.45 illustrate the mean estimation of item 9 varied for the different ages (20-29, 30-39, 40-49, 50+). Furthermore, as shown in p value of Table 4.46, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) = 5.17$, $P=0.003$.].

Furthermore, the results of post hoc test for the ninth item shows the mean value of the instructors between 20-29 age groups ($X=4.32$, $SD=1.34$) is similar to that of 30-39 age groups ($X=3.56$, $SD=1.69$), however, it is significantly different from that of 40-49 age groups ($X=2.67$, $SD=1.65$) and 50+ ages ($X=3.06$, $SD=1.56$). Moreover, the 30-39 ($X=3.56$, $SD=1.69$) age groups are similar with that of 40-49 ages and 50+. Conclusively, it is seen that 50+ ages ($X=3.06$, $SD=1.56$) are similar with that of 40-49.

Table 4.47 presents the results of descriptive statistics which includes frequency, mean and SD value for item 11. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.47: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 11

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	3.36	0.91
From 30-39	18	2.94	1.06
From 40-49	21	2.86	1.11
50 and more	17	2.35	1.12

Table 4.48 demonstrates One-Way ANOVA table with sum of squares, Standard deviation (SD), significant difference, f value and p value, for item 11, which presents the relationship between instructors' ages and the perceptions they hold toward ICT usage for teaching aims.

Table 4.48: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 11

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	10.88	3	3.63	3.38	0.022	20-29 &50+
	Within groups	85.83	80	1.07			
	Total	96.70	83				

Furthermore, in order to find the impact of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Table 4.47 illustrate the mean estimation of item 11 varied for the different ages (20-29, 30-39, 40-49, 50+). Furthermore, as shown in p value of Table 4.48, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) = 3.38$, $P=0.022$.].

Moreover, the results of post hoc test for item 11 displays the mean value of the instructors between 20-29 age groups ($X=3.36$, $SD=.911$) is similar to that of 30-39 age groups ($X=2.94$, $SD=1.06$), 40-49 ($X=2.86$, $SD=1.11$), however, it is significantly

different from that of 50+ age groups (X=2.35, SD=1.12). Moreover, the 30-39 age groups (X=2.94, SD=1.06) are similar with that of 40-49 ages and 50+. Conclusively, it is seen that 40-49 ages (X=2.86, SD=1.11) are significantly similar with that of 50+.

Table 4.49 presents the results of descriptive statistics, which includes frequency, mean and SD value for item 15. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.49: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 15

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	3.82	1.36
From 30-39	18	3.33	1.37
From 40-49	21	2.43	1.47
50 and more	17	2.65	1.27

Table 4.50 demonstrates One-Way ANOVA table with sum of squares, Standard deviation (SD), significant difference, f value and p value, for item 15, which presents the relationship between instructors' ages and the perceptions they hold toward ICT usage in teaching and learning process.

Table 4.50: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 15

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perception toward ICT Usage	Between groups	28.43	3	9.48	5.02	0.003	20-29 &40-49
	Within groups	151.13	80	1.89			20-29 &50+
	Total	179.56	83				30-39 &40-49

In order to find the impact of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Additionally, Table 4.49 illustrate the mean estimation of item 15 varied for the different ages (20-29, 30-39, 40-49, 50+). Furthermore, as shown in p value of Table 4.50, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) =5.02$, $P=0.003$.].

Furthermore, the results of item 15 post hoc test indicates that the mean value of the instructors between 20-29 age groups (X=3.82, SD=1.36) is similar to that of 30-39 age groups (X=3.33, SD=1.37), nevertheless, it is significantly different from that of 40-49 (X=2.43, SD=1.47) and 50+ age groups (X=2.65, SD=1.27). Moreover, the 30-39 age groups (X=3.33, SD=1.37) are similar with that of 50+ but significantly different from that of 40-49. Conclusively, it is seen that 50+ (X=2.65, SD=1.27) ages are significantly similar with that of 40-49.

Table 4.51: presents the results of descriptive statistics, which includes frequency, mean and SD value for item 16. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.51: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 16

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	4.14	1.46
From 30-39	18	3.61	1.54
From 40-49	21	2.62	1.53
50 and more	17	2.59	1.46

Table 4.52 demonstrates One-Way ANOVA table with sum of squares, Standard deviation (SD), significant difference, f value and p value, for item 16, which presents the relationship between instructors' ages and the perceptions they hold toward ICT use in teaching and learning aims.

Table 4.52: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 16

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	39.89	3	13.30	5.95	0.001	20-29 &40-49
	Within groups	178.78	80	2.24			20-29 &50+
							30-39 &40-49
	Total	218.67	83				30-39 &50+

Moreover, for finding the influence of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Additionally, Table 4.51 illustrate the mean estimation of item 16 varied for the different ages (20-29, 30-39, 40-49, 50+). Furthermore, as shown in p value of Table 4.52, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) =5.02$, $P=0.001$].

Furthermore, the outcomes of post hoc test for item 16 indicates the mean value of the instructors between 20-29 age groups (X=4.14, SD=1.46) is similar to that of 30-39 age groups (X=3.61, SD=1.54), nevertheless, it is significantly different from that of 40-49 (X=2.62, SD=1.53) and 50+ age groups (X=2.59, SD=1.46). Additionally, the 30-39 age groups (X=3.61, SD=1.54) are significantly different with that of 40-49 and 50+. Finally, it is seen that 40-49 ages (X=2.62, SD=1.53) are significantly similar with that of 50+.

Table 4.53 shows the result of descriptive statistics, which includes frequency, mean and SD value for item 20. It shows the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.53: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 20

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	3.79	1.40
From 30-39	18	3.06	1.39
From 40-49	21	2.24	1.26
50 and more	17	2.24	1.39

Table 4.54 demonstrates One-Way ANOVA table with sum of squares, Standard deviation (SD), significant difference, f value and p value, for item 20 which presents the relationship between instructors' ages and the perceptions they hold toward ICT usage in teaching and learning process.

Table 4.54: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 20

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors	Between groups	39.04	3	13.02	7.01	0.000	20-29 &40-49

	Within groups	148.53	80	1.86	20-29 &50+
	Total	187.57	83		

Moreover, for outlining the influence of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

As well as, Table 4.53 illustrate the mean estimation of item 20 varied for the different ages (20-29, 30-39, 40-49, 50+). Also, it is shown in p value of Table 4.54, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) = 7.01$, $P=0.000$].

Moreover, the results of item 20 post hoc test indicates that the mean value of the instructors between 20-29 age groups (X=3.79, SD=1.40) is similar to that of 30-39 age groups (X=3.06, SD=1.39), nonetheless, it is significantly different from that of 40-49 (X=2.24, SD=1.26) and 50+ age groups (X=2.24, SD=1.39). Additionally, the 30-39 age groups (X=3.06, SD=1.39) are similar with that of 40-49 and 50+. Lastly, it is seen that 40-49 (X=2.24, SD=1.26) ages are similar with that of 50+.

Table 4.55 displays the consequences of descriptive statistics, which includes frequency, mean and SD value for item 21. It illustrates the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.55: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 21

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	1.64	.56
From 30-39	18	1.78	.65
From 40-49	21	1.67	.58
50 and more	17	2.41	1.00

Table 4.56 presents ANOVA table with sum of squares, (SD), significant difference, f value and p value, for item 21, that illustrates the correlation between instructors' ages and the perceptions they hold toward ICT utilization into teaching process.

Table 4.56: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 21

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	7.34	3	2.45	5.11	0.003	50+ &20-29
	Within groups	38.32	80	.48			50+ &30-39
							50+ &40-49
	Total	45.67	83				

Moreover, for finding the influence of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Additionally, Table 4.55 illustrate the mean estimation of item 21 varied for the different ages (20-29, 30-39, 40-49, 50+). As well as, it is shown in p value of Table 4.56, a significant difference was shown in different ages based on the instructors'

perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) = 5.11$, $P=0.003$].

In addition to that, the consequences of post hoc test for item 23 indicates the mean value of the instructors between 30-39 age groups (X=1.78, SD=.65) is similar to that of 20-29 age groups (X=1.64, SD=.56) and 40-49(X=1.67, SD=.58). Additionally, the 40-49 age groups (X=1.67, SD=.58) are similar to that of 20-29. In addition, the 50+ age groups (X=2.41, SD=1.00) is significantly different from that of 20-29, 30-39 and 40-49 age groups.

Table 4.57 shows the result of descriptive statistics, which includes frequency, mean and SD value for item 23. It explains the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.57: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 23

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	3.68	1.12
From 30-39	18	2.94	1.21
From 40-49	21	2.57	1.33
50 and more	17	2.82	1.29

Table 4.58 presents One-Way ANOVA outcomes for sum of squares, F, P, SD for item 23 that will describe the relation between instructors' different ages with the perception they hold towards ICT usage for educational purposes.

Table 4.58: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 23

Variable source	Sum of square	SD	Mean square	F	P	Sig. Difference

Instructors' Perception toward ICT Usage	Between groups	16.91	3	5.64	3.74	0.014	20-29 &40-49
	Within groups	120.67	80	1.51			
	Total	137.57	83				20-29 &50+

Moreover, for finding the influence of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Additionally, Table 4.57 illustrate the mean estimation of item 23 varied for the different ages (20-29, 30-39, 40-49, 50+). As well as, it is shown in p value of Table 4.58, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) = 3.74$, $P=0.014$].

Moreover, the outcomes of 23rd tem post hoc test specifies that the mean value of the instructors between 20-29 age groups (X=3.68, SD=1.12) is similar to that of 30-39 age groups (X=2.94, SD=1.21), nevertheless, it is significantly different from that of 40-49 (X=2.57, SD=1.33) and 50+ (X=2.82, SD=1.29). Additionally, the 30-39 age groups (X=2.94, SD=1.21) are similar to that of 40-49 and 50+.Furthermore, 50+ age groups (X=2.82, SD=1.29) are identical with that of 40-49.

Table 4.59 shows the result of descriptive statistics, which includes frequency, mean and SD value for item 24. It explains the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.59: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 24

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	3.75	1.58
From 30-39	18	3.33	1.57
From 40-49	21	2.67	1.43
50 and more	17	2.47	1.13

Table 4.60 presents One-Way ANOVA outcomes for sum of squares, F, P, SD for item 24 that will describe the relation between instructors' different ages with the perception they hold towards ICT usage for educational purposes.

Table 4.60: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 24

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Teachers' Perceptions toward ICT Usage	Between groups	23.41	3	7.80	3.67	0.016	20-29 &40-49
	Within groups	170.15	80	2.13			
	Total	193.56	83				20-29 &50+

Furthermore, for finding the influence of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Additionally, Table 4.59 illustrate the mean estimation of item 24 varied for the different ages (20-29, 30-39, 40-49, 50+). Moreover, it is shown in p value of Table 4.60, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) = 3.668$, $P=0.016$].

Moreover, the results of item 24 post hoc test reveals that the mean value of the instructors between 20-29 age groups (X=3.75, SD=1.58) is similar to that of 30-39 age groups (X=3.33, SD=1.57), however, it is significantly different from that of 40-49 (X=2.67, SD=1.43) and 50+(X=2.47, SD=1.13). Also, the 30-39 age groups (X=3.33, SD=1.57) are similar to that of 40-49 and 50+. Furthermore, 40-49 age groups (X=2.67, SD=1.43) are identical with that of 50+ age groups.

Table 4.61 shows the results of descriptive statistics, which includes frequency, mean and SD value for item 26. It explains the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.61: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 26

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	3.89	1.20
From 30-39	18	3.22	1.59
From 40-49	21	2.71	1.52
50 and more	17	3.53	1.55

Table 4.62 shows One-Way ANOVA findings for sum of squares, F, P, SD for item 26 that will describe the relation between instructors' different ages with the perception they hold towards ICT usage for educational purposes.

Table 4.62: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 26

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors Perceptions toward ICT Usage	Between groups	17.50	3	5.83	2.81	0.045	20-29 &40-49
	Within groups	166.31	80	2.08			
	Total	183.81	83				

To find the influence of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Furthermore, Table 4.61 shows the mean estimation of item 26 varied for the different ages (20-29, 30-39, 40-49, 50+). Moreover, it is shown in p value of Table 4.62, a significant difference was shown in different ages based on the instructors' perception toward ICT usage at Alrefak university ($p<0.05$) for three restrictions [$F(3,80) = 2.81$, $P=0.045$].

Furthermore, the results of post hoc test for item 26 reveals the mean value of the instructors between 20-29 age groups ($X=3.89$, $SD=1.20$) is similar to that of 30-39 age groups ($X=3.22$, $SD=1.59$), 50+ age groups ($X=3.53$, $SD=1.55$), nonetheless, it is significantly different from that of 40-49 ($X=2.71$, $SD=1.52$). Additionally, the 30-39 age groups ($X=3.22$, $SD=1.59$) are similar to that of 40-49. Furthermore, 50+ age groups ($X=3.53$, $SD=1.55$) are identical with that of 30-39 and 40-49 age groups.

Table 4.63 indicates the results of descriptive statistics, which includes frequency, mean and SD value for item 28. It explains the relation between instructors' ages and the perceptions they hold toward ICT usage.

Table 4.63: Descriptive statistics table of instructors' perceptions toward ICT usage depending on their ages for item 28

Instructors' ages	Frequency (n)	Mean	SD
From 20-29	28	3.46	1.17
From 30-39	18	2.83	1.20
From 40-49	21	2.57	1.17
50 and more	17	2.12	1.05

For finding the influence of age differences on the instructors' perception towards ICT usage, One-Way ANOVA test was conducted to calculate all age groups (20-29, 30-39, 40-49, 50+) with the instructors' perceptions.

Table 4.64: One-Way ANOVA table of instructors' perceptions toward ICT usage depending on their ages for item 28

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perceptions toward ICT Usage	Between groups	21.30	3	7.01	5.34	0.002	20-29 &40-49
	Within groups	106.37	80	1.33			20-29 &50+
	Total	127.67	83				

Moreover, Table 4.63 shows the mean estimation of item 28 varied for the different ages (20-29, 30-39, 40-49, 50+). Moreover, it is shown in p value of Table 4.64, a significant difference was shown in different ages based on the instructors' perception

toward ICT usage at Alrefak university ($p<0.05$) for three constraints [$F(3,80) = 5.338$, $P=0.002$].

Additionally, the results of item 28 post hoc test reveals that the mean value of the instructors between 20-29 age groups ($X=3.46$, $SD=1.17$) is similar to that of 30-39 age groups ($X=2.83$, $SD=1.20$), nonetheless, it is significantly different from that of 40-49 ($X=2.57$, $SD=1.17$) and 50+ age groups ($X=2.12$, $SD=1.05$). Furthermore, the 30-39 age groups ($X=2.83$, $SD=1.20$) are similar to that of 40-49 and 50+.Conclusively, 40-49 age groups ($X=2.57$, $SD=1.17$) are identical with that of 50+.

Consequently, as it is shown that out of 27 items, 18 items have a significant difference among different age groups of instructors and only 9 items show no differences. 20-29 age group of instructors had the highest mean value while 40-49 and 50+ age group instructors had the lowest mean value. Therefore, this result demonstrate that the instructors ages is considered as a major determinant of their perception toward ICT usage in teaching and learning process at Alrefak University in Libya. Accordingly, age differences have an effect toward instructors' perception on ICT usage for teaching and learning process. Furthermore, this result is similar to the result of the research conducted by Basargekar and Singhavi (2017) where they found out that there is a significant difference across the different age groups. This finding indicates that younger teachers are more confident in using ICT when it is compared it with older teachers.

4.4 The Relationship between the Instructors' Perceptions on the Implementation of ICT Tools in Teaching and Learning Process and their Field of Study

For measuring the relation between instructors' field and the perception they hold toward ICT usage at Alrefak University in Libya, One-Way ANOVA and Post Hoc test was conducted. It shows that out of 27 items, only 2 items had a significant difference regarding the field of instructors and their perceptions towards ICT usage.

Table 4.65 presents the descriptive statistics table that contains frequency (N), mean and SD value for item 1. It shows the relation between instructors' field and their perceptions towards ICT usage.

Table 4.65: Descriptive statistics table of instructors' perception towards ICT usage depending on their field for item 1

Instructors' Field of study	Frequency (n)	Mean	SD
Education department	22	4.00	1.48
Engineering	32	3.88	1.13
Business	11	2.91	1.45
Other	19	3.00	1.60

Table 4.66 presents the One-Way ANOVA table with sum of squares, standard deviation (SD), significant difference, F value, and P value, for item 1 that will describe the relation between instructors' fields and the perceptions they hold toward ICT usage for educational purposes.

Table 4.66: One-Way ANOVA table of instructors' perception towards ICT usage depending on their field for item 1

		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perception toward ICT Usage	Between groups	18.01	3	6.00	3.15	0.029	Education to Business
	Within groups	152.41	80	1.91			Education to Other
							Engineering to Business
	Total	170.42	83				Engineering to Other

In order to find the impact of field differences on the instructors' perceptions towards ICT usage, One-Way ANOVA test was conducted to calculate the effect of instructors' field on instructors' perceptions towards ICT usage in respect to the various field of study (Education department, Engineering, Business, Other).

As described in Table 4.65, the mean estimation of item 1 was different in each field which is also shown in the p value of Table 4.66. A clear difference was shown in different fields on the instructors' perception towards ICT usage at Alrefak University ($p<0.05$) for three restrictions [$F(3,80) = 3.15$, $P=0.029$].

Moreover, the results of post hoc test for the first item indicates that the mean value of the instructors in Education department ($X=4.00$, $SD=1.48$) is similar to that of Engineering department ($X=3.88$, $SD=1.13$), however, it is significantly different to that of Business department ($X=2.91$, $SD=1.45$) and Other departments ($X=3.00$, $SD=1.60$). On the other hand, the mean value of the instructors in the Engineering

department (X=3.88, SD=1.13) is significantly different from that of Business department and Other departments. Additionally, the mean value of the instructors in Other departments (X=3.00, SD=1.60) is similar to that of Business department.

Table 4.67 presents the descriptive data table, which includes frequency, mean and SD value for item 15. It shows the relation between instructors' field and their perceptions towards ICT usage.

Table 4.67: Descriptive statistics table of instructors' perception towards ICT usage depending on their field for item 15

Instructors' Field of study	Frequency (n)	Mean	SD
Education department	22	2.41	1.05
Engineering	32	2.28	0.77
Business	11	1.73	0.47
Other	19	1.84	0.38

As illustrated in Table 4.68, a One-Way ANOVA table, specifically for item 15 with sum of squares, standard deviation (SD), significant difference, f value, and p value, which shows the relation between instructors' fields and the perceptions they hold toward ICT usage for educational purposes.

Table 4.68: One-Way ANOVA table of instructors' perception towards ICT usage depending on their field for item 15

Variable source		Sum of square	SD	Mean square	F	P	Sig. Difference
Instructors' Perception	Between groups	5.79	3	1.93	3.32	0.024	Education to Business
	Within groups	46.50	80	0.58			

			Education to Other
Total	52.29	83	Engineering to Business

To discover the relationship between instructors' perceptions toward ICT usage and instructors' field, a One-Way ANOVA test was conducted for evaluating the impact of instructors' field on instructors' perceptions toward ICT usage in respect to various fields (Education department, Engineering, Business, Other).

Moreover, as illustrated in Table 4.67, the mean estimation of item 15 varied for the different fields (Education department, Engineering, Business, Other). Additionally, as shown in p value of Table 4.68, a significant difference was shown in different fields based on the instructors' perception towards ICT usage at Alrefak University ($p<0.05$) for three restrictions [$F(3,80) = 3.32$, $P=0.02$].

The results of post hoc test for item 15 indicates that the mean value of the instructors in Education department ($X=2.41$, $SD=1.05$) is similar to that of Engineering department ($X=2.28$, $SD=0.77$), however, it is significantly different from that of Business department ($X=1.73$, $SD=0.47$) and Other departments ($X=1.84$, $SD=0.38$). Furthermore, Engineering department ($X=2.28$, $SD=0.77$) is similar with that of Other departments, although it is significantly different from that of Business department. Conclusively, it is seen that Other departments ($X=1.84$, $SD=0.38$) is similar to that of Business department.

Consequently, out of 27 items in the survey, only 2 items had a significant difference among various fields and 25 items had no significance difference. Instructors who are from educational fields had the highest mean value, whereas instructors from business fields had the lowest mean value, which shows that there is an essential difference between the field of studies and the instructors' perception towards ICT usage.

Nevertheless, these results indicate that instructors' field are considered as a major determinant of their perception toward ICT usage in teaching and learning process at Alrefak University in Libya. Therefore, there is a relation between instructors' perception towards ICT usage and instructors' field for Education department, which proves that Education department instructors have high level of perceptions towards ICT usage in education.

On the Contrary, Basargekar and Singhavi (2017) findings are dissimilar to the findings of this research regarding the relation of the instructors' fields and the perception they hold towards ICT usage in teaching and learning process, where their findings suggest that subject differences are not seen as a major determinant of instructor's perception toward ICT utilization in teaching and learning purposes. They analyzed both technical (science-computer) and non-technical subjects (language) and found out that there is no significant difference among different subjects for ICT usage in education.

Chapter 5

CONCLUSION

This study was carried out for examining the instructors' perception towards implementing ICT into teaching and learning process in Libya and it is relation to gender, age, and field of study.

For collecting the data for this particular study, quantitative research and survey method was implemented at Alrefak University in Libya. The research participants comprised of 84 instructors from different gender, ages, and fields at Alrefak University in 2020-2021 Fall semester who freely contributed in the proposed survey study.

Additionally, to examine the data gathered, descriptive analysis, Frequency (f), Percentage (%), independent T-test, and One-Way ANOVA test were done. Descriptive analysis and frequency were used to present all the results of each posed research question variable whereas independent t-test was implemented only with two variables such as the relation between instructors' perceptions with gender differences, and One-Way ANOVA test was used with more than two variables such as the relation between the instructors' perception with their ages and fields of study.

The results of this study illustrate that Alrefak University instructors hold high level of perceptions toward ICT implementation in teaching and learning process regarding

the three sub-dimensions, which are instructors' perception on ICT usage, ICT usage in the class and ICT selection criteria.

In addition to that, as a conclusion for measuring the relationship between instructors' gender with their perception towards ICT in teaching and learning process, the researcher concluded that there is no difference among both genders. Therefore, the result indicates that gender distinction is not a crucial element and hence has no relationship with the instructors' perceptions toward ICT implementation in teaching and learning process.

On contrary, the finding for assessing the relationship between instructors' ages and the perception they have on ICT utilizations toward teaching and learning process is different from the finding of gender distinctions. The researcher concluded that there is a significant difference among various instructors' ages. Consequently, instructors' ages have a significant relationship with the instructors' perceptions on ICT utilizations toward teaching and learning process.

Furthermore, the finding for assessing the relationship between instructors' fields of study and the perception they hold towards ICT usage, the researcher concluded that there is a major difference between various educational fields. Consequently, the result indicates that instructors' fields of study is a vital factor. Hence, instructors' fields of study have a significant relationship with the instructors' perceptions towards implementing ICT tools in educational contexts.

To conclude, results of this study reveals that Alrefak University instructors' hold high level of positive perception on ICT usage toward educational processes in reference to their perception, utilization in class and selection techniques.

Further studies may explore the same topic with other Universities or schools in Libya and compare the findings, because this study is only referring to one particular University, which is Alrefak University, so it cannot be generalized to the whole education system in Libya.

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APPENDICES

Appendix A: Demographic Survey

Dear Teacher,

In order to answer the questions in this section, please put a tick in the appropriate box that suits the answer you have selected.

Note: only one answer can be selected for a question.

PART 1: Demographics

1. Age:

   - Under 20
   - From 20 to 29
   - From 30 to 39
   - From 40 to 49
   - 50 or more

2. Gender:

   - Male
   - Female

3. Field of the study:

   - Education department
   - Engineering
   - Business
   - Others

4. ICT pedagogical training received:

   - None
   - Less than 1year
   - 1 to 2 years
   - 3 to 4 years
   - More than 4 years

5. How long have you been using ICT in your teaching?

- None
- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 30 years
- More than 30 years

Appendix B: Teachers Perception toward ICT Usage in Teaching and Learning Process

Section 2

Main Questionnaire

There are 35 items under three sub-dimensions. 6 of the items are open-ended type of questions where as 29 items are in the Likert Scale where 5 — **Strongly agree,** 4 - **Agree,** 3 — **Neutral, 2— Disagree** and 1 — Strongly **disagree.** (Tick as appropriate)

1. PERCEPTION OF TEACHERS ON ICT USAGE

NO	Items	scale				
		1	2	3	4	5
1	Using ICT make teaching easier					
2	Using ICT enhances learners' critical thinking.					
3	Using ICT promote innovation and problem-solving skills of my learners					
4	Using ICT enhance collaborative learning among learners and teachers					
5	ICT promote research-based teaching and learning					
6	Using ICT help to ensure quality education					
7	Lack of ICT makes it difficult for teachers to keep up with the current trends in education					
8	Schools need to prioritize the ICT pedagogical training in their Continuous Professional Development (CPD)					
9	Teachers need to be encouraged to use ICT in their teaching and learning activities					
10	I find the use of ICT in teaching and learning a time					

	consuming					
11	ICT facilitates problem-based learning					
12	What do you think about the benefits of integrating ICT in teaching and learning?					
13	What do you perceive as the main challenges of using ICT in teaching and learning at your school?					

2. THE USE OF ICT IN THE CLASSROOM

NO	Items	Scale				
		1	2	3	4	5
14	1 use ICT (computer/laptop with internet) to Search for information during my lesson. planning and preparation					
15	I use ICT (Interactive whiteboard/projector) to arouse and direct my learners' attention/make the lesson interesting					
16	I motivate my learners to learn and solve task collaboratively through the use of the Internet					
17	I use E-reader (a device to read books and newspapers on screen) during the lesson					
18	In a classroom, I use desktop computers with access to the internet					
19	I only have access to computers in the computer laboratory					
20	I allow my learners to use gadgets (ICT devices) during the lesson					
21	I prefer using ICT on my own when no-one is around/watching to see me making Mistakes					
22	I confidently use different ICT devices in teaching					

3. CRITERION TEACHERS USE IN CHOOSING THE TYPE OF ICT

NO	Items	scale				
		1	2	3	4	5
23	The type of ICT tools I use in teaching is largely dependent on the lesson objectives and activities					
24	The type of ICT tools I use in teaching is largely dependent on the availability and accessibility at school					
25	The type of ICT I use is largely dependent on the diverse learners' needs					
26	I choose the type of technology (ICT devices) that T am familiar with or frequently use					
27	I choose the latest ICT tools available for my teaching					
28	I choose the type of technology to increase learners' confidence in learning					
29	I choose ICT tool based on the curriculum or subject policies					
30	lf in question 34 you disagree, please give reasons for your disagreement					
31	From the list below, indicate ALL the ICT device (s) that you are currently using/ have used previously in teaching and learning	[]Desktop computer [] Laptop []Mobile phone [ ]Tablet []Smart phone []Te1evision				

		[] Projector []smartboard
32	Briefly explain what makes the ICT device (s) indicated in Question 37 suitable to use in teaching and learning?	
33	What informs your decision for using the ICT tools in your teaching?	
34	In what way can the use of ICT affect your learners' attitude towards learning?	
35	What advice would you give to other teachers about the use of ICT in teaching and learning?	

Appendix C: Consent Form

Dear Teachers,

CONSENT FORM FOR TEACHER QUESTIONNAIRES

I am conducting a study that explores the teachers' perception toward implementing ICTs in teaching and learning process: A case study at Alrefak University in Libya. This research is being conducted to complete a thesis for master's degree from EMU The aim of this study is to identify the teachers' perception in using ICTs in teaching and learning process.

The aim of the thesis is to answer the following questions:

1. What perception do Alrefak university teachers' hold toward the usage of ICT in teaching and learning?
2. Does gender effect on the teachers' perceptions toward the usage of ICTs in the class?
3. Do teachers' age effect on their perception toward the usage of ICTs in the class?
4. Does the field of teacher's effect on their perception toward the usage of ICT in teaching and learning?

- The following data that will be derived from this scale will be used only in measuring the teachers' perception toward the usage of ICT in teaching and learning process and will not be applied to a different research.
- Kindly, sincere answers are required to fill the survey question since your Knowledge and experience is very helpful to get to the main point of this thesis. Also, it is vital for the analysis to fill all the questions in the survey.

The questionnaire consists of two parts and will consume a maximum 20 minutes to answer all the questions. After reading the questions carefully, please tick the most suitable choice. The participation in this survey is voluntary. So, you are free to withdraw at any time. You are also allowed to skip the questions that you don't feel comfort to answer it. All the data will be kept confidentially and will only be used for this research. For any further information or complaint, don't hesitate to contact me.

Amani Ismail Enfes
Master's student
Information and Communication Technologies in education department ICTE
Eastern Mediterranean University
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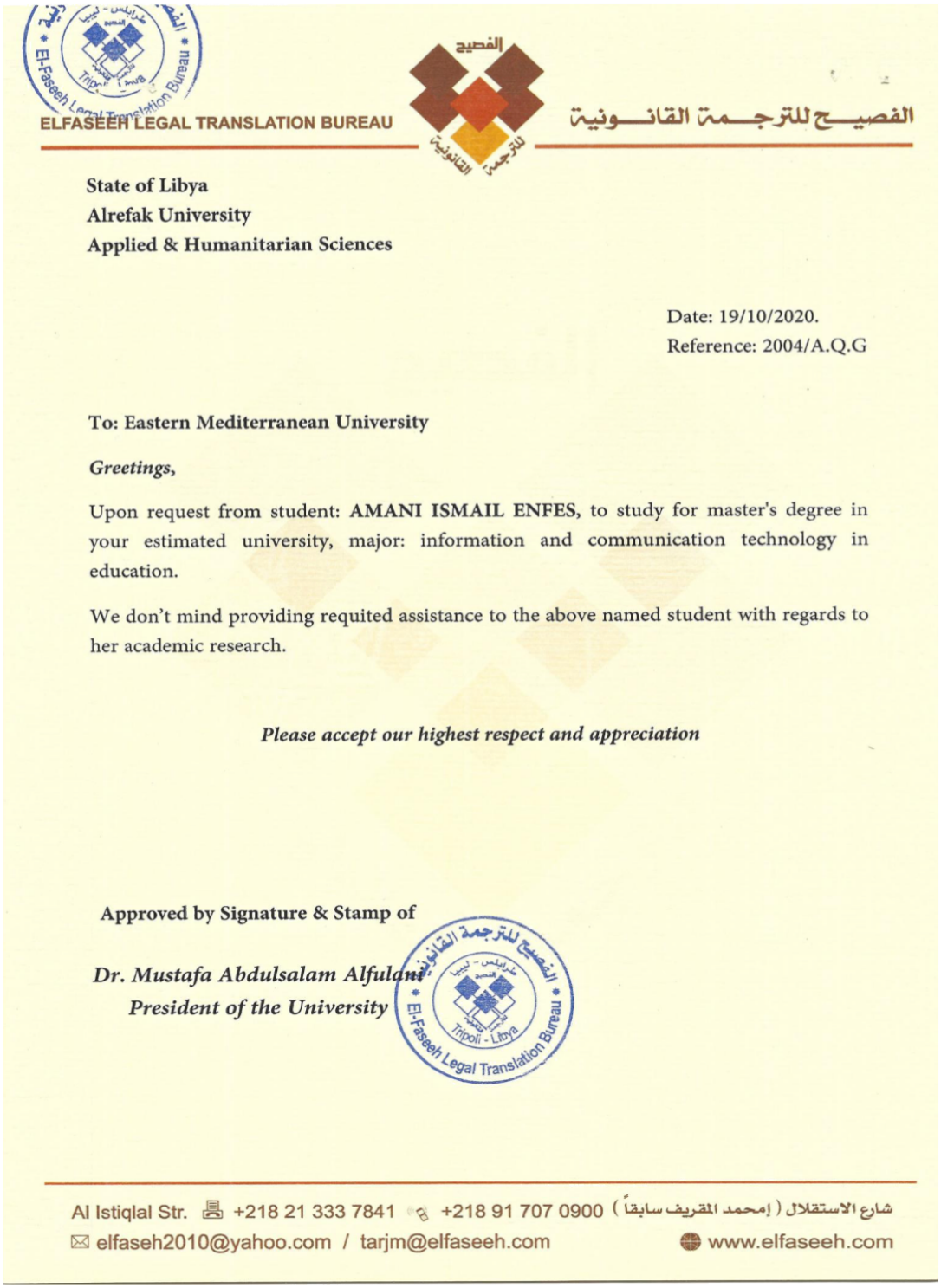
Prof.Dr. Ersun ISCIOGLU
Thesis Supervisor
Department of CITE
Eastern Mediterranean University
Email:ersun.iscioglu@emu.edu.tr
Phone: 03926303123

I have read and understood this form. I have asked my necessary questions and received clear answers. Thus, I voluntarily accept to participate in this survey.

Name-Surname: Date:

Signature:

Appendix D: Consent Form from Institute for Data Collection



ELFASEEH LEGAL TRANSLATION BUREAU

الفصيح للترجمة القانونية

State of Libya
Alrefak University
Applied & Humanitarian Sciences

Date: 19/10/2020.
Reference: 2004/A.Q.G

To: Eastern Mediterranean University

Greetings,

Upon request from student: **AMANI ISMAIL ENFES,** to study for master's degree in your estimated university, major: information and communication technology in education.

We don't mind providing requited assistance to the above named student with regards to her academic research.

Please accept our highest respect and appreciation

Approved by Signature & Stamp of

Dr. Mustafa Abdulsalam Alfulani
President of the University

Al Istiqlal Str. +218 21 333 7841 +218 91 707 0900 شارع الاستقلال (إمحمد المقريف سابقاً)
elfaseh2010@yahoo.com / tarjm@elfaseeh.com www.elfaseeh.com

State of Libya
Alrefak University
For Applied & Human Sciences

دولـــة لـيبيـــا
جامعـــة الرفـــاق
للعلوم التطبيقية والانسانية

شعارنا التميز والنزاهة والشفافية

الرقم الاشاري / Ref No: 2021 م.ق.ج

التاريخ / Date: 2020.10.19

السادة / جامعة شرق البحر المتوسط المحترمين .

بعد التحية ،،،

بنـاء علـى الطلـب المقـدم مـن الطالبـة / امـاني اسـماعيل انفـيص الدارسـة بسـاحة قبـرص الشـمالية بجـامعتكم المـوقرة لنيـل درجـة الماجستير في تخصص تكنولوجيا المعلومات والاتصالات .

فإننـا لا نـرى مانعـاً فـي تقـديم المسـاعدة للطالبـة المـذكورة فيمـا يتعلق بدراستها البحثية .

وتفضلوا بقبول وافر الاحترام

د.مصطفى عبد السلام الفلاني

رئيس الجامعة

صـــــورة الى:
وكيل الشـؤون العلـــمية
وكيل الشـؤون العـــامة
مكتب ضمـــان الجودة
مـــلف الصـــادر
الـــدوري العـــام
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info@alrefak.ly Republic Street, Dahra , Tripoli - Libya شارع الجمهورية ، الظهرة ، طرابلس - ليبيا www.alrefak.edu.ly

Appendix E: Ethics Committee Approval Letter

Doğu Akdeniz Üniversitesi
"Erdem, Bilgi, Gelişim"
Eastern Mediterranean University
"Virtue, Knowledge, Advancement"
99628, Gazimağusa, KUZEY KIBRIS / Famagusta, North Cyprus, via Mersin-10 TURKEY
Tel: (+90) 392 630 1995
Faks/Fax: (+90) 392 630 2919
E-mail: bayek@emu.edu.tr
Etik Kurulu / Ethics Committee

Reference No: ETK00-2020-0257 04.12.2020

Subject: Your application for ethical approval.

Re: Amani İsmail Enfes
Faculty of Education.

EMU's Scientific Research and Publication Ethics Board (BAYEK) has approved the decision of the Ethics Board of Education (date: 26.11.2020, issue: 2020/80) granting Amani İsmail Enfes from the Faculty of Education to pursue with his/her MA thesis work titled **"The instructors' perception toward implementing ICTs in teaching and learning process: A case study at Alrefak University in Libya"** supervised by Prof. Dr. Ersun İşçioğlu.

Prof. Dr. Yücel Vural
Chair, Board of Scientific Research and Publication Ethics - EMU

YV/ns.

Appendix F: Original Report

Turnitin Originality Report

Thesis_New2 by Amani Enfes

From Amani_Enfes (SCHOOL OF COMPUTING AND TECHNOLOGY)

- Processed on 26-Feb-2021 14:47 +03
- ID: 1518739066
- Word Count: 26316

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3 1% match (student papers from 09-Feb-2021)
Class: SCHOOL OF COMPUTING AND TECHNOLOGY
Assignment: Tengu_Njoh
Paper ID: 1504999950

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Submitted to University of Warwick on 2019-03-29

5 < 1% match (student papers from 17-Jan-2019)
Class: SCHOOL OF COMPUTING AND TECHNOLOGY
Assignment: Bolouere Kikanwa Afenfia
Paper ID: 1065149904

6 < 1% match (Internet from 18-Jul-2020)
https://mafiadoc.com/modern-journal-of-language-teaching-methods_5b852018097c473b5d8b4569.html