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| RESEARCH ARTICLE

The Use of ICT-Based Teaching in the 21st Century: Attitudes, Beliefs, and Perceptions of University Lecturers in the Afghan Context

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| ABSTRACT
The current study aimed to investigate attitudes, beliefs, and perceptions of Afghan university lecturers' towards the use and integration of ICT in the 21st century. The study also sought to examine whether instructors' attitudes and beliefs affect the integration of ICT in 21st-century teaching in the Afghan context. The participants (n=414) who were Afghan university lecturers were selected through the simple random sampling technique. The researcher employed both descriptive and inferential statistical analysis to analyze the data. The result of the study revealed that Afghan university instructors' had positive attitudes and beliefs toward the integration of ICT in 21st-century teaching in the Afghan context. The result also indicated that Afghan university instructors perceived positive perceptions of the integration of ICT in 21st-century teaching in Afghan contexts. It was also found that attitudes and beliefs related to ICT use affected the integration of ICT in teaching.

| KEYWORDS
Afghan University Instructors' Attitudes, Beliefs, Perceptions, ICT Based Teaching, 21st Century

| ARTICLE INFORMATION
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1. Introduction

The application of ICT-based teaching in the 21st century has become a significant topic in the educational area for the last decades (Ghavifekr and Rosdy, 2015). This is because the integration of ICT-based teaching has enormously transformed the lives of people, the way they believe, their attitudes, perceptions, and, specifically, the educational setting of many countries around the world (Ghavifekr et al., 2012). The integration and application of ICT simply mean technology-based teaching and learning in the 21st century that could help both learners and practitioners to employ for the enhancement of their knowledge due to the fact that most of the young generations in the 21st century are familiar with the technologies and devices that can be employed in the teaching process and will learn better in the ICT-based environment. In this respect, the role of ICT-based teaching and learning in the 21st century is considered vital for university lecturers. According to Ghavifekr et al. (2015), almost all of the subjects could be taught and learned more effectively through the use of ICT-based teaching. Therefore, the attitudes, beliefs, and perceptions of lecturers towards the use of ICT-based teaching in the 21st century are significant in exploring the context of Afghanistan.

Given that, Afghanistan started using ICTs based in Kabul in 1930 and connected with a wire to some other big cities in the country. Due to the ongoing four decades of war in the country, all the infrastructures were destroyed, including the ICT centers. After the fall of the Taliban regime in 2002, a new government came into power and started to reconstruct a modern ICT infrastructure to provide facilities for the citizens (Rehman and Anjum, 2016). The use of ICT gradually developed from the very basic equipment to connect the country to the globe. Besides that, the education systems are also renewed and updated to provide basic education for the new generation of the country. Millions of students enrolled at schools, and thousands of others graduated from universities in different parts of the country each year (Hashemi & Kew, 2021). Despite all these devastations and opportunities, the rapid

technological advancement and revolution, in conjunction with the restoration of the ICTs center, erupted in all academic institutions across the country (Rahim and Chandran, 2021).

In the context of ICT-based teaching in Afghanistan, the Ministry of Higher Education (MoHE) has provided great opportunities for ICT centers and applications at public universities across the country. According to the MoCIT (2015), the government of Afghanistan has provided ICT centers, ICTs opportunities, and the availability and accessibility of ICTs applications and resources to all higher education institutions across the country and encourages all lecturers to integrate ICTs applications and devices while teaching. Realizing the importance of ICT-based teaching in the educational domain, the Ministry of Higher Education in Afghanistan has established an ICT center for students in each university. The purpose of the establishment of these centers has been said to be to accelerate ICT-based teaching and learning and to develop the old system of education into a new and updated educational system (Orfan, 2021). In addition, MoHE has established a Professional Development Center (PDC) in public universities to improve technical and vocational skills and provide ICT-based teaching facilities (Samsor, 2016).

However, notwithstanding the considerable donations and investment by the Ministry of Higher Education of Afghanistan (MoHE) to public universities, necessary efforts have not been made to provide the teachers with opportunities to develop their skills and knowledge in employing ICT-based teaching. Thus, these circumstances may discourage low competency in employing ICT-based teaching in the 21st century with ineffective functioning skills in this dynamic and academic environment. Therefore, the present research study attempts to eliminate this gap and would make a small contribution to the growing body of literature on the use of ICT-based teaching in the Afghan context.

The main purpose of the present research study is to investigate the attitudes, beliefs, and perceptions of university lecturers on using ICT-based teaching in the 21st century. Furthermore, it attempts to find out the effectiveness of ICT integration in 21st-century teaching and whether their attitude and beliefs related to ICT use in teaching affect ICT integration in 21st-century teaching.

1.1 Research Objective

The following research objectives are formulated to achieve the aim of the study, which is to examine Afghan university lecturers' perceptions of ICT integration in 21st-century teaching.

1. To investigate instructors' attitudes towards ICT use in teaching
2. To examine instructors' beliefs related to ICT use in teaching
3. To find out the effectiveness of ICT integration in 21st-century teaching perceived by instructors
4. To find out how the instructors' attitudes related to ICT use in teaching affect the ICT integration in 21st-century teaching in the Afghan context
5. To find out how the instructors' beliefs related to ICT use in teaching affect the ICT integration in 21st-century teaching in the Afghan context

1.2 Research Framework

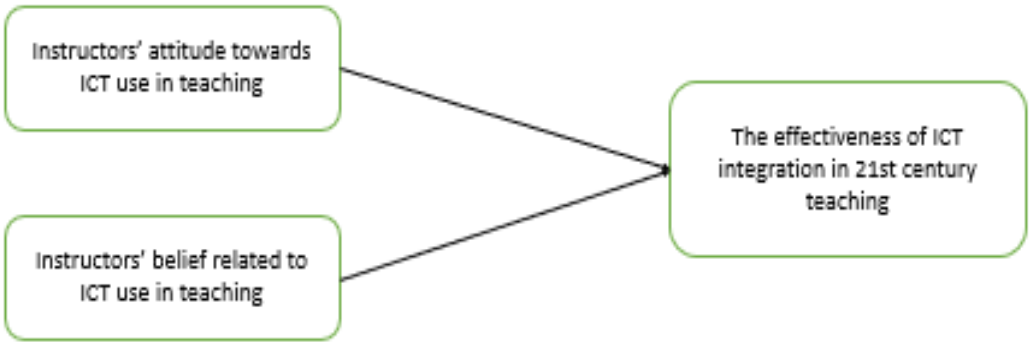

Figure 1: Conceptual Framework

2. Literature Review

2.1 Current Situation of ICT in the Afghan Context

Afghanistan, as a post-conflict country in the region, still follows the traditional (teacher-centered) method of teaching, and therefore, many struggles have been made to adapt to ICT-based teaching. The government of Afghanistan is attempting to find its place and role in internationalizing new contributions to the establishment of innovative and ICT-based teaching as a response to 21st-century teaching approaches (Samsor, 2016). Few studies have been done related to the current study of technology-based teaching in Afghanistan's educational context. Waseel & Yusof (2019) recently studied the attitude and challenges of ICT

skills among university lecturers and students in Afghanistan. He stated that, due to the three decades of conflicts in the country, the majority of the lecturers and students are facing barriers to the use of ICT in the teaching and learning process. He further indicates that most literate educators left the country because of the continuation of war. In the meanwhile, the result of his study revealed that the lecturers are not very skillful in the use of ICT except for understanding some multimedia features and word processing applications. The lack of ICT infrastructure and ICT training is also highlighted in his study (Waseel & Yusof, 2019). Hence, the perceptions of Afghan university lecturers regarding the use of ICT in 21st-century teaching across the universities in the country may help the researcher to identify the effectiveness of ICT integrations and their adoption to 21st-century learning and teaching.

Besides that, the use of technologies in Afghanistan's Higher Educational institutions has recently been the focus of attention of the Ministry of Higher Education (MOHE) (Hafizoah & Bakhtyari, 2014). According to Hafizoah and Bakhtyari (2014), the MOHE of Afghanistan emphasizes technology-based teaching and learning at higher educational institutions and motivates ICT-driven approaches. He further explains that the MOHE of Afghanistan viewed technology-based teaching and learning as the most significant learning approach to avoid employing the traditional approach of learning and teaching in Afghanistan's Higher Educational institutions, which can help to facilitate the learning and teaching process.

Nonetheless, Sokout & Usagawa (2018) report that the Ministry of Higher Education (MOHE) of Afghanistan has recently decided to effectively incorporate and implement E-learning at public universities where teachers and students can adopt ICTs in their teaching and learning process. However, the accessibility and effective training in ICT integration are still considered major challenges of ICT adoption in the teaching and learning process. Despite that, MOHE is determined to reach its vision of ICT implementations within five years of accomplishment in three phases: Enrichment, blended learning, and virtual learning (Sokout & Usagawa, 2018).

2.2 Instructors' attitudes, beliefs, and perceptions toward ICT use in teaching

A few studies have been carried out on the attitude towards the use of ICT in teaching and learning in the Afghan context. Noori (2019) studied the attitude of Afghan EFL lecturers towards instructional technology. Several findings revealed, though one of them showed that Afghan university lecturers hold a positive attitude towards the use of ICT-based teaching and instructional technology. Comparing this to the findings of a study carried out by Waseel and Yusof (2019b), it is indicated that university students hold negative attitudes towards the use of ICT in terms of ICT literacy and competence. On the other hand, (2018) investigated the engagement predictions of students in an e-learning system. On the contrary, their findings revealed that students had a positive attitude towards the implementation of e-learning.

A study conducted by (2019) examined the attitudes of university lecturers towards the use of ICT skills in Afghanistan. Their study revealed that university lecturers based in Kabul had a positive attitude towards the use of ICT as a 21st-century skill. Moreover, their findings also identified gender differences in terms of the use of ICT skills, along with some of the challenges indicated. Similarly, another study was carried out by Stilz (2014) on how internet access to universities in Afghanistan reproduced the facilities in higher education institutions and provided opportunities for further improvement in Afghan educational contexts. Besides, he believed that these services had changed the attitude of Afghan university lecturers toward the future of ICT-based teaching. Balajadia (2017) carried out a study on ICT-based teaching readiness in the 21st-century era. The findings of his study revealed that despite some inadequacy in relation to the curricular program and ICT implementation, the respondents hold a positive view of the advantages of ICT-based teaching. Hence, ICT-based teaching plays a crucial rule in the 21st century teaching.

Similarly, Drossel et al. (2017) carried out a study on the attitude of school teachers and their collaboration with ICT use. Their findings revealed that the teachers are confident in using ICT and have the potential to prepare lessons that require technological devices. Moreover, their respondents hold a positive attitude in terms of using ICT in preparing lessons and teaching as the significant approach of the 21st century. In the meantime, Ozdamli (2017) researched the opinions and attitudes of teachers on digital technology use. The findings of his study revealed that the respondents hold positive views and attitudes towards the use of ICT, mainly technology-based teaching. While Zamir and Thomas (2019) studied the attitude, perceptions, and motivation of university lecturers' effect on the readiness for the integration of ICT use. They have found that motivation is a crucial factor in enhancing the lecturers' ICT literacy and promoting their positive attitudes towards the use of ICT in the teaching process. Therefore, studies on the attitudes, perceptions, and beliefs towards the use of ICT-based teaching revealed holding both positive and negative attitudes toward the use of ICT in the teaching process.

2.3 The effectiveness of ICT Integration in the 21st century

The effectiveness of ICT integration in the teaching and learning process can vary in terms of various applications of ICT in 21st-century skills and approaches. In the 21st-century learning approaches, ICT integration in the teaching and learning process is considered a universal competition where students are required to meet the requirements of twenty-first-century skills in advance, such as collaboration skills, critical thinking skills, interpersonal and problem-solving skills (Pheeraphan, 2013; Munyengabe et al., 2020). In this respect, the potential to use ICT enriches and enhances skills to encourage learners to employ ICTs in their learning

process. Noor-ul-amin (2013) explains the effectiveness of ICT integration into various concepts. He believes that ICT integration in education can enhance both the teaching and learning process and the quality of education, enhance critical thinking where it can provide a better learning environment, the level of learner's motivation to employ ICT and affect the student's academic performance.

Despite that, Rajasekhar (2012) indicates that the effectiveness of ICT integration in education depends on how one can have effective training in ICT use and how to employ a variety of technological tools in teaching and learning. In the same vein, Rajasekhar believes that the enhancement of education quality and critical thinking depends on ICT employment in teaching and learning; on one side, it enables students to improve their collaborative learning, and from the other side, it enhances teachers' interest to utilize ICT in their teaching process. Wan & Gut (2011) stated the effectiveness of ICT integration in their book on the needs of students in 21st-century skills. He indicates ICT often supported changes in sharing information, analysis, and the process of teaching. He further explains the effectiveness of ICT integration in the teaching process as interrelated skills of 21st-century learning skills that can be highly dependent on another skill in order to effectively transform into knowledge. Additionally, Lubis and Indonesia (2018) also consider critical thinking skills as part of media, information, and technology and, in general, ICT applications that can enhance the ability to provide collaboration and contribution. Hence, the concept of ICT integration in 21st-century teaching skills can provide productive citizens with the real-world learning and teaching process through critical thinking, collaboration, and contributions of knowledge in advance. According to Pheeraphan (2013), in an ICT-driven base, students are required to learn effectively and have highly acquired critical thinking skills, productive interpersonal communication skills, and collaboration skills. Therefore, the attitudes and perceptions towards ICT integration into 21st-century skills are significant, and they must be explored at different levels.

The integration of information communication and technology (ICT) in 21st-century teaching refers to the use of ICT applications and instruments that are incorporated into the instructional process of daily sessions in the classroom (Ghavifekr and Rosdy, 2015). Educational industry stakeholders made efforts to identify the potential requirements of ICT use in education to enhance the teaching and learning process in the 21st century (Garba et al., 2015). This means that effective steps have been taken towards the use of ICT integration in 21st-century teaching to create a knowledge-based society. On the other hand, Lewin and Mcnicol (2015) believe that the development of 21st-century competencies and skills is dependent on ICT integration. In this regard, the practitioners and lecturers are required to know the importance of ICT integration in 21st-century teaching. Furthermore, Salamzada et al. (2015) indicate that teachers in any field must be aware of ICT integration and its implementations in their classes for the enhancement of their learners in the 21st century.

The rapid growth in ICT integration into the teaching and learning process has been remarkable and has brought significant changes in the 21st century (Göçen et al., 2020). He also claims that growing demand for the use of ICT and restructuring their curricula that can be met to the needs of the students in teaching and preparing them for the skills of the 21st century. Similarly, Scherer et al. (2015) indicated that the goal of 21st-century education is to develop the students' ICT skills and competence. As part of this, Ghavifekr & Rosdy (2015) stated that educational institutions, universities, and school administrators who are supposed to educate and prepare learners in a technology-based society are required to consider information communication technology (ICT) integrations into their curriculum. (2020) believe that teachers play a key role in ICT integration in their teaching process. The reason is that teachers are integrators who provide facilities for students to employ ICTs in their studies.

3. Methodology

The present study adopted the quantitative research design to collect the data mainly on The Use of ICT-Based Teaching In the 21st Century: Beliefs, Attitudes, and Perceptions of University Lecturers in the Afghan Context. Creswell (2013) indicates that the quantitative approach deals with computations and scientific analysis. Therefore, this approach aimed to be significant to the analysis of the current study through statistical approaches.

3.1 Population and Sampling

The study population was from public universities in Afghanistan, majoring in various fields. Hence, the researcher targeted a total population of 414 respondents from 29 public universities who are currently teaching at their respective institutions. Probable simple random sampling was employed to select the sample size of 414 respondents to distribute the questionnaire regardless of their field of study and gender. Johnson and Christensen (2004) indicate that a simple random sampling technique allows the respondents to think that they have an equal chance of selection.

3.2 Research Instrument

The current study adopted a survey design questionnaire to identify and analyze the perceptions of Afghan University lecturers on ICT integration and to identify the effectiveness of ICT integration in 21st-century teaching. The survey questionnaire was adapted from Ghavifekr and Rosdy (2015) and consists of 29 items divided into four sections. The first part of the questionnaire sought the demographic profile of the respondents, which consisted of 4 items exploring gender, and age, teaching experience, highest

academic qualification. The second section of the questionnaire focuses on the instructors' attitudes towards ICT use in teaching. Likewise, the third research question deals with instructors' beliefs related to the use of ICT, and the last part of the items focuses on the effectiveness of ICT integration in 21st-century teaching. The survey questionnaire was designed based on the four-point Likert scale ranging from 4= Strongly Disagree, 3= Disagree, 2= Agree, and 1= Strongly Agree. The respondents were given two weeks to complete and submit it back to the researcher.

3.3 Data collection method

The survey questionnaire was prepared using Google Forms to collect the data. It was considered effortless for the researcher to collect the data from different universities. The link to the survey questionnaire was shared through Facebook, Telegram, and WhatsApp messengers to the participants. A consent form was attached to the survey questionnaire, along with confidentiality assurance.

3.4 Data analysis method

Descriptive statistical analysis was employed through the statistical package of social science (SPSS) software version 25 to analyze the data obtained from the respondents. Frequency and percentage were used to identify the frequency, percentage, and standard deviation of the respondents. The inferential statistics were used to explore the instructors' attitudes and beliefs related to ICT use in teaching and how they affect ICT integration in 21st-century teaching in the Afghan context. Moreover, the data obtained from the respondents were presented in tables to illustrate the different variables along with items.

4. Findings

Table 1. Respondents Demographic Information

Gender				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Male	360	87	87	87
Female	54	13	13	100
Total	414	100	100	
Age				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
25-30	128	30.9	30.9	30.9
30-35	230	55.6	55.6	86.5
35 and above	56	13.5	13.5	100
Total	414	100	100	
Experience				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
0-5 Years	143	34.5	34.5	34.5
6-10	238	57.5	57.5	92
10 and above	33	8	8	100
Total	414	100	100	
Education				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor	102	24.6	24.6	24.6
Master	290	70	70	94.7
PhD	22	5.3	5.3	100
Total	414	100	100	

Table 1 illustrates the demographic information of the respondents. As shown in Table, 360 male respondents (87%) and 54 female respondents (13%) participated in the study. The ages of 128 respondents ranged from 25-30, while 230 respondents were aged 30-35. The ages of 56 respondents were above 35. Their experiences varied from 0 –above 10 years. 143 respondents had 0-5 years of experience, while 238 respondents reported having 6-10 years of teaching experience. Only 33 respondents had over 10 years of experience teaching. They also had different education levels. 102 respondents reported holding bachelor's degrees, and 290 respondents hold master's degrees. Only 22 respondents had a Ph.D. degree participating in the study.

RQ1: What is the instructors' attitude towards ICT use in teaching?

Table 2. Show the Instructors' Attitude towards ICT

Descriptive Statistics							
Items	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Q9	414	1	5	1300	3.14	1.402	1.966
Q10	414	1	5	1407	3.40	1.307	1.708
Q11	414	1	5	1440	3.48	1.347	1.814
Q12	414	1	5	1374	3.32	1.428	2.039
Q13	414	1	5	1671	4.04	1.154	1.333
Q14	414	1	5	1665	4.02	1.095	1.198
Q15	414	1	5	1307	3.16	1.330	1.769
Q16	414	1	5	1253	3.03	1.377	1.895
Q17	414	1	5	1327	3.21	1.325	1.757
Q18	414	1	5	1268	3.06	1.375	1.890
Valid N (listwise)	414						

According to Table 2, the mean, standard deviation, and variances of the items related to the attitudes of instructors were computed. As shown, items 13 and 14 had the highest mean of 4.04 and 4.02 respectively. Items 16 and 9 had the lowest mean, 3.03 and 3.14, indicating that ICT teaching provides more opportunities and prefers to teach ICT based. Therefore, it was evident that their attitude towards the use of ICT in the 21st century has to be promoted.

Table 3. Descriptive Statistics of the Instructors' Attitudes

Descriptive Statistics							
	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Attitude	414	1.90	4.90	1401.20	3.3845	.52640	.277
Valid N (listwise)	414						

According to Table 3, the descriptive statistics of the instructors' attitude towards the use of ICT in twenty-first century shows that the respondents hold a positive attitude as the mean score was 3.384 with a standard deviation of 0.526.

RQ2: What is the instructors' belief related to ICT use in teaching?

Table 4. Illustrates the Instructors' Beliefs

Descriptive Statistics							
Items	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Q1	414	1	5	1307	3.16	1.330	1.769
Q2	414	1	5	1255	3.03	1.377	1.895
Q3	414	1	5	1326	3.20	1.327	1.760
Q4	414	1	5	1266	3.06	1.373	1.885
Q5	414	1	5	1343	3.24	1.404	1.972
Q6	414	1	5	1588	3.84	1.297	1.682
Q7	414	1	5	1574	3.80	1.185	1.404
Q8	414	1	5	1433	3.46	1.305	1.702
Valid N (listwise)	414						

Table 4 shows the descriptive statistics of the instructors' beliefs towards the use of ICT in teaching in the twenty-first century. As shown in Table 4, items 6 and 7 have the highest mean score, 3.84 and 3.80, respectively. While items 2 and 4 have the lowest

mean score concerning the beliefs of instructors related to the use of ICT. To consider the overall mean score of the instructors' beliefs towards the use of ICT, it is evident that they had positive beliefs towards the use of ICT in the twenty-first century.

Table 5. Descriptive Statistics of the Instructors' Beliefs

Descriptive Statistics							
	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Belief	414	1.38	4.75	1386.50	3.3490	.60479	.366
Valid N (listwise)	414						

Table 5 shows the descriptive statistics of the instructors' beliefs about the use of ICT in the twenty-first century. The overall mean score of the instructors' beliefs was 3.349, with a standard deviation of 0.604. Therefore, it can be indicated that they had positive beliefs towards the use of ICT in the twenty-first century.

RQ 3: How do instructors perceive the effectiveness of ICT integration in 21st-century teaching?

Table 6. Descriptive Statistics of the Instructors' Perceptions of the Effectiveness of ICT Integration

Descriptive Statistics							
Items	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Q20	414	1	5	1588	3.84	1.297	1.682
Q21	414	1	5	1574	3.80	1.187	1.409
Q22	414	1	5	1434	3.46	1.306	1.707
Q23	414	1	5	1301	3.14	1.404	1.972
Q24	414	1	5	1405	3.39	1.312	1.721
Q25	414	1	5	1437	3.47	1.347	1.814
Q26	414	1	5	1374	3.32	1.428	2.039
Q27	414	1	5	1672	4.04	1.155	1.335
Q28	414	1	5	1485	3.59	1.378	1.899
Q29	414	1	5	1329	3.21	1.401	1.963
effectiveness	414	1.70	5.00	1459.90	3.5263	.55077	.303
Valid N (listwise)	414						

Table 6 illustrates the descriptive statistics of the instructors' perceptions of the effectiveness of ICT integration in twenty-first-century teaching. As shown in Table 6, the highest mean score of 4.04 refers to item 27, and the lowest mean score of 3.14 and 3.21 goes to items 23 and 29, indicating they perceived the usefulness of ICT integration in twenty-first-century teaching. To consider the overall mean score of the instructors' perceptions towards the integration of ICT in twenty-first-century teaching, it is obtained that the instructors hold positive perceptions of the integration of ICT in twenty-first-century teaching.

RQ 4: How do the instructors' attitudes related to ICT use in teaching affect the ICT integration in 21st-century teaching in the Afghan Context?

Table 7. Shows the Normality Test

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
effectiveness	.063	414	.000	.988	414	.002
a. Lilliefors Significance Correction						

Table 7 illustrates the normality tests of the data. As demonstrated in Table 7, the P-value of 0.002 is less than the alpha value of 0.05. It can be indicated that the data was not normal. Therefore, nonparametric tests were carried out to analyze the data obtained from the research question.

Table 8. Shows whether Instructors' Attitude Affects the Use of ICT Integration

Test Statistics	
	effectiveness - Attitude
Z	-3.844[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Table 8 illustrates whether instructors' attitude affects the use of ICT integration in twenty-first-century teaching in the Afghan context. As shown in Table 8, the p-value of 0.00 is less than the alpha value of 0.05. Therefore, it can be evident that instructors' attitudes affected the use of ICT integration significantly.

RQ 5: How do the instructors' beliefs related to ICT use in teaching affect the ICT integration in 21st-century teaching in the Afghan Context?

Table 9. Normality Test on the Instructors' Beliefs

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
effectiveness	.063	414	.000	.988	414	.002
a. Lilliefors Significance Correction						

Table 9 demonstrates the normality tests concerning the beliefs of instructors. As it is shown, the P-value is less than the alpha value (0.002< 0.05). Based on the aforementioned table, the data was found to be abnormal. Therefore, nonparametric tests were required to be employed for the analysis of the data obtained from the research question.

Table 10. Illustrated whether instructors' beliefs affect the use of ICT integration

Test Statistics	
	effectiveness - Belief
Z	-4.124[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Table 10 sought to find out whether instructors' beliefs affect the use of ICT integration in twenty-first-century teaching in the Afghan context. As indicated in Table 10, the p-value of 0.00 is less than the alpha value of 0.05. Therefore, it was found that instructors' beliefs affected the use of ICT integration significantly.

5. Discussion

The current study aimed to investigate the attitudes, beliefs, and perceptions of Afghan university lecturers in using ICT-based teaching in the Afghan context. Besides, the study also aimed to explore the instructors' perceptions of the effectiveness of ICT integration in 21st-century teaching. Furthermore, the study attempted to investigate whether instructors' attitudes and beliefs related to ICT use in teaching affect the ICT integration in 21st-century teaching in the Afghan context. The result of the current study for the first research question revealed that Afghan university instructors' held positive attitudes toward the use of ICT in 21st-century teaching. This finding is in line with the results of the studies conducted by (Edmunds et al. 2012; García-Martínez et al., 2021 Kubiatko, 2013 Ndibalema, 2014), who found a positive attitude towards the use of ICT in the teaching process.

Concerning the second research question, "What are the instructors' beliefs related to ICT use in teaching?" the result showed that Afghan university instructors had positive beliefs related to ICT teaching. Most of the instructors believed that ICT allows students to be more creative and imaginative and encourages students to communicate more with their classmates. In addition, they believed that ICT helps to broaden students' knowledge paradigm and improves their reading and writing abilities. Considering all these beliefs indicated by Afghan instructors', one can understand that Afghan university instructors' held positive beliefs to maintain their acceptance of using ICT in 21st-century teaching. The result in this respect particularly supports the result of a study carried out by (Kaur and Singh, 2018; Ndibalema, 2014) confirming that their respondents had positive beliefs towards the use of ICT in 21st-century teaching.

The result of the study for the third research question, "How do instructors perceive the effectiveness of ICT integration in 21st-century teaching?" revealed that Afghan university instructors perceived positive perceptions towards the usefulness of ICT integration in 21st-century teaching. Most Afghan university instructors perceive that ICT facilitates problem-based learning and research-based teaching. Therefore, this can be great evidence of the effectiveness perceived by Afghan university instructors in ICT integration for twenty-first-century teaching. The result in this regard is similar to the result of the studies carried out by (Edmunds et al. 2012; García-Martínez et al., 2021; Kaur and Singh, 2018; Kubiatko, 2013; Ndibalema, 2014), whose findings revealed positive perceptions on the effectiveness of ICT integration in the twenty-first-century teaching. Contrary to this result, studies conducted by (Hashemi, 2021a, 2021b) revealed that ICT integration during the COVID-19 pandemic for both students and teachers was not effectively perceived, and they were not highly satisfied with online teaching during this critical moment.

The fourth research question, "How do the instructors' attitudes related to ICT use in teaching affect the ICT integration in 21st-century teaching in the Afghan context?" showed significance. It can be indicated that the instructors' attitudes highly affected the use of ICT integration for 21st-century teaching in the Afghan context. The result indicated that Afghan university instructors employed ICT applications and devices appropriately for their teaching process and highly affected their teaching outcomes. This result is consistent with the result of a study conducted by Mustafina (2016), who found that instructors' attitudes related to ICT use in teaching had positively affected the integration of ICT. Hence, it can be predicted that Afghan university students perceived strong positive attitudes towards ICT integration in twenty-first-century teaching. In this case, these attitudes can highly influence the integration of ICT in 21st century teaching.

To consider the last research question, "How do the instructors' beliefs related to ICT use in teaching affect the ICT integration in 21st-century teaching in the Afghan context?" the result revealed that Afghan university instructors' beliefs related to ICT use in teaching were significant. The result in this respect showed that Afghan university instructors' beliefs highly affected the use of ICT integration in 21st-century teaching. They perceived positive beliefs in the integration of ICT use in twenty-first-century teaching in the Afghan context. It was expected that most Afghan university lecturers hold positive beliefs, and their beliefs could highly affect their perceptions of ICT integration in 21st-century teaching in the Afghan context. The result of the study in this regard supports the result of the studies conducted by (Ndlovu et al., 2020; Pourhosein Gilakjani, 2012), where they found positive beliefs about the integration of ICT in 21st-century teaching in the Afghan context. Thus, their belief in the use of ICT integration in 21st-century teaching can help them to use various ICT applications and devices to enhance the quality of education and ease the learning process.

6. Conclusion

The main objective of the current study was to investigate the attitudes, beliefs, and perceptions of Afghan university students towards the use of ICT in 21st-century teaching in the Afghan context. The study sought to explore how the instructors' attitudes and beliefs related to ICT use in teaching affect ICT integration in the twenty-first century. The result of the study revealed that Afghan university instructors held positive attitudes, beliefs, and perceptions towards the use of ICT, as well as the effectiveness of the integration of ICT in twenty-first-century teaching in the Afghan context. It was also found that the instructors' attitudes and beliefs related to ICT use in teaching affected the integration of ICT in 21st-century teaching in the Afghan context. To conclude, several factors might be involved, such as positive attitudes, beliefs, and perceptions of the integration of ICT in 21st-century teaching in the Afghan context. These factors can be better infrastructure, ICT resources, and better equipment, providing technical devices and applications, and looking for collaborative developments for the enhancement of ICT integration in 21st-century teaching.

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