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Editorial

FITNAH BOOK (FACEBOOK) AND NARCISSISM: THE POST NORMAL BEHAVIOURS OF MUSLIMS IN SOCIAL MEDIA USAGE

Professor Dr G. Hussein Rassool
Professor of Islamic Psychology

What are the challenging issues faced by the Muslims in the island of Mauritius? There are several emerging issues and problems faced by Muslims including acculturation, addiction, domestic abuse, rising divorce rate and marital breakdown, various ideologies of the Ummah, and institutional discrimination. However, in this paper, I will focus on the dangers of excessive social media usage, both from an Islamic perspective and the effects on mental health. In part I will focus on acculturation and Facebook addiction.

When Sheikh Muhammad 'Abduh one of the most influential Muslim scholars of the late 19th and early 20th century, famously declared that he had found Islam but no Muslims abroad (in the West), and Muslims but no Islam at home (in the Muslim world), he wanted to bring home the message that Muslims were more and more drifting away not only from the original revealed message of Islam, but also from the power and guidance both of sound reasoning and pure human nature, or instinct.¹ This statement reflects a significant problem faced by

¹Cited in Omer, S. (2018). *Westernization and Muslims' Spiritual Apathy*.
Source: IslamiCity Jan 10, 2018,

Muslims in Mauritius. In contemporary times, Muslims are being acculturated in Western values and practices. Acculturation is defined as “a process of cultural contact and exchange through which a person or group comes to adopt certain values and practices of a culture that is not originally their own, to a greater or lesser extent. The result is that the original culture of the person or group remains, but it is changed by this process.”² Unfortunately, it is the Muslim youths that are repeatedly the biggest victim of the whole tragedy. This means that Muslim youths are adopting the practices and values of Western culture, and their own Islamic cultural identity is being diluted.

In this context, some young Muslims became very weak and vulnerable, and are increasingly abandoning their traditional religious beliefs and values in favour of the glamour of Western lifestyles, pervasive secularism, irreligious modernism and liberalism. Acculturation brings out a detachment from the teaching of Islamic beliefs and practice. It is stated that “Westernization, as a process whereby societies come under or adopt Western culture, including lifestyle, religion, philosophy, entertainment, government and values, is often cited as one of the main reasons for a rapid decline in Muslims’ religiosity. It is often perceived that being Westernised is the antithesis of being a good Muslim.”³

<https://www.islamicity.org/13984/westernization-and-muslims-spiritual-apathy/>, (accessed 26 August 2022).

² Cole, N.L. (2020). *Understanding Acculturation and Why It Happens*. ThoughtCo, Dec. 30, 2020, [thoughtco.com/acculturation-definition-3026039](https://www.thoughtco.com/acculturation-definition-3026039).

³ Omer, S. (2018). *Westernization and Muslims’ Spiritual Apathy*.

Muslim youths often find themselves painfully torn between Islamic culture and lifestyles and the inviting, seducing, provocative, liberalising lifestyles of Westerners. This is reflected in their modified dress code for female, Mohican haircuts for men, the wearing of “Friendship band” (It is not only for friendship but for protection from evil, danger and fear). The latter adoption is pure *shirk*. For young *hijabi* women, there is a growing trend in Mauritius and elsewhere, in the wearing of leggings or really tight clothes with lots of make-up. This is fashion trend and beats the whole purpose of wearing *hijab*. The wearing of the *hijab* for women is for modesty, piety and representing their identity.

The main criterion on clothing of a woman is understood as the covering the private parts. (Except hands and face) and not wearing transparent, short and tight clothes. Allah says in the Qur’an (interpretation of the meaning): “And tell the believing women to lower their gaze (from looking at forbidden things), and protect their private parts (from illegal sexual acts) and not to show off their adornment except only that which is apparent (like both eyes for necessity to see the way, or outer palms of hands or one eye or dress like veil, gloves, headcover, apron), and to draw their veils all over *Juyubihinna* (i.e. their bodies, faces, necks and bosoms) and not to reveal their adornment except to their husbands, or their fathers, or their husband’s fathers, or their sons, or their husband’s sons, or their brothers or their brother’s sons, or their sister’s sons, or their (Muslim) women (i.e. their sisters in Islam), or the (female) slaves whom their right hands possess, or old male servants who lack vigour, or small children who have no sense of feminine sex. And let them not stamp their feet so as to reveal what they hide of their

adornment. And all of you beg Allah to forgive you all, O believers, that you may be successful.”⁴ With regard to the Ahadith, it was narrated from Safiyyah bint Shaybah that ‘Aishah (may Allah be pleased with her) When Allah revealed: "... and to draw their veils all over their *Juyubihinna* (i.e., their bodies, faces, necks and bosoms)..." (Qur'an.24:31) they tore their *Murat* (woollen dresses or waist-binding clothes or aprons etc.) and covered their heads and faces with those torn Muruts.⁵

The following is an abridged version of a poem regarding the *hijab*:

When u wear the hijab u feel good
Coz u know it's right
But when u put on your tight-fitting clothes
The angels take flight
And stop singing your praises
You're caught up in the middle
Being Muslim and Western
Your mind knows that its Allah u should obey and follow
But you're confused
About which pill to swallow
And u try and follow the middle path
Even though u know their ain't no such thing
But u just can't resist not wearing bling
With tight clothing
Gaining reward
And losing it

⁴ An-Nur 24:31

⁵ Bukhari. Sahih al-Bukhari 4758. In-book reference: Book 65, Hadith 280.USC-MSA web (English) reference: Vol. 1, Book 60, Hadith 281.

When u put on your tight jeans and top
Should u not stop and think?⁶

According to Abul A 'La Mawdudi "The Shari'ah forbids the use of all those things which are injurious to man's physical, mental and moral existence. The law in Islam requires men and women to wear dignified and decent clothes. The Muslim youth of today feel that in order to be civilized, one has to be Westernized in their clothes, in their mind, in their education, and this is due to what they come across in the media, through social media, and the internet." ⁷It is ironic to observe little girls in hijab going to *madrasah* accompanied by their Western dress mothers (without hijab)!

It was narrated from Abu Hurairah that the Messenger of Allah (ﷺ) said: "You will most certainly follow the ways of those who came before you, arm's length by arm's length, forearm's length by forearm's length, hand span by hand span, until even if they entered a hole of a mastigure (lizard) you will enter it too." They said: "O Messenger of Allah, (do you mean) the Jews and the Christians?" He said: "Who else?"⁸

In addition to the imitation Western values through the process of acculturation, the media also construct the social and political reality of Muslims. The media plays a very important role in this negative propagation and changing of mindset in the Muslim

⁶Cullen, H (2008). What's the point. Wearing a hijab. <http://www.therevival.co.uk/blogs/hannahcullen/hijab-tight-clothing>, (accessed 26 August 2022).

⁷Mawdūdi, A. I. (1980). Towards understanding Islam (New rev. ed.). Leicester: Islamic Foundation.

⁸ Ibn Majah.

nations especially the youth. The youths are being told that whatever practice of Islam has been prescribed is backward and not for this time. There seemed to have a better way out there which needs to be adopted. The media propagates obscenity and impermissible acts making it acceptable as part of the norms of society. The media encouraged and promoted those “integrated Muslims” (Muslims adopting Western values and code of attire and behaviours) as “good Muslims” in contrast with those “fundamentalist” who lived by the laws of *Shari’ah*. Our main problem as a Muslim community is that we do not condemn such people who are out to change the Islamic culture under the name of “growth” and “liberation.” In fact, we have handed the media platforms to those “integrated Muslims”.

Social media has made people celebrities overnight and many Muslims, single and married with grandchildren have failed to recognise the dangers and vulnerability they faced by exposing themselves on Fitnah book (Facebook) and other social media platforms. There is a now a body of literature to suggest the addictive nature of Facebook.⁹ Facebook addiction or my coined term of “Fitnah addiction” is common among female Muslims who engage in excessive, compulsive Facebook use. The common trend among a minority of female Muslims is the uploading countless selfies, writing intimate status updates, and checking notifications every other minute. For example, some females, old and young, are changing their photos on Fitnah book almost every day posing with different body language and

⁹Kuss, D.J., & Griffiths, M.D. (2011). Online social networking and addiction-a review of the psychological literature. *Int J Environ Res Public Health*, 8(9), 3528–3552.

clothing. This is happening to married women, even young grandmothers. They believe they are photogenic and need to expose themselves, and what is surprising, with the connivance of their husbands. This post-normal behaviour of female Muslims has led to some form of narcissism, especially “grandiose narcissism.”¹⁰ The users of Facebook, with grandiose narcissist tendencies have the characteristics of being more extroverted, callous, and genuinely self-absorbed and obsessed with social media. It is worth pointing out that it is not social media that is actually the problem, merely a symptom. These female grandiose narcissist Muslims need both psychological and spiritual treatment.

¹⁰ McCain, J. L., & Campbell, W. K. (2018). Narcissism and social media use: A meta-analytic review. *Psychology of Popular Media Culture*, 7(3), 308–327. <https://doi.org/10.1037/ppm0000137>

THE ROLE OF ASKING QUESTIONS IN ISLAMIC PEDAGOGY AND MUSLIM TEACHERS PRACTICE

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ABSTRACT

Questioning among teachers and learners plays an important role in teaching. The modern teaching and learning literature suggest that asking questions both by teachers and students lead to enhanced understanding, digestion of material, better recall, and content retention. Questioning can also be used as a tool to engage students and increase collaboration among them. In some Muslim cultures and schools of thoughts, the public is expected to follow the scholars without the need for asking question or enquiring to investigate the source. However, this appears contradictory to the guidance provided by the Quran and the Sunnah where people are encouraged to actively ask questions and seek clarifications. The study delves into both Islamic and Western perspectives on the topic, and through a thorough analysis, presents a comprehensive discussion of the views to uncover common ground and areas of disagreement. Both Islamic and Western perspectives agree that questioning is a useful tool and technique in teaching with many benefits such as motivation, engagement, encouragement, interest creation, and increased effective learning. Western secular literature also suggests that excessive questioning is counterproductive, may hinder the learning process and that a balance must be struck between zero questioning and asking too many questions. The data from the Quran, the Sunnah and the Muslim teaching practices suggest that Western academic

literature agrees with and confirms the Islamic perspective both on the importance of asking questions and the counterproductivity caused by excessive questioning.

Keywords: Asking questions, Quran, Hadith, excessive questioning, Islam, Muslim, teachers.

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1. INTRODUCTION

Asking questions is an important aspect of human communication and learning, and it has a long history in various religious and cultural traditions. In the Islamic tradition, the Qur'an and hadith contain numerous references to the value and importance of asking questions as a means of seeking knowledge and understanding. However, the role of questioning in Islam is complex and multifaceted, and the Qur'an and hadith contain references encouraging asking questions yet caution against excessive or inappropriate questioning.

The act of asking questions or the practice of questioning remains one of the most important modes of expression, communication, and human interaction throughout history. Both past and present philosophers have utilized questioning to formulate ideas, strengthen arguments, and construct complex theories. Questioning has been one of the characteristics traits and a teaching tool in learning the Islamic disciplines. The Quran uses various types of such real and metaphorical questions. Similarly, the hadith are replete with examples indicating how the Prophet (ﷺ) let the companions ask questions and even engaged them by posing questions to the companions themselves (Badi et al., 2017).

In addition to the above, the Muslim learning heritage itself also encourages the use of asking questions. For instance, al-Baghdadi (d. 463AH/1071AD), would advise learners to sit silent but raise questions when it was time to do so. He further said that asking questions created a learning environment by appealing to the learner's readiness and willingness to seek

knowledge. Imam al-Nawawī (d. 676 AH/1277AD) advocated that a student should not feel shy of asking questions rather they should keep questioning until the matter is cleared, and all confusion is eliminated. Ibn al-Qayyim (d. 751 AH/1350AD), another distinguished scholar, considered questioning as one of the initial steps towards comprehensive learning. Others such as Ibn Jamā'ah (d. 733 AH/1332AD) also asserted that learners must not leave anything unclear and clarification must be sought through asking questions. Abul Walalīd al-Bāji (1081/474 AH) devoted a full chapter in one of his books to the value, benefit, and necessity of asking questions while learning.

A similar emphasis on the importance of questioning can be found in Western secular literature. For instance, Daniels (2002) and Day & Sachs (2004) insist that asking questions should be a frequently used tool in the classroom. According to Western pedagogical research, questions serve multiple purposes in the classroom, such as checking student understanding (Daniels, 2002), developing critical thinking (Day & Sachs, 2004), and promoting student involvement during the lessons (Daniels, 2002). By asking questions, teachers can assess if students understand the material and can subsequently provide additional help and support (Black & William, 1998). Studies have shown that effective questioning can improve learning retention and performance in assessments (Brookhart, 2013). Additionally, questions can also be used to stimulate critical thinking in students (Day & Sachs, 2004). Teachers can prompt students to think more deeply about a subject by asking open-ended or higher-level questions, which encourages students to analyze information from multiple viewpoints (Brookhart, 2013).

While both the Islamic outlook (as reflected in the Quran, Hadith, and Muslim scholars' tradition) and modern Western literature appreciate the importance of asking questions and discourage excessive questioning, there is a lack of any substantial research to synthesize these two perspectives. This paper aims to bridge the gap by analyzing both viewpoints and synthesizing them together to uncover common grounds or disagreements. Additionally, this paper attempts to ascertain whether contemporary empirical research substantiates or refutes the use of questioning in the instructional techniques employed by the Prophet Muhammad (ﷺ) as elucidated in the Quran and hadith. By highlighting the significance of questioning, the paper also provides valuable insight for Muslim teachers to regularly incorporate questioning as a tool for an effective teaching practice.

First and foremost, this paper critically reviews modern secular literature on the topic of questioning in the context of teaching and learning. Next, it conducts a thematic analysis of some Quranic verses and selected hadith of Prophet Muhammad (ﷺ) on the topic. The paper then, analyses data collected from ten Muslim teachers in the North of the United Kingdom (UK). The paper further proceeds to discuss the findings from the Quran, the Sunnah and Muslim teaching practices in the light of modern secular literature. Finally, the paper concludes by restating the claim that concept of questioning in secular literature and perspectives have a common ground and that the Muslim teachers need to include this tool as an essential component in their pedagogical practices.

2. REVIEW OF LITERATURE

2.1 Asking Questions

In Western academia, asking questions has long been recognized as a key pedagogical tool in teaching and learning. For instance, Daniels (2002) and Day & Sachs (2004) contend that it should be one of the most frequently and regularly used teaching tool. According to research, questions can serve a variety of purposes in the classroom, including checking for understanding (Daniels, 2002), promoting critical thinking (Day & Sachs, 2004), and encouraging student engagement (Daniels, 2002). By posing questions to students, teachers can assess whether students are grasping the material being presented and can provide additional support as needed (Black & William, 1998). Research has also shown that effective questioning can help students retain information and improve their performance in assessments (Brookhart, 2013). Furthermore, questions can also be used to promote critical thinking in students (Day & Sachs, 2004). By posing questions that are open-ended or require higher order thinking, teachers can encourage students to reflect deeply on a topic, as well as analyze information from multiple perspectives (Brookhart, 2013). Along with promoting critical thinking, asking questions can also increase student engagement in the classroom (Daniels, 2002). When students are actively participating in discussions and problem-solving, they are more likely to be motivated and interested in the material (Brookhart, 2013). Asking questions that require students to justify their answers or explain their thinking can also foster a sense of collaboration and encourage students to listen to and respect the perspectives of their peers (Brookhart, 2013).

There are several different types of questions that teachers can use in the classroom (Daniels, 2002). Low-level questions, also known as recall questions, require students to recall facts or information from memory (Daniels, 2002). These types of questions can be useful to check the basic understanding, but may not necessarily promote critical thinking (Brookhart, 2013). Higher order questions, on the other hand, require students to analyze, evaluate, or synthesize information and are more likely to promote critical thinking (Brookhart, 2013).

Besides the level of the question, the structure of the question can also impact its effectiveness (Daniels, 2002). Leading questions, which suggest a particular answer or contain a bias, may not be as effective in promoting critical thinking as neutral questions (Brookhart, 2013). Open-ended questions, which do not have a single correct answer, can also encourage students to think critically and engage with the material more deeply (Brookhart, 2013). There is also evidence to suggest that the timing and frequency of questioning can impact its effectiveness (Daniels, 2002). Research has shown that asking questions at regular intervals throughout a lesson can help maintain student engagement and improve learning outcomes (Brookhart, 2013). However, it is important for teachers to strike a balance, as asking too many questions can interrupt the flow of the lesson and may lead to student frustration (Brookhart, 2013).

It should be noted that asking question should not be a uniliteral activity on the part of the teacher. Rather it should be a mutual activity between teacher and learners. A study conducted by Lee & Driscoll (1988) found that learners who ask more questions in the classroom than others, have more chances of

better grades and higher levels of achievement. It is mostly like that such a difference is due to asking questions which helps learners to seek clarification of the material that leads to better comprehension and retention. Chou & Chiou (2010) also asserted that those who ask questions in the classroom appear to be more engaged and motivated than those who remain silent. Research suggests that learners who feel comfortable and safe in the classroom (Davies & Graff, 2011) tend to ask questions. Similarly, Chou & Chiou (2010) identified that learners are likely to ask more engaging questions if they feel that their teachers are responsive or approachable. A responsive and approachable teacher creates opportunities for learners to actively seek clarifications, thus facilitating an interactive and collaborative learning environment (Liu & Wilen, 2012).

2.2 Excessive Questioning

Even though a critical analysis of the literature indicates that asking questions has a vital role to create an enhanced learning environment, nonetheless, excessive question is found to be counterproductive. Excessive questioning is asking inappropriate or unrelated questions; such practice can have negative impacts on teaching and learning (Smith, 2016; Wang, 2019), may disrupt the flow of the lesson (Wang, 2019; Cai, 2018; Smith, 2016; Brown & Roediger III, 2014) hinder student understanding and engagement (Knight, 2017; Lai & Liang, 2015), and create a disorganized and chaotic classroom environment (Sibley & Macaro, 2010). When teachers ask too many questions, it can break the momentum of the lesson and cause students to become disengaged or confused (Smith, 2016). In addition, if teachers ask unrelated or inappropriate

questions, it can distract students from the main content of the lesson and hinder their understanding (Wang, 2019).

Research has also shown that students may become frustrated or anxious if they are unable to answer questions or if they feel that the questions are too difficult or unrelated to the material (Smith, 2016). This can lead to a decrease in student motivation and participation (Wang, 2019). Other studies found that when students are given a free hand to ask excessive questions, it leads to lesson disruption. For instance, White & Gunstone (1990) found that excessive questioning was disruptive and time consuming. Brophy (1998) identified that learner questioning is a useful tool but can turn into disruption if not well-managed and organized. Furthermore, too many questions by students can lead to lower levels of participation, chaotic environment (Smith 2016) and less positive perceptions of discussion among other learners (Huang & Shih, 2007). Excessive questioning hinders student understanding (Cai, 2018; Knight, 2017), they become overwhelmed, unable to process information (Cai, 2018), and leads to decreased retention of the material (Smith, 2016). Overall, the research suggests that excessive questioning can have negative impacts on teaching and learning (Brown & Roediger III, 2014; Cai, 2018; Knight, 2017; Lai & Liang, 2015).

Modern research suggests that asking questions is a valuable tool in teaching and learning (Daniels, 2002; Day & Sachs, 2004). By using a variety of question types and structures and considering the timing and frequency of questioning, teachers can promote critical thinking, check for understanding, and increase student engagement in the classroom. However,

excessive questioning is counterproductive; thus, a balance between no questioning and excessive questioning is essential.

3. RESEARCH METHODOLOGY

The purpose of the study was to examine the role of asking questions in Islam, with a focus on the Qur'an and hadith. To achieve this goal, a qualitative research approach was employed, including content and thematic analysis, textual analysis of the Qur'an and the Sunnah, and semi-structured interviews. Qualitative research was particularly well suited for studies that aimed to explore complex, multifaceted phenomena such as the role of questioning in Islam. Qualitative research allowed for the collection/selection of rich, in-depth data that could provide insight into the experiences and perspectives of participants (Denzin & Lincoln, 2011).

3.1 Data Collection

The study involved the interpretation of text from the Quran and hadith. For this purpose, verses of the Quran and Hadith were selected. For hadith selection, Mishkatal Masabih was used, with authentication by Albani. Data was also collected from ten Muslim teachers working in various Muslim educational institutions in the UK. As this paper was part of the PhD thesis on the Prophetic pedagogy, no new participants were recruited, and data that was collected earlier as part of the PhD thesis was analyzed. All real names were replaced with pseudonyms to protect participant privacy.

3.2 Semi Structured Interviews

Semi-structured interviews were a flexible and in-depth method for gathering data from participants (Hsieh & Shannon,

2005). They allowed for the exploration of a wide range of topics and issues related to the study, while also allowing for the collection of detailed and specific data (Kvale, 1996). Semi-structured interviews were particularly useful for exploring complex and multifaceted phenomena (Srivastava, 2018), such as the role of questioning in Islam.

3.3 Content and Thematic Analysis

Content and thematic analysis was a method used for systematically analyzing written, spoken, or visual communication for the purpose of identifying patterns and themes (Hsieh & Shannon, 2005). It was particularly useful for examining texts, such as the Qur'an and hadith, for references to a particular topic; in this case, questioning (Bryman, 2012). The Qur'an and hadith text were analyzed for the use and purpose of questioning. This involved a close reading of the texts and the identification of patterns and themes related to questioning (Srivastava, 2018). Textual analysis of the Qur'an and the Sunnah involved the use of thematic analysis, a method for identifying, analyzing, and interpreting patterns or themes within data (Braun & Clarke, 2006). It was particularly useful for organizing and synthesizing large amounts of data, such as the results of content analysis or interviews, and for identifying patterns and themes that emerge across the data (Srivastava, 2018). Text from the Qur'an and Sunnah were analyzed for references to questioning and the purpose of questioning. This involved a detailed review of relevant verses and hadith and the identification of themes and patterns related to questioning.

Semi-structured interviews were conducted with ten Islamic scholars and educators to identify their practices of questioning

in teaching (Srivastava, 2018). The interviews were transcribed and analyzed for themes and patterns related to the use and purpose of questioning (Kvale, 1996) in the Islamic tradition. The data selected from the Qur'an and Hadith and that collected from the participants through these research methods was analyzed and synthesized to develop a comprehensive understanding of the role of questioning in Islam.

4. FINDING AND RESULTS

4.1 Asking Questions: The Islamic Perspective

Islam attaches great importance to the seeking of knowledge and encourages its readers to engage in the act of teaching and learning. In the following verse, Allah (Subha wa ta'ala) distinguishes those who are learned from those who are not.

"Those who have knowledge and those who do not have knowledge are not equal" (Quran 39:9)

and that one of the purposes of revelation is to

"Make clear to people what is revealed to them" (Qur'an 16:44).

The Quran not only attaches great importance to seeking knowledge, but it also provides practical tools, techniques and tips that make the learning process meaningful, clear and effective. Asking questions or questioning is one the several techniques that is reflected in the various verses of the Quran. It is seen as a vital part of the process of acquiring knowledge and seeking understanding of Revelation.

As such, asking questions is seen as a crucial part of the process of acquiring knowledge and seeking understanding of the

divine. Asking questions is deemed as a way of clarifying misunderstandings and seeking guidance. In the Qur'an, it is stated:

"If you are in doubt about what We have revealed to you, ask those who have been reading the Book from before you" (10:94).

This verse indicates the importance of asking questions even from those who rejected the revelation sent to the Prophet Muhammad (ﷺ). The purpose of questioning in the verse is confirmation, in other words, clarification. As-S a'di (2018) commented on this verse saying it is an instruction to the Prophet (ﷺ) to confirm the soundness of the Quran and that they will verify that it matches with what the people of the book have.

And We sent not before you except men to whom We revealed [Our message]. So, ask the people of the message if you do not know. (16:43)

According to Shafi (2009), people of the message in the above verse means scholars among the Jews. This again validates asking questions from any source to seek understanding, confirm and reach the truth encouraged. Ibn Kathīr (2003), while quoting at-Tabri, is also of the opinion that 'ahledhikr' in this verse means people of the Book.

Ibn al-Qayyim (d. 751 AH/1350AD), in his *Ilm al-Mowaqeeb Ab Rabbil Aalamin*, argues that four types of questions are generally asked by questioners. There is no fifth type. The first type is to ask about an injunction, that what is the ruling about a particular matter. The second type is to enquire about

evidence for a particular ruling. The third type is to know the reason behind a ruling. The fourth type is to question the evidence that goes against the answer.

The Quranic questions, however, can broadly be categorized into two types: clarification questions or understanding questions, and rhetorical questions. Clarification questions are those where the learners may not have understood or might have been confused to clearly grasp a particular content. These questions may also be called understanding questions which are asked to gain deeper understanding of a particular topic or subject. Rhetorical questions, on the other hand, are asked to make a point, and may not necessarily need a response. Quranic interpreters have also analyzed two forms of questions: the genuine questions and the figurative/metaphorical ones (Badi et al., 2017). The former are real questions seeking clarification, confirmation or increasing understanding, while the latter are rhetorical in nature.

According to Kehlī (2009) and al-Balkhī (2007), the number of questions in the Quran is estimated to be 1363. In total, 946 words have been used in the Quran for asking questions. However, their unique number is 12 without repetition. Broadly speaking, these have been employed for asking clarification, understanding or just as rhetorical technique. In the following table, the number of occurrences of the interrogative particles used in the Qur'an have been listed.

Table 1. The Number of Occurrences of The Interrogative Particles Used in The Qura'n

S.No	Word	Occurrences	
1	أَ	Will/shall you? Have you?	507
2	مَا maA	What	95
3	هَلْ hal	Do/did you? Have you	93
4	كَيْفَ kayof	How	80
5	مَنْ man	Who	37
6	أَيُّ Ayye	Which	35
7	أَنَّى Anna	How / Where	27
8	مَاذَا madhaa	What	26
9	كَمْ kam	How many	20
10	أَيْنَ ayna	Where	12
11	مَتَى mataa	When	9
12	أَيَّانَ ay~aAn	When	5
	Total	946	

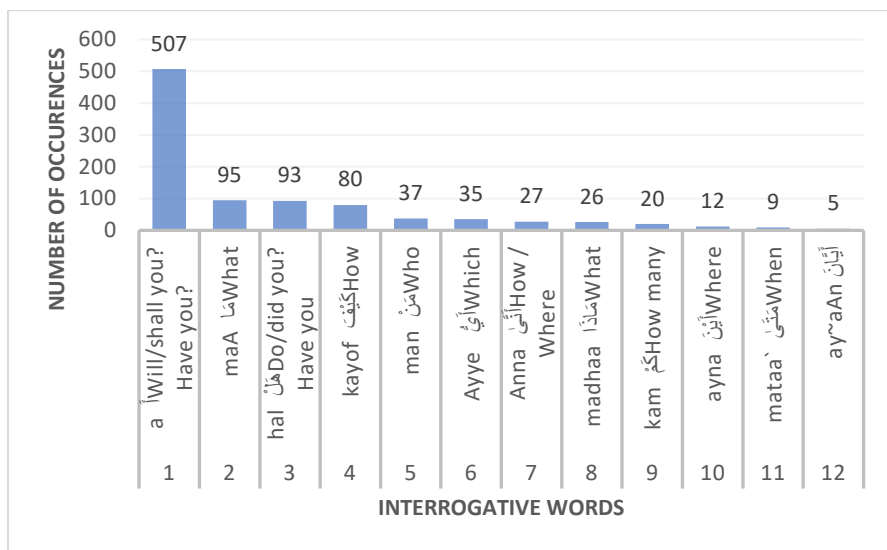


Figure 1. Occurrences of Interrogative Words in the Quran from Highest to Lowest

The following table shows the number of questions asked in each chapter of the Quran arranged in the order from the highest to the lowest number.

Table 2. Number of questions in each surah in the Qura'h

Surah No	Surah Name	No of Questions	Surah No	Surah Name	No of Questions
7	Al-araaf (The Elevation)	50	36	Ya-Seen (Ya-Seen)	19
2	Al-Baqarah (The Cow)	49	5	Al-Maidah (The Table)	18

6	Al-Anam	43	16	An-Nahl (The Bee)	18
10	Jonah (Younas)	41	12	Joseph (Yusuf)	17
26	As-Shuaraa (The Poets)	41	56	Al-Waqa'ah (The Inevitable)	17
55	Al-Rahman (The Compassionate)	32	52	At-Tur (The Mount)	16
3	Al-Imran (The Family of Imran)	31	53	Al-Najam (The Star)	15
4	An-Nisa (Women)	29	54	Al-Qamar (The Moon)	15
37	As-Saffat (The Aligners)	28	67	Al-Mulk (The Sovereignty)	15
11	Hud	25	25	Al-Furqan (The Criterion)	14
21	Al-Anbiyab (The Prophets)	25	40	Al-Ghafir (The Forgiver)	14
27	An-Namal (The Ants)	25	17	Al-Isra (The Night Journey)	13
39	Az-Zumur (The Throngs)	24	29	Al-Ankabut (The Spider)	13
9	At-Tawbah (Repentance)	22	38	Saad (Saad)	13
23	Al-Mominoon (The Believers)	21	41	Fusilat (Detailed)	13

43	Az-Zukhruf (The Decorations)	21	13	Ar-Raad (Thunder)	12
18	Al-Kahf (The Cave)	20	34	Sheba (Saba)	12
19	Maryam (Mary)	19	46	Al-Ahqaf (The Dunes)	12
20	Taha (Taha)	19	47	Muhammad (Muhammad)	12
28	Al-Qasas (The Stories)	19	78	An-Naba (The News)	12
22	Al-Hajj (The Pilgrimage)	11	97	Al-Qadar (Decree)	1
35	Fatir (Originator)	11	99	Al-Zalzalah	1
77	Al-Mursalat (The Unleashed)	11	100	Al-Aadiyat (The Racers)	1
24	An-Nur (The Light)	10	104	Al-Humaza (The Backbiter)	1
32	As-Sajdah (The Prostration)	9	107	Al-Maoon (Assistance)	1
68	Al-Qalam (The Pen)	9	1	Al-Fatiha (The Opening)	0
75	Al-Qiyamah (The Resurrection)	9	62	Al-Jumrah (Friday)	0
14	Ibrahim (Abraham)	8	63	Al-Munafiqoon	0

				(The Hypocrites)	
30	Ar-Rum (The Romans)	8	87	Al-Aala (The Most High)	0
31	Luqman (Luqman)	8	91	Ash-Shams (The Sun)	0
50	Qaf (Qaf)	8	92	Al-Layl (The Night)	0
15	Al-Hijr (The Rock)	7	98	Al-Bayinnah (The Clear Evidence)	0
51	Ad-Dhariat (The Spreaders)	7	102	At-Takthur (Abundance)	0
45	Al-Jathiyah (The Kneeling)	6	103	Al-Asr (The Time)	0
79	An-Naziaat (The Snatchers)	6	106	Al-Quraish (The Quraish)	0
65	At-Talaq (Divorce)	1	108	Al-Kawthar	0
72	Al-Jinn (The Jinn)	1	109	Al-Kafiroon (The Disbelievers)	0
73	Al-Muzzammil (The Enwrapped)	1	110	Al-Nasr (Victory)	0
76	Al-Insaan (The Man)	1	111	Al-Masad (Lahab) (The Thorns)	0

86	At-Tariq (The Nightly Visitor)	1	112	Al-Ikhlās (Monotheism)	0
			113	Al-Falaq (The Daybreak)	0
			114	An-Nas (the Mankind)	0
				Total	1109

The importance of asking questions is also evident in the traditions of the Prophet Muhammad (ﷺ). Prophet Muhammad (ﷺ) was known for his willingness to answer questions and his patience in doing so. He also encouraged his followers to ask questions.

A Bedouin once visited Prophet Muhammad (ﷺ) and enquired: “Tell me about an action that I shall do and that I obtain paradise.”

Prophet Muhammad (ﷺ) replied: “(That) you worship Allah alone and that you do not make partners with Him. Offer the compulsory prayer, pay the obligatory charity (zakah) and fast (the month of) Ramadan” (Bukhari, Muslim, Mishkaat al-Masaabih 14, 16).

At certain times, the Prophet (ﷺ) would give personal lessons or, to delve further into a topic, he would ask a follow-up question after the initial question had been answered. For example: Mu'ad Ibn Jabal asked the Prophet (ﷺ): “Messenger of Allah, tell me of deeds that will make me obtain paradise and keep me away from Hell.”

Before answering, the Prophet (ﷺ) would complement the questioner for asking a significant and serious question. He would then provide a direct response to the question without including unnecessary details.

“Worship Allah and do not associate any partner with Him. Perform the prayer, give the obligatory charity (zakah), fast in the month of Ramadan, and go on Hajj.”

Even though the previous question had been answered, the Prophet (ﷺ) asked another question to ensure that the learner was ready for the next stage of the lesson and that their preferences had been taken into consideration.

“Shall I not guide you to the doors of good?”

After receiving a response indicating that the learner was ready to proceed, the Prophet (ﷺ) used metaphorical language in the lesson.

“Fasting is a shield, charity puts out fire like water does so, and midnight prayer has a similar effect.”

The Prophet (ﷺ) asked another consenting question before proceeding to a more advanced, highly figurative stage of the lesson.

“Shall I not guide to the head, support and top of the hump?”
The Prophet (ﷺ) asked.

Again, receiving a confirmatory answer, the Prophet (ﷺ) proceeded:

“Islam is its head (of the matter), prayer is its support and Jihad is its top of the hump.”

Before the session is concluded, the Prophet (ﷺ) employed the questioning technique and adapted the kinaesthetic teaching style.

“Shall I not tell you of something that controls all of that?”. He held his tongue in his fingers and said, “Restrain this” (Ahmad, Tirmidhi; Ibn Majah; Mishkaat al-Masaabih 29 - Graded Hassan by Alizai).

At other times, the Prophet (ﷺ) would teach a group of learners and then it would lead to a question / answer session. The following hadith is the prime example:

They (the women) asked: “Why (for what reason) O Messenger of Allah?”

The Prophet (ﷺ) replied: “Generally, you are used to abuse and remain ungrateful to your husbands and there are some among women who are deficient in intellect and your religion. You have been best at taking away the understanding of a wise man”.

They (the women) enquired: “What does that mean that we are deficient in intelligence and religion, O Messenger of Allah?”

The Prophet (ﷺ) replied: “Is not the testimony of a woman equal to half the testimony of a man?”

They replied: “Yes”.

Regarding the deficiency in religion the Prophet (ﷺ) said: “Is it not that when she (a woman) passed through her monthly periods (menstruation) she does not pray and fast?”

They replied: “Yes (it is so)”

The Prophet (ﷺ) said: “That is their deficiency in religion” (Bukhari; Muslim; Mishkaat al-Masaabih 19).

Both the Quran and the Sunnah of the Prophet are replete with examples that can be cited to support the claim that questioning is an important tool and technique in the Islamic Pedagogy. The Quran and the Sunnah uses real questions to provide clarification, deeper understanding and engage the learner. The Quran and the Sunnah make use of real questions to achieve multiple goals such as providing clarity, promoting deeper comprehension, and engaging learners. The use of real questions in the Quran and Sunnah highlights the importance of an interactive and engaging learning experience in promoting deeper understanding and retention of information. Rhetorical questions on the other hand, inspire the learner to delve deeper into the subject matter and attain a more profound understanding. These questions encourage the reader/learner to reflect to make the learning process richer and more meaningful.

4.2 Discouragement of Excessive Questioning in Islam

The Quran, as seen above, encourages the reader to ask questions and seek clarification. The Prophet(ﷺ) and those who have knowledge are encouraged to respond the questions being posed. However, excessive questioning is not only discouraged but strongly condemned. In the following verse, it has been commanded to avoid excessive questioning.

"Ask not about things which, if made plain to you, may cause you trouble" (Qur'an 5:101).

So unnecessary questioning can add to problems and confusion than clarification and understanding. The following verse, in similar tone, prohibits discussion without knowledge.

"And do not pursue that of which you have no knowledge. Indeed, the hearing, the sight, and the heart - about all those [one] will be questioned" (Qur'an 17:36).

Sometimes, the questioner may pose a question that is meaningless or even silly due to ignorance.

"And those who have no knowledge say, "Why does Allah not speak to us or there come to us a sign?" Like those before them, they speak words of no account. Thus, the hearts of those without knowledge are in their breasts" (Qur'an 2:118).

A question may have nothing to do with the learner in respect of it benefits or understanding. Such questions should be avoided.

"They ask you about the Hour: "When will be its arrival?" Say, "Its knowledge is only with my Lord. None will reveal its time except Him. It lays heavily upon the heavens and the earth. It will not come upon you except unexpectedly" (Qur'an 7:187).

The hadith literature also indicates, with numerous examples, that excessive questioning is discouraged. For instance:

"Do not ask too many questions, for some people before you were destroyed because of their excessive questioning and their disagreement with their prophets." (Sahih Bukhari)

Another hadith indirectly refers to asking excessive questioning may lead to innovations with serious consequences.

"The worst of all matters are those which are newly invented, and every newly-invented matter is an innovation, and every innovation is a misguidance, and every misguidance is in the Fire." (Sahih Muslim)

Ibn al-Qayyim (d. 751 AH/1350AD), in his *Ilm al-Mowaqeeb Ab Rabbil Aalamin*, stated that only relevant question with practical benefits should be posed and that all irrelevant questions should be avoided. He even insisted that there was no need to answer if a question is irrelevant and that answering it will not benefit the one who asked. He says:

If the questioner appears to benefit from the right answer, then a right answer must be given. However, if the scholar to whom the question is posed that the question is irrelevant and that it will not benefit the questioner in any way, it is ok for the scholar to digress and speak about matters that are beneficial to the questioner (al-Jawziyyah, 2016).

4.3 Questioning by Muslim Teachers – The Practice

Many teachers reported using a combination of posing questions to their students and allowing them too to ask questions. This approach was seen as effective in fostering engagement, creating interest, motivation and encouraging critical thinking.

Sheikh Majid mentioned using questioning as a way to stimulate independent thought in his students.

That is mainly questioning, or you will ask questioning, what you're trying to do is to provoke thought, what you're trying to do is provoke independent thought, what you're trying to do is provoke is to make that person.

The teacher considers questioning as the main tool both by students as well as the teacher. Provoking thought is considered to be the primary purposes of providing the learners the opportunity to ask questions. It gives the learner independence and freedom to develop critical thinking. The phrase “provoke to make that person” indicates that the aim is to build and develop the learner into an inquisitive and curious participant in the class discussion.

Dr. Fatah placed great importance on the questions and answers being discussed and made referred to the story of Moses and Khadhir in the Quran as an example.

If you see the story of Prophet Musa and Khidir (A.S) is a good example of a teacher and a student on questioning.

The story of Khidir and Moses involves a series of questions. In the story, questioning is not discouraged, however, the right and appropriate time must be sought for asking questions. The incorrect time may not lead to a good relationship between the teacher and the learner. It averts developing a conducive learning environment. The story envisages that learners must have the patience to absorb the content first and wait for the right time to put forward relevant questions.

Sheikh Doosam preferred to start his sessions by either asking a question or telling a joke in order to relax the audience and make them feel more comfortable. This approach allowed him to establish a balance between being serious while also lighting the mood. He believed that this helped create an environment in which the audience felt more comfortable asking questions.

And number 2, put the audience at ease, they can ask questions. So, I think you think it's a balance, I am quite serious, but at the same time, you know, I kind of break the ice.

In addition to creating a pleasant learning environment, the teacher can see the benefit in questioning in terms of “putting the audience at ease”. They are free to start asking questions. This could also benefit them to activate the schema by appealing to existing knowledge in their cognitive framework, so that they can logically connect new ideas with the older ones. The teacher sees it breaking the ice. So, there is not a direct start of the lesson rather slowly transitioning the learners by putting them first in the learning mode.

Sheikh Saif consistently encourages his students to ask questions in order to gauge their understanding of the material being taught. This helps him to assess their comprehension and identify any areas where further clarification may be needed.

So, what I tend to do is I ensure that many questions are being asked, while I'm going along, for example, going to teaching a gardaan and make sure. Do you understand it?

Sheikh Saif takes it a step further by allowing his students to ask questions that may not be directly related to the topic being discussed.

I believe that it is beneficial for students to ask questions, even if they are unrelated to the current topic of discussion. I encourage my students to ask questions that they may be hesitant to ask others and assure them that I am open to answering any questions they may have. I emphasize the importance of asking questions as a means of learning and

encourage my students to be curious and ask questions in order to better understand the material being covered.

Some teachers either remained silent or did not respond to this interview question. This suggests that some teachers understand the importance of questioning and employ the technique in the classrooms. Others do not consider it as important or to be employed as a teaching tool rather sparingly using it when absolutely necessary. The data from the teachers also is void of any reference to the Quran or the Sunnah. Even though, the Quran and the Sunnah of the Prophet (ﷺ) is very explicit about employing the technique and its benefits, none of the teacher referred to the primary Islamic sources except to the story of Moses and Khidr.

5. DISCUSSION

The critical review of both the Islamic and secular literature suggests that the role of questioning in teaching and learning is complex and multifaceted. The Qur”and hadith contain several references that encourage questioning as a means of seeking knowledge and understanding. These findings suggest that asking questions is valued and encouraged in the Islamic tradition as a way of gaining insight and deepening one's understanding of the faith. The Quranic verses and traditions of the Prophet (ﷺ) have enough examples of the benefits of asking questions. The secular literature confirms the Islamic standpoint on the various benefits of questioning as a teaching and learning tool. Questioning plays a key pedagogical tool in teaching and learning (Daniels, 2002; Day & Sachs, 2004) and the Quran and hadith frequently use the tool for maximum learning. One of the roles of engaging learners in questions is

checking for understanding (Daniels, 2002). This is clearly illustrated in the Prophetic tradition. The Prophet(ﷺ) would normally pose a question before even proceeding to the main lesson. This served the purpose of checking the learner's existing level. In case, a learner is not ready, he/she can be provided additional support (Black & Wiliam, 1998) in the form of custom material. Sometimes, the Prophet(ﷺ) would ask a question in the middle which can be an equivalent of modern concept check questions or CCQs as the lesson progresses (Daniels, 2002). Questioning improves learners' performance as a result of formative assessment and feedback (Brookhart, 2013). This can be seen in many instances in the Prophetic traditions. For instance, when Mu'ad Ibn Jabal was trained for taking over as governor to the people of Yemen, the Prophet(ﷺ) conducted a formative assessment in the form of questioning to assess and give feedback.

Teachers can encourage students to think critically and consider multiple perspectives on a topic by asking open-ended or higher-order questions. These types of questions require students to analyze information and evaluate its credibility or consider the potential consequences of a concept. For example, a teacher might ask students to assess the reliability of a source or evaluate the potential impacts of a particular idea. This approach, as described by Brookhart (2013), can help students develop deeper understanding and more complex thinking skills. This can be seen in many examples when the Prophet(ﷺ) would ask question and elicit the companions' responses. Daniels (2002) and Brookhart (2013) asserted that student engagement, participation, motivation, and increased interest may be achieved by simply engaging them in questions and

answers. This also helps learners share opinion with their peers. The Prophet (ﷺ) would ask questions and let the companions speak. Other companions present would listen and then wait for the Prophet's feedback. The study also suggests that the Prophet (ﷺ) would use different kinds of questions such as low-level or recall questions (Daniels, 2002), high order questions and structured questions (Brookhart, 2013), according to the context. The data from the interview questions by the Muslim practicing teachers suggest that questioning is an important tool, and some teachers employ it as pedagogical tool. However, not all teachers responded in the same vein. Some teachers were reluctant to respond in detail and were even unaware of the importance of questioning in the light of the Quran and the Sunnah.

The paper also confirms that irrelevant, unnecessary, and excessive question is unproductive and may have a negative impact on learners (Smith, 2016; Wang, 2019). This may disrupt the flow of the lesson (Wang, 2019; Cai, 2018; Smith, 2016; Brown & Roediger III, 2014), hinder students learning (Knight, 2017; Lai & Liang, 2015), create disorganized and chaotic learning environment. The modern secular and Western literature agree with the Quranic and Hadith perspectives on avoiding unnecessary, irrelevant, and excessive questioning. The Muslim scholars for the most view the same view that excessive questioning is counterproductive and hence must be avoided. Thus, the study suggests that there may be limits to the types of questions that are considered appropriate or acceptable in the Islamic tradition, and that excessive or inappropriate questioning may be discouraged.

Overall, the results of this study provide insight into the role of questioning in teaching and learning in the Islamic tradition and suggest that it is an important and valued aspect of the learning process. Further research is needed to better understand the role of questioning in different contexts and settings, and to explore ways in which questioning can be effectively used to support learning and understanding in the Islamic tradition.

6. CONCLUSION

The role of questioning in Islam is complex and multifaceted. The text of the Quran, the Sunnah and the Muslim scholarly literature encourage questioning as a means of seeking knowledge and understanding and is seen as a valuable tool in Islamic teaching and learning. Some Muslim teachers use the questioning technique in their teaching practice. They understand that it is important to employ the tool to create a conducive learning environment, motivate learners, create engagement, arouse curiosity and interest. Secular academic literature confirms the Islamic position on the role and importance of questioning as a vital tool in Islamic pedagogy and education.

However, excessive, or inappropriate questioning may be discouraged in the Islamic tradition and can have negative impacts on learning. This again appears to agree with secular literature on teaching and learning. Teachers can use open-ended or higher order questions to encourage critical thinking and the consideration of multiple perspectives. The Prophet (ﷺ) used various types of questions depending on the context. Muslim teachers should aim at maintaining a balance in using questioning as a teaching tool. At the one end of the continuum,

there may be discouragement of question while at the other end, too many questions may be asked. The study confirms that most Muslim teachers understand the role of asking questions and regularly incorporate questioning in their teaching practices. The results of this study also suggest that questioning is an important and valued aspect of the learning process in the Islamic tradition. However, questioning is a comprehensive area and other methods such as lesson observations should be used to explore the topic in the practices of the Muslim teachers and its impact on learning. Further research is needed to explore the complexities and limitations of questioning in Islam in a much wider context.

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PERCEIVED EFFECT OF E-COMMERCE TAX AWARENESS AND TECHNOLOGY OPTIMISM ON TAX COMPLIANCE INTENTION

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ABSTRACT

Despite the high volume of e-commerce transactions and massive virtual tax revenue generation from different e-commerce trading platforms worldwide, the tax compliance intention remains low, coupled with the complexity of its legal tax provisions, tax awareness and technology optimism. Several administrative efforts and frameworks were recently put in place to address the lingering issues, yet information about e-commerce tax awareness and technology optimism remains the least from most formal and informal sectors' users and operators in developing countries like Nigeria. As such, the study examines the perceived effect of e-commerce tax awareness and technology optimism on tax compliance intention. Specifically, the study examines the influence of university students' e-commerce tax awareness and technology optimism on tax compliance intention. A cross-sectional survey design was used for the study. A questionnaire was self-administered to 372 samples, and 323 valid responses were obtained from undergraduate students with practical e-commerce technology experience. Subsequently, Partial Least Squares Structural Equation Model was used to test the proposed research

model using SmartPLS4. The study found that e-commerce tax awareness and technology optimism positively and significantly correlated with tax compliance intention, among e-commerce platform users in universities. The practical and theoretical importance of understanding the implications of the study was finally highlighted.

Keywords: E-commerce, Tax Awareness, Technology Optimism and Tax Compliance Intention.

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1. INTRODUCTION

Tax compliance intention signifies the proper functioning of a tax authority, which promotes more revenue generation. The tax compliance intention variable looks into the readiness, tendency and decision to comply with tax provisions or not based on people's behavior (Salaudeen and Ejiofor, 2022; Thornton, Akinin, Branscombe and Helliwell, 2019; Utama, Nimran, Hidayat and Prasetya, 2022). Understanding people's behavior that promotes their attitudes is crucial in increasing tax compliance intention (Kupoluyi, Oloyede and Oyedokun, 2022). It further goes a long way in promoting government expenditure for the general benefit of a nation, especially in e-commerce, which promotes the payment of Value Added Tax (VAT) from different virtual transactions around the world.

E-commerce has modernized and enhanced the connections between sellers, manufacturers and consumers in a better way that applies vital tools of financial incentives. Accordingly, the expansion of e-commerce has a direct link to an increase in online sales, tax collections and revenue generation in many countries of the world (Argilés-Bosch, Somoza, Ravenda and García-Blandón, 2020; Baozhuang, Mu, Cao and Gao, 2021; Mu, Ren and Wang, 2022; Niu, Deng and Hao, 2020). Such e-commerce expansion makes it the best consumer choice for logistics delivery over long distances worldwide. Consumers' satisfaction is crucial for the continuous utilization, repurchasing intentions, and success of e-commerce (Artana et al., 2022; Coppola, 2021; Escursell, Llorach-Massana and Roncero, 2021; Xiao, Yuan, Sun and Sun, 2021).

Moreover, e-commerce global trade volume continues to grow annually in many countries and has gained increasing importance between 2000 to 2020 and beyond (Christie, 2021; Escursell et al., 2021; Scarcella, 2020). Scarcella (2020) reported an e-commerce sale of goods estimated at USD 2 trillion annually with projections to reach USD 4.5 trillion by 2021, out of which USD 1 trillion is estimated to be cross-border e-commerce. Correspondingly, Coppola (2021) reported worldwide net sales of 4.28 trillion USD in e-retail sales from over two billion purchases and 5.2 billion unique visitors primarily via mobile devices. Equally, the Covid-19 pandemic around 2020 and beyond had contributed immensely to the accelerated growth, spread, adoption and utilization of e-commerce via the e-commerce platforms globally (Helmy Mohamad, Farouk Hassan and Abd Elrahman, 2022; Kumar, Lim, Pandey and Christopher Westland, 2021; Scutariu, Şuşu, Huidumac-Petrescu and Gogonea, 2022).

E-commerce platforms are used by different users globally. These e-commerce platforms' users cut across various economic sectors, disciplines, and individuals. They include undergraduate and postgraduate students, social media users, retailers, manufacturing SMEs, public online shoppers, government agencies, tax departments, hotel managers, owners of restaurants, and entertainment centers (Al-Ttaffi, Bin-Nashwan and Amrah, 2020; Bestaria, Sinagab and Saudi, 2019; Gupta, Kiran, & Sharma, 2020; Hertati & Safkaur, 2021; Jianjun, Wang and Wu, 2020; Kahiigi and Semwanga, 2020; Pratama and Jin, 2019; Singh and Bharath, 2021; Solichin, Astuti and Mahardhika, 2021; Suartana and Masari, 2019; Yuyan, Fan, Shen and Miller, 2020).

University students also formed part of the global users that embraced e-commerce among the categories of students in the universities utilizing and applying e-commerce platforms for online trading. In support of university students' use of e-commerce, it was found from some studies that university students prefer online shopping using mobile applications to offline markets (Kesuma, Kesuma, Nasution and Epriel, 2020; Nursyirwan and Ardaninggar, 2020). Furthermore, Kesuma et al. (2020) reported that university students use online trading platforms due to the significant changes in their purchase intention owing to promotions, quality of websites, and trust alongside low prices, discounts and special offers from the platforms. Similarly, some researchers reported that university students portray a great willingness to continue adapting and utilizing e-commerce platforms while in school and after school (Beatson et al., 2020; Kesuma et al., 2020; Liao, 2020; Olokundun et al., 2018; Russell, Ariail, Smith and Smith, 2020).

As mentioned above, these studies outline indications that students in universities are also active users of e-commerce platforms, contributing to developing different nations' economies and global international trading owing to their technology optimism. In that regard, Jiang, Sun, Yang and Gu (2022) point out that this optimism about utilizing new business technology has helped many e-commerce users (and students inclusive) to have better online business experiences. Similarly, a rise in the technological optimism of e-commerce users and their usage of online business technologies has cleared the way for the realization of additional tax revenue through the users' intention to comply with tax laws (Baozhuang et al., 2021; Mu et al., 2022; Soon, Derashid and Bidin, 2020). Moreover,

without tax awareness of e-commerce technology, compliance will not exist (Asrinanda, 2018; Lixuan, Smith and Gouldman, 2020). Therefore, tax awareness enhances taxpayers' compliance intention (Asrinanda, 2018).

Unfortunately, some downsides are associated with e-commerce technology for tax compliance intention. For instance, e-commerce technology has not been efficiently utilized for tax filing and returns by many e-commerce users at different levels due to a lack of computer literacy and tax awareness, which led to low tax compliance intention (Asrinanda, 2018; Bestaria et al., 2019; Bornman and Ramutumbu, 2019; Edgley and Holland, 2020; Lestari and Wicaksono, 2017). Comparatively, Humta and Ghafourzay (2021); Lixuan et al. (2020) reported that low tax awareness and conscience are parts of online tax challenges, with many users not knowing the exact way to remit e-taxes. As a result, it is more common in e-commerce, leading to non-tax compliance intention (Lixuan et al., 2020).

Furthermore, prior studies provide that the university students' non-tax compliance intention were due to: negative attitudes, lack of school guidance, inadequate social support, negative behavioral influence, simplicity of social and virtual environment, obsolete government tax policies and implementations (Beatson et al., 2020; Gou and Zhang, 2021; Kesuma et al., 2020; Oyekunle, 2019; Pratama and Jin, 2019; Russell et al., 2020). Similarly, in Nigerian universities, for instance, the adoption of new technologies does not always go smoothly due to the issue of technology optimism among university staff and students (Adegore and Adegboro, 2021; Hamajoda, 2018). As such, according to Zubairu, Oyefolahan,

Babakano, Etuk and Mohammed (2020), Nigeria is low in technology readiness for the digital economy. In support of that, Nigeria was ranked low by United Nations (2021) in terms of readiness for frontier technologies index, based on a global technological wave and innovation ranking, occupying 124th place out of 158 countries involved. Moreover, the country is also ranked 123rd among 132 countries based on knowledge and technology outputs by the Global Innovation Index (2021). These limitations affect the utilization of online technology in compliance with the new e-commerce and tax compliance provisions as contained in the newly established Nigerian Financial Act 2020.

These aforementioned challenges bring about the need to enhance the level of tax awareness and technology optimism among taxpayers in the country. It is because tax awareness promotes tax knowledge (Bornman and Ramutumbu, 2019) and lessens the misconception and misunderstanding of tax policies by taxpayers. Without adequate tax awareness, tax compliance will not exist (Asrinanda, 2018; Lixuan et al., 2020). However, when taxpayers are sufficiently aware of the existing tax policies, they will embrace the online tax policies with great ease, as the online tax declaration and e-tax payments provide the most advanced technological breakthrough in tax administrative procedures and the gradual modernization of taxation. According to Bestaria, Sinagab and Saudi (2019), the online tax system helps public members obtain tax information and ease tax payments. Hence, the digitalized economy and tax systems ensure that multinational firms engaged in online business operations like e-commerce pay taxes to the governments of countries where the economic activity occurs

(Charlemagne Igue and Alinsato, 2021; Lucas-Mas, Oliver, Junquera-Varela and Felix., 2021) due to the level of technology optimism. In that regard, it was reported that technology optimism positively and significantly contributes to tax compliance (Ming Ling and Muhammad, 2006) and has a positive relationship with consumers' intention to use technology-based services (Cruz-Cárdenas, Guadalupe-Lanas, Ramos-Galarza and Palacio-Fierro, 2021), thereby increasing taxpayers' technology readiness.

Yet, several efforts recently put in place could not completely address the lingering issues. As a result, existing studies have also stressed the need for more research on the technology optimism of students as e-commerce users, especially in universities (Haryanti and Pribadi, 2019; Saidu, Jibrin, Shagari, Kabir and Abubakar, 2021). However, limited studies have examined how university students' optimism about new business technologies influences their behavioral intentions (Chao and Yu, 2019). Moreover, on the part of recent studies that examined tax compliance intention in e-commerce, very minimal attention was given to the same issues in the African context (Bani-Khalid, Alshira'h and Alshirah, 2022). The same is true for other developing nations like Nigeria (Abdullah, Naved Khan and Kostadinova, 2021; Etimphd, Jeremiah and Udonsek, 2020; Gupta et al., 2020; Kumar et al., 2021; Opeuti, 2020; Saidu et al., 2021; Villa, Ruiz, Valencia and Picón, 2018; Yaacob and Gan, 2021). Based on these premises, this study seeks to bridge the existing issues and gaps by examining the effect of e-commerce tax awareness and technology optimism on tax compliance intention in universities within Northeast Nigeria.

2. REVIEW OF LITERATURE

2.1 Tax Compliance Theory

There is no theory completely explaining tax compliance behavior or intention. It is because the tax compliance behavior or intention variables are influenced by economic and non-economic elements, including deterrence, social psychology, financial exchange, comparative treatment, political legitimacy, and public confidence in government (Bello and Danjuma, 2021; Krieger, 2021). Nevertheless, the most popular theory is the Income Tax Evasion Theory (ITET) (Bello & Danjuma, 2021; Devos, 2014; Fjeldstad, Schulz-Herzenberg and Hoem Sjursen, 2012; Krieger, 2021). Allingham and Sandmo (1972) founded the ITET. The ITET asserts that tax compliance affects tax rates, fraud fines, and the likelihood of identifying tax evaders (Bello and Danjuma, 2021; Devos, 2014; Lewis, 1982).

The ITET also looked at the relationships between the desire to evade paying taxes and the efforts made to find and stop it (Allingham and Sandmo, 1972; Devos, 2014). Conversely, under low likelihoods of a tax audit, detection and low penalties, the tendency to tax evasion is high among taxpayers and vice versa (Abuamria, 2019; Alm, Cox and Sadiraj, 2019; Devos, 2014; Fjeldstad et al., 2012). The ITET critically examines the economic factor of deterrence, which describes the likelihood of being detected and the consequences to be meted out to defaulters, as well as the psychological component of moral principles, equity, and fairness maintained by taxpayers (Abuamria, 2019; Alm et al., 2019; Devos, 2014; Krieger, 2021).

2.2 E-commerce Platforms and Students' Usage in Universities

E-commerce activities in universities include several websites, institutional portals and social media platforms for virtual interaction, communication and marketing of products and services (Oyekunle, 2019). The ease of use and usefulness of the e-commerce platforms contribute to students' continuous adoption, utilization and intention to make online payments (Ardiansah, Chariri, Rahardja and Udin, 2020; OECD, 2020; Singh and Bharath, 2021). Even though some students may express worries over privacy, consumer protection and security challenges in universities. Undergraduate students are among others in universities that utilize and apply e-commerce platforms for online trading. They use the platforms due to their emerging accounting and entrepreneurial knowledge, business skills, and intention (Beatson et al., 2020; Kesuma et al., 2020; Russell et al., 2020).

Similarly, university students expressed great willingness to utilize the e-commerce platforms during school and after due to their knowledge and skills (Liao, 2020; Olokundun et al., 2018). These knowledge and skills are vital in their future business success and improve their academic performance in universities. Similarly, university students prefer online shopping using mobile applications to offline markets due to the significant changes in their purchase intention (Abdullah et al., 2021; Kesuma et al., 2020; Nursyirwan and Ardaninggar, 2020). In addition, promotions, website quality, trust alongside low prices, discounts, special offers, and dedicated programs for students and the platforms' security were reasons why university students used the e-commerce platforms (Kesuma et

al., 2020; Nursyirwan and Ardaninggar, 2020). Pribadi (2019) reported an average level of university students' e-commerce technology readiness using UNIMART, a designed online shopping service for university students in Indonesia. However, female university students were more involved in online shopping than their male counterparts (Kesuma et al., 2020).

Despite the enormous contribution of e-commerce to university students, e-commerce studies are yet to be fully utilized in universities worldwide. Some business and university students are not participating in the applicable e-commerce practices due to a lack of guidance from schools, insufficient social support, physical and virtual environment, government policies and implementations (Gou and Zhang, 2021; Oyekunle, 2019). There are shreds of evidence of minimal research studies on university issues in e-commerce despite the available data sources and online materials, especially in Nigeria (Atanassova, 2018; Mills, 2019; Oyekunle, 2019). Most of the previous studies in line with university students' utilization of e-commerce platforms were studies on foreign undergraduate universities students (Bestaria et al., 2019; Kesuma et al., 2020; Nursyirwan and Ardaninggar, 2020; Pratama and Jin, 2019; Singh and Bharath, 2021), colleges students (Gou and Zhang, 2021; Liao, 2020) or mixed institutions (Ardiansah et al., 2020).

The empirical contributions from African universities remained very limited (Haryanti & Pribadi, 2019; Saidu et al., 2021). For instance, results from bibliometric analyses indicate that the dominant studies on e-commerce were more from countries like China, the USA, the United Kingdom, Taiwan and India, among other nations (Abdullah et al., 2021; Kumar et al., 2021; Mou and Cui, 2019; Yaacob and Gan, 2021). China, alone

accounts for 50% of the recent total e-commerce studies (Dongyang and Liu, 2021; Kang, Diao and Zanini, 2020; Kumar et al., 2021; Liu, Osewe, Shi, Zhen and Wu, 2022; Luzhao, 2020; Reardon et al., 2021) with very minimal attention given to the same issues in the African context (Bani-Khalid et al., 2022).

2.3 Hypotheses development

2.3.1 *Tax Awareness and Tax Compliance Intention*

Perceived tax awareness is taxpayers' sincerity, willingness, and desire to fulfil their tax responsibilities (Asrinanda, 2018; Nurlis and Ariani, 2020). An individual taxpayer can understand the purpose, meaning, and justification of paying taxes, and how to implement the tax laws freely and quickly to fulfil the necessary tax obligations (Lestari and Wicaksono, 2017). The work of the taxing authorities, the government, and the people depend on the development of such obligations for paying taxes for both online and offline transactions. The government must raise taxpayer awareness to enhance tax revenue generation (Andreas and Savitri, 2015).

Furthermore, tax awareness can influence taxpayers' intention to comply positively and significantly among individuals. In other words, a taxpayer is more likely to have a good intention to comply with tax requirements if they are more aware of their tax liability. In support of this empirically. Researchers discovered that tax compliance is considerably and favorably influenced by tax awareness in another investigation (Asrinanda, 2018; Ay et al., 2021; Savitri and Musfiaily, 2016). Similarly, some researchers discovered a direct and significant relationship between tax awareness and intention to comply

with the laws (Haryati and Tambun, 2022). Therefore, we hypothesize that:

H1a: University students' e-commerce tax awareness positively and significantly relates to tax compliance intention.

2.3.2 Technology Optimism and Tax Compliance Intention

Perceived technology optimism is a positive view of technology with a firm belief that it provides increased control, flexibility and efficiency to people's lives and work (Na, Lee, and Yang, 2021; Syamfithriani, Mirantika, Daswa, Yusuf and Kurniadi, 2021). It can promote flexibility, control, and work efficiency (Chang and Chen, 2021). Technology optimism is one of the four dimensions of the T.R. Model, including innovativeness, insecurity and discomfort (Mohamed and Raghavan, 2021; Syamfithriani et al., 2021). The unique ability of technology optimism to modify students' perceived behavioral control, attitudes, and social impacts on behavioral intention justifies its usage as a unidimensional construct (Chao and Yu, 2019).

People with high values of optimism and innovativeness contribute to the increase in overall technology readiness and intention (Parasuraman, 2000b; Parasuraman & Colby, 2015). Technology optimism was noted to promote the relationship between the factors determining technology usage and consumer intention (Meng, Kyung-Soo and Oh, 2017; Tsourela and Roumeliotis, 2015). Chang and Chen (2021) found that technological optimism significantly and positively increases more intention to shop online using the intelligent shop. Similarly, Cruz-Cárdenas et al. (2021) in Ecuador, also found technology optimism has a significant and positive relationship with consumers' intention to use technology-based services.

Thus, technology optimism strongly influences the relationship between online business users' behavior and intentions. That is to say; technology optimism has a positive contributing effect in shaping the behavior of taxpayers toward tax compliance intention. Therefore, it is hypothesized that:

H2a: University students' e-commerce technology optimism positively and significantly relates to tax compliance intention

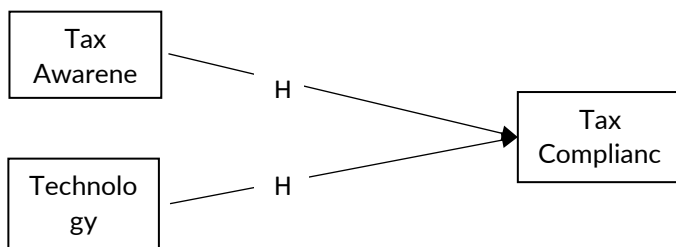


Figure 1: The Research Conceptual Model

3. RESEARCH METHODOLOGY

The research focused on undergraduate university students with practical experience in formal and informal e-commerce platforms. The formal e-commerce platforms are operationalized in the study as the registered and globally recognized cross-border online platforms, while the informal e-commerce platforms are the non-registered e-commerce platforms recognized and embraced by some online business users. A cross-sectional survey design was used for the population that stood at 65,218 undergraduate students within the six (6) state universities in Nigeria's Northeastern states, as

obtained from the data available at the National Universities Commission in February 2022 (National Universities Commission, 2022). A minimum sample size of 266 undergraduate students was obtained using the Anokye (2020) sample size table and was later increased by 40% (106 more participants), as Salkind (2018) suggested. The final sample size was 372. In total, 367 out of the 372 questionnaires were received. After the final data cleaning and screening, 323 valid responses were finally used for the data analysis. The tax awareness items were adapted from Taing and Chang (2020). The tax compliance items were adapted from Pratama and Jin (2019) and Nurlis and Ariani (2020). Finally, the items for technology optimism were adapted from Parasuraman and Colby (2015). Table 2 Under Appendix I provides full details of all the adapted measurement items and their sources.

The questionnaire instrument includes 16 self-directed administered items and two demographic information items adapted from prior researchers on a 5-point Likert scale, ranging from 1=strongly disagree to 5=strongly agree. The instruments were directly distributed to the respondents using Snowballing technique. The researchers chose the snowball technique for this study to ensure that only those with e-commerce experience or who had at one point in time ever made an online product purchase from any e-commerce trading platform. In addition, the researchers consider mixing the measurement items to avoid respondents' illogical responses. Moreover, three negatively stated items were later recorded and reversed to positive statements and values before the final data analysis. It is because experts recommend that researchers include measurement items to check for the preciseness of

words, double-barreled statements, positive and negative statements, and socially acceptable responses, among others (Elangovan and Sundaravel, 2021). Lastly, for the data analysis, an SPSS version 25 and a SmartPLS 4, version 4.0.8.5 were used. The SPSS version 25 was used by the researchers in handling issues of data cleaning and missing data replacement using Series Mean (SMEAN) to obtain the final and valid analysis result as recommended by Collier (2020). SmartPLS 4 was later used by the researchers to assess the research conceptual model and the proposed hypotheses using the Partial Least Squares Structural Equation Modeling (PLS-SEM).

4. RESULTS

Table 1 presents the demographic information of the study's respondents. The numbers of male respondents are 57% much higher than female respondents, who are 43% of the overall valid respondents. Regarding age categorization, 162 (50%) fall within the age bracket of 15-25 years. The second age categories 133 (41%) are for the age limit of 26-35 years. The third categories are 22 (7%) within the age limit of 36-45, while the final age categories are 6 (2%) with an age limit above 45 years. The result clearly shows that the vast majority of the respondents accounting for 50% of the whole respondents, who are undergraduate students, have an age limit ranging between 15-25 years.

Table 1. Demographic Information of the Respondents

Demographic Variables	Categories	Frequency (N)	Percentage (%)
Gender	Male	185	57
	Female	138	43
Age	15 -25 years	162	50
	26-35 years	133	41
	36-45 years	22	7
	Above 45 years	6	2
Total		323	100

4.1 Measurement model Evaluation

The assessment of the PLS-SEM measurement model depicted favorable outcomes. First, all indicators as contained in Table 2 meet the satisfactory requirements of factor loading and reliability, as their outer loadings are above 0.70 (Hair, Black, Babin and Anderson, 2019; Hair, Hult, Ringle and Sarstedt, 2022; Ramayah, Cheah, Chuah, Ting and Memon, 2018). Similarly, all constructs meet the minimum standard for construct reliability, having Cronbach's alpha and composite reliability index values above 0.7 along with a convergent validity, having average variance extracted (AVE) values greater

than 0.5 as contained in Table 2. Thus, all the AVEs exceeded the minimum accepted level of 0.5 as recommended by experts (See Chin, Marcolin and Newsted, 2003; Chin and Marcoulides, 1998). Finally, Table 3 shows that discriminant validities are established based on the HTMT, Fornell-Larcker and Cross loadings criteria (Hair et al., 2022; Sarstedt, Ringle and Hair, 2021).

Table 2. Factor Loadings, construct reliability and convergent validity

Construct /indicators	Outer Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Tax Compliance Intention		0.871	0.907	0.661
TCI1	0.839			
TCI2	0.876			
TCI3	0.789			
TCI4	0.819			
TCI6	0.734			
Technology Optimism		0.866	0.908	0.713
TEO2	0.825			
TEO3	0.868			
TEO4	0.836			

TEO5	0.848		
Tax Awareness	0.722	0.842	0.641
TXA1	0.760		
TXA3	0.820		
TXA5	0.820		

Note: ATT: Attitude; BHC: Behavioral Control; SJN: Subjective Norms; TCI: Tax Compliance Intention; TEO: Technology Optimism; TXA: Tax Awareness.

Table 3. Measurement model evaluation: Discriminant validity

Discriminant validity: HTMT	TXA	TCI	TEO
Tax Awareness			
Tax Compliance Intention	0.846		
Technology Optimism	0.602	0.515	
Discriminant validity: Fornell Larker Criterion	TXA	TCI	TEO
Tax Awareness	0.801		
Tax Compliance Intention	0.683	0.813	
Technology Optimism	0.48	0.455	0.844
Discriminant validity: Cross Loadings	TCI	TEO	TXA
TCI1	0.839	0.362	0.603

TCI2	0.876	0.379	0.611
TCI3	0.789	0.299	0.494
TCI4	0.819	0.394	0.543
TCI6	0.734	0.411	0.511
TEO2	0.313	0.825	0.369
TEO3	0.446	0.868	0.437
TEO4	0.401	0.836	0.418
TEO5	0.351	0.848	0.385
TXA1	0.465	0.391	0.760
TXA3	0.528	0.377	0.820
TXA5	0.626	0.387	0.820

Note: TCI: Tax Compliance Intention; TEO: Technology Optimism; TXA: Tax Awareness.

4.2 Structural model Evaluation

Following the guides proposed by experts (Aguirre-Urreta & Rönkkö, 2018; Henseler, Ringle and Sarstedt, 2015), the researchers used 10,000 subsamples bootstrapping technique to assess the proposed path relationships hypothesized in the research conceptual model using the standard errors, t-statistics, p-values at 95% bias-corrected confidence intervals (BCCI) for assessing the presence of statistical significance or not. The coefficient of determination (R²) measures the proportion of the variance in the dependent variable explained

by the independent variables in-samples. The results in Table 4 and Figure 2 indicate that the structural Model has a direct path coefficient of determination (R2) value of 0.487. In addition, the results shown in Table 5 and Figure 3 further indicate that all the direct path relationships hypothesized are positive and statistically significant. Particularly, tax awareness ($\beta = 0.603$, $t = 13.991$, $p < 0.000$) and technology optimism ($\beta = 0.165$, $t = 4.104$, $p < 0.000$) which are both found to have a positive and significant effect on tax compliance Intention. The results have minimum standard errors of 0.043 and 0.040 at a 95% BCCI of [0.511; 0.680] and [0.087; 0.244] with no absolute '0' or 1 for both tax awareness and technology optimism respectively. Thus, the two hypotheses are both supported.

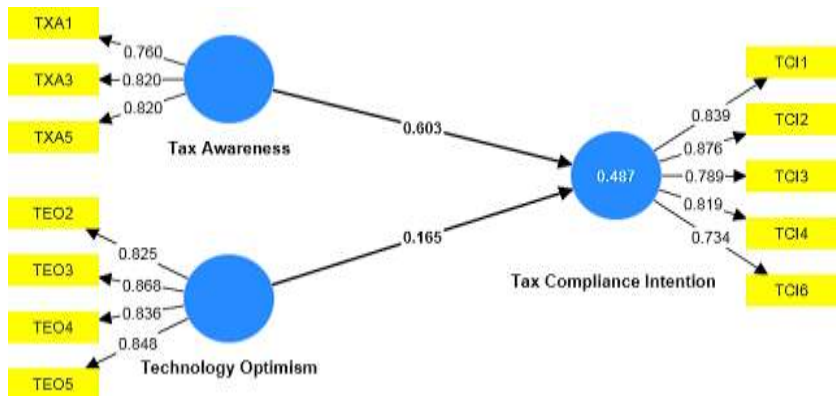


Figure 2. Indirect Path Coefficient and Bootstrapping

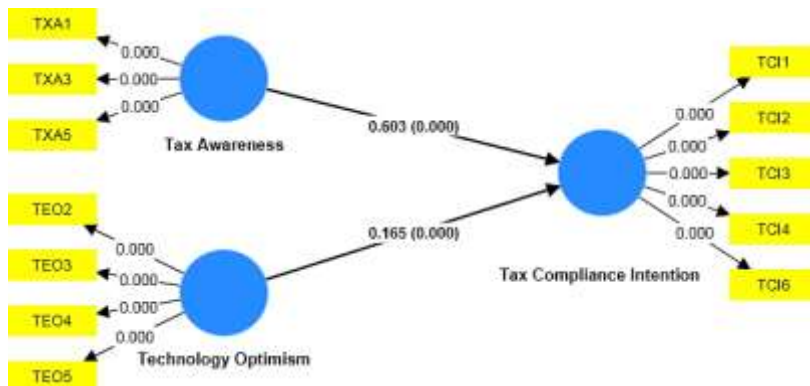


Figure 2. Direct Path Coefficient and Bootstrapping

4.3 The Effect size Predictive Evaluation

The model's effect size (f^2) was also assessed for the study's predictive constructs. According to Hair et al. (2022); Ramayah et al. (2018), the effect size is the value for every predictor established by distinguishing between the selected predictors added and the explanatory power of the structural model. In that regard, Table 6 revealed that the predictive f^2 value for tax awareness was 0.546 while technology optimism was 0.041. Cohen (1988) postulated that the effect size of a predictive variable of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. Any small effect size has a meaningful effect (Cohen, 1988; Ramayah et al., 2018). That is to say, tax awareness has a large predictive effect size while technology optimism has a small and meaningful effect size. Thus, the two predictive constructs have relative and meaningful effect sizes.

4.4 The Model's Predictive Power Evaluation

The result of the study further indicates the conceptual research model's predictive relevance also known as Q^2 predict. According to Hair et al. (2019), Q^2 predict assesses whether a model precisely predicts the data not used in assessing the model's parameters. It is a procedure for determining the out-of-sample prediction by estimating a model's accuracy on a training sample and evaluating its overall predictive performance on a holdout sample from 10 different folds (Shmueli et al., 2019). Any predictive value finally obtained above zero (0) is a great sign of a model's predictive power or relevance (Shmueli, Ray, Velasquez Estrada and Chatla, 2016; Shmueli et al., 2019). Interestingly, the result from Table 7 shows that the proposed conceptual model used in the study has an overall Q^2 predict power of 0.477 at a PLS-SEM-based predictions (PLS-SEM) value of 0.729 and a Linear regression Model (LM) value of 0.546. The PLS-SEM is higher than the LM at a Root-Mean-Square Error (RMSE) difference of 0.183. Thus, the predictive model meets the Q^2 predict criterion and so far, established.

Table 4. Coefficient of Determination

	Direct	Path
Coefficient of determination	Coefficient	
R-square	0.487	
R-square adjusted	0.484	

Table 5. Direct Path coefficient and Bootstrapping

Hypotheses	Path Relationship	β	Standard Errors	T statistics	P values	95% BCCI	Support
H _{a1}	TXA -> TCI	0.603	0.043	13.991	0.000	[0.511; 0.680]	Yes
H _{a2}	TEO -> TCI	0.165	0.040	4.104	0.000	[0.087; 0.244]	Yes

Note: β : Path coefficient; BCCI: Bootstrapping at 95% bias-corrected confidence intervals based on 10,000 subsamples.

TCI: Tax Compliance Intention; TEO: Technology Optimism; TXA: Tax Awareness.

Table 6. The Effect size (f^2) Predictive Evaluation

Predictors	f^2	Remark
Tax awareness	0.546	Large Effect
Technology optimism	0.041	Small Effect

Table 7. The Model's Predictive Power/Relevance (Q^2_{predict}) and Level

Predictors	Overall Q^2_{predict}	PLS-SEM RMSE	LM RMSE	Difference	Remark
Tax awareness and Technology optimism	0.477	0.729	0.546	0.183	Presence of Predictive power

Notes: Q^2_{predict} : The model's predictive power/relevance; RMSE: Root mean squared error. PLS-SEM: PLS-SEM-based predictions;

L.M.: Linear regression model.

5. DISCUSSION

5.1 Tax Awareness and Tax Compliance Intention

The study first shows the empirical positive and significant effect of tax awareness on tax compliance intention. The finding affirms what previous studies have examined in similar direct path relationships. For instance, a study in Afghanistan by Ay et al. (2021) revealed that tax awareness significantly and positively influences tax compliance intention. Adam et al.'s (2021) study from Indonesia found that tax awareness significantly and positively affected tax compliance intention. A similar result was obtained by Lixuan et al. (2020) where they found that taxpayers with a high degree of religiosity, national identity and strong commitment to social responsibilities had

more tax compliance intention in the United States. Thus, worldwide tax awareness is notably recognized and perceived to increase individuals' willingness to comply with legal tax provisions. On the contrary, AlAdham, Abukhadijeh and Qasem (2016) found a positive but insignificant tax awareness. Most of these findings are primarily inclined toward companies and related e-commerce enterprises. Thus, worldwide tax awareness is notably recognized and perceived to increase individuals' willingness to comply with legal tax provisions. The current finding adds more knowledge by using e-commerce tax awareness to better the understanding of e-commerce users among university students toward their tax compliance intention. It is as opposed to what is previously known in literature.

5.2 Technology Optimism and Tax Compliance Intention

Although there are limited empirical studies examining the direct relationship of technology optimism with tax compliance intention, this study contributes to the body of knowledge by providing statistical evidence to the existing literature in that regard. However, the current study found technology optimism's positive and significant influence on tax compliance intention. The finding was directly sustained by the Technology Readiness Index (TRI) which is a model that measures an individual's generally positive beliefs about new technology (Mohamed and Raghavan, 2021; Parasuraman, 2000a, 2000b; Syamfithriani et al., 2021; Vik, Melås, Stræte and Søråa, 2021). The TRI model posits the overall readiness of users to adopt new technology by considering the user's personality, traits, and beliefs and indicates its ability to increase behavioral intentions (Acheampong et al., 2017).

Moreover, prior empirical evidence indicates that technology optimism often increases e-commerce platform intention to shop online or increase their online compliance intentions. For example, a study in China by Chang and Chen (2021) indicates that technological optimism significantly and positively increases more intention to shop online using the intelligent shop. In a similar study conducted by Cruz-Cárdenas et al. (2021) in Ecuador, they also found technology optimism has a significant and positive relationship to consumers' intention to use technology-based services. In connection with taxation, Ming Ling and Muhammad (2006) from Malaysia found that technology optimism positively and significantly contributes to tax compliance among tax personnel, thereby increasing the workers' technology readiness. So, technology optimism is essential in promoting and increasing the level of e-commerce users' compliance intention and readiness. The finding highlights that technology optimism is vital to e-commerce users in increasing their level of tax compliance intention. Thus, the finding indicates that the more university students adopt e-commerce technology, the more optimistic they are about increasing their level of tax compliance intention.

6. CONCLUSION

The study examines the effect of university students' e-commerce tax awareness and technology optimism on tax compliance intention. However, from the study's outcomes, the researchers concluded that e-commerce tax awareness, and technology optimism positively and significantly correlated with tax compliance intention among e-commerce users in universities. The findings from the current study go a long way as it provides empirical evidence toward comprehending some

predictors that strongly influence tax compliance intention among university students. However, the study is limited to one dimension of technology readiness (i.e., technology optimism), leaving behind the remaining three dimensions of the technology readiness index model: innovativeness, insecurity, and discomfort. Secondly, the study is also limited to the target population of the study. These are the undergraduate students at some state universities, leaving behind the part-time and post-graduate students, and the teaching and non-teaching staff of state, private and federal universities. Future studies can use these empirical gaps for the future studies.

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Appendix

Table 8: The summary of adapted measurement items of the study

Tax	Awareness Measurement Items	Reliability	Sources
1	I am aware of some of the existing e-commerce taxes in my country.	0.8161	Taing and Chang (2020)
2	I know that different e-commerce transactions will require the payment of different taxes.		
3	I know that it is good to pay e-commerce tax to the government.		
4	I have a good e-commerce tax awareness perception		
5	I know that paying e-commerce taxes contributes to the economy of my country.		

Tax	Compliance Intention Measurement Items	Reliability	Sources
1	I intend to use e-commerce platforms even if they deduct taxes from my transactions.	0.7520	Pratama and Jin (2019)

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- | | | | |
|---|---|--------|--------------------------|
| 2 | I will agree for VAT tax to be included in my e-commerce payments. | | |
| 3 | Knowing more about e-commerce taxes will increase my tax compliance. | 0.7000 | Nurlis and Ariani (2020) |
| 4 | Lack of information about e-commerce taxes will decrease users' tax compliance. | | |
| 5 | More e-commerce tax compliance intention is good for my country. | | |
| 6 | I will disseminate e-commerce tax compliance provisions to my colleagues if I know more about it. | | |

Technology	Optimism	Reliability	Sources
Measurement Items			
1	Using e-commerce technology contributes to a better quality of my life.	0.8100	Parasuraman and Colby (2015)
2	E-commerce technology gives me more control over business lives.		
3	I do like the impression of doing e-commerce business.		

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- 4 E-commerce products and services that use modern technologies are more convenient for me.
 - 5 Using e-commerce helps me build stronger business relationships.
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**PREVALENCE OF ANXIETY AND DEPRESSION
AMONG ORPHANS AND NON-ORPHANS IN
NIGERIA:
A COMPARATIVE STUDY**

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ABSTRACT

Orphanhood is an arduous period, and orphans are more vulnerable to emotional difficulties because they often lack secured parental attachment and care that are crucial for healthy emotional development. The current difficult socioeconomic conditions in Nigeria also put children and adolescents living with their families at risk for emotional problems. This study aimed to investigate the prevalence of anxiety and depression among orphans and non-orphans in Nigeria. The research sample consisted of 200 participants including 100 orphans and 100 non-orphans aged 8-18 years (M= 13). The Revised Child Anxiety and Depression Scale-25 (RCADS-25) was the tool used for data collection. The mean score of the total sample was calculated. Independent-Samples T\test was conducted to compare the means of orphans and non-orphans. Pearson Product Moment Correlation was computed to correlate total anxiety and total depression scores. The results showed that there is low prevalence of anxiety and depression among children and adolescents in Nigeria. Orphans had more symptoms of both anxiety and depression, compared to non-orphans. A moderate positive correlation (.570) was found between levels of anxiety and depression, indicating that there is comorbidity between both disorders. The research findings are

discussed in the light of relevant research. Further research that utilizes larger, nation-wide samples are recommended to extend this research findings, and timely interventions should be administered to children experiencing symptoms of depression and anxiety.

Keywords: Anxiety, Depression, Orphans, Non-orphans.

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1. INTRODUCTION

Childhood and adolescence are critical periods for an individual's overall development -- physical, biological, cognitive, and psychosocial development (Dornan & Woodhead, 2015); thus, an individual's experiences in childhood and adolescence have physical and mental health consequences that do not only affect the childhood or adolescence phase, but also the entire life-course of the person (World Health Organization [WHO], 2014). Research has demonstrated that internalizing disorders like anxiety and depression are not only prevalent in adults, but also in children and adolescents (Slemming et al., 2010). Certain groups of children such as orphans, those abandoned by their families, and those nurtured in institutional homes are even more at risk of developing these psychological disorders than others, because they often lack family's love, care, and parental secured attachment that are crucial for growing into emotionally stable adults (Earls et al., 2008; Liu, 2006).

Anxiety is defined as an emotional state that is characterized by persistent feelings of worry, terror, and tension. Individuals with anxiety disorders usually experience recurring disturbing thoughts, avoid perceived threatening situations and objects, and may also have physiological symptoms such as dizziness, sweating, restlessness, trembling, increased heartbeat etc. Anxiety disorders are highly comorbid with one another and with other psychological disorders, especially depression (Penninx et al., 2021).

Depression is a common and serious mental disorder that is characterized by persistent feelings of sadness, worthlessness

or guilt, loss of interest, and inability to experience pleasure in enjoyable or previously rewarding activities (World Health Organization [WHO], 2012). In addition to emotional symptoms, people with depression also usually have physical symptoms such as trouble sleeping, disturbed appetite, loss of energy, impaired concentration, and increased fatigue. These symptoms significantly impair the individual's ability to live a rewarding and functional life (Wang et al., 2021).

Orphans in the present study, are children and adolescents aged 18 and below, who have lost one or both parents and are being fully cared for and raised in institutional homes, with minimal or no contact with their biological families. Non-orphans, in this context, are school-going children and adolescents aged 18 and below who live with both of their biological parents and whose biological parents are their primary caregivers.

Insecurity, insurgency, and terrorism are major challenges in Nigeria of today, leading to the loss of many lives and properties. Many people are rendered homeless, and many children are now orphans, denied a family's love and care (Obi, 2015). The numbers of orphans are increasing day-by-day. However, interventions and support for orphans in Nigeria are typically geared towards meeting the physical needs of such children. While meeting their physical needs is crucial, adequate attention needs to be paid to their psychological well-being as well. Unfortunately, there is a dearth of research on children's mental health and the prevalence of psychological disorders among orphans and non-orphans in Nigeria. There is also little awareness on the importance of this critical aspect.

Early detection and intervention are crucial for recovery and the prevention of further problems that may ensue if psychological difficulties are left unaddressed (Groenman et al., 2017). Consequently, the present study aims to explore the prevalence of anxiety and depression among children and adolescents in Nigeria. This research will investigate whether orphans raised in institutional homes present with more symptoms of anxiety and depression than non-orphans living with their parents. This study will also assess if there is comorbidity of anxiety and depression symptoms among children and adolescents in Nigeria. The significance of this study is to raise awareness at the family, institutional, and community levels about the importance of the mental health of children and adolescents. If orphans are found to have more symptoms of anxiety and depression than non-orphans, then measures can be taken to mitigate the detrimental effects by raising awareness on the importance of social and emotional support for potentially vulnerable groups of children. The study outcome will assist clinicians and counselors in paying attention to the unique circumstances of orphans and non-orphans during therapies. This research will also broaden the existing scant body of research on the mental health issues of children and adolescents, particularly orphans in Nigeria and other similar developing countries.

2. LITERATURE REVIEW

2.1 Anxiety and Depression

Karevold et al. (2009) conducted a study to identify the early predictors and pathways of symptoms of depression and anxiety in adolescence. They used data from an 11-year

prospective longitudinal survey in Norway. The relationship between temperamental (child emotionality and shyness) and contextual (family adversities, maternal distress, and social support) predictors was examined using structural equation modeling. Their findings showed that early risk factors accounted for 25% variance in covarying symptoms of anxiety and depression in adolescent girls, and 38% in boys. Child emotionality partly mediated all the risk factors. Maternal distress at 18 months predicted heightened levels of anxiety and depression in early adolescence. Family adversity in childhood was found to be a significant predictor of depressive symptoms in adolescence. They concluded that early life experiences have lasting effects on adolescent internalizing difficulties.

Moffitt et al. (2007) conducted a prospective longitudinal cohort study on 1037 participants in New Zealand to examine the cumulative and sequential co-morbidity of generalized anxiety disorder (GAD) and major depressive disorder (MDD). These participants were followed from birth up to age 32 years, with 96% retention. Research diagnoses of GAD and MDD were conducted on the participants at various ages. The results showed that there is a history of anxiety in 48% of lifetime depression cases, and a history of depression in 72% of lifetime anxiety cases. 12% of the cohort, in adulthood, had comorbid MDD and GAD, and 11% of the comorbid group had attempted suicide. They concluded that the relationship between GAD and MDD is stronger than previously presumed, and comorbid cases of both poses a severe mental health burden. They further asserted that it might be more important to predict overlapping

symptoms of anxiety and depression than symptoms of either depression or anxiety alone.

Groenman et al. (2017) carried out a quantitative meta-analysis of thirty-seven longitudinal studies including over 762,187 participants. The results showed that depression, childhood conduct disorder, oppositional defiant disorder, and attention-deficit/hyperactivity disorder (ADHD) significantly increased the risk of developing substance-related disorders later in life. They concluded that early detection and intervention are crucial for children experiencing these disorders in order to prevent crippling substance-related disorders later in life. This study indicates that childhood psychological disorders are not only sometimes persistent, but they may also lead to the acquisition of other debilitating mental disorders later in life if left undetected and untreated.

2.2 Anxiety, Depression, and Care Environment

Asides the relationship between anxiety and depressive disorders, various studies have also examined how different care environments may impact the prevalence of anxiety, depression, and other psychological disorders in children and adolescents. Omari et al. (2021) carried out a prospective cohort study on 1931 participants in Western Kenya from 2009-2019, to compare the impact of care environment on the mental health of orphans in institutional care, family-based care, and self-care on the streets. They found that orphans in all care environments experienced potentially traumatic events. However, orphans in institutional care are less likely to be diagnosed with mental health concerns such as depression, suicidality, anxiety and post-traumatic stress disorder (PTSD)

during the follow-up period, compared to orphans in family-based care. Orphans on the streets were found to be significantly more likely to be diagnosed with these psychological problems at any time during the follow-up periods than the other groups. They recommended that community mental health supports be made available for orphans.

Bhatt et al. (2020) conducted a cross-sectional study to examine the prevalence of depressive symptoms among 602 orphans (13-17 years) living in childcare homes in Nepal. They used a validated questionnaire and Beck Depression Inventory-II (BDI-II) to assess depressive symptoms among the participants. They concluded that there is a high prevalence of clinically-relevant depressive symptoms among orphans living in childcare homes. They also concluded that females, victims of bullying, those with physical health problems, alcohol users, and those who have low social support are at more risk for depression; thus, interventions should be focused more on these groups.

A comparative study was conducted by Shafiq et al. (2020) using samples of 150 orphans and 150 non-orphans in Lahore, Pakistan to explore the relationship between anxiety, depression, stress, and decision-making among orphan and non-orphan adolescents. Depression, Anxiety & Stress Scales (DASS) and the Adolescent Decision-Making Questionnaire (ADMQ) were used for data collection. They used descriptive statistics, Pearson product moment, independent t-tests and simple regression analysis to analyze the data. The findings showed that decision-making is significantly positively correlated with anxiety, stress, and depression. The results also

revealed significant gender differences among both orphans and non-orphans with girls having high anxiety as compared to boys. They also found that anxiety and depression are more prevalent in orphans than non-orphans.

Kaur et al. (2018) conducted a descriptive study on the prevalence of behavioral and emotional problems in 292 orphans and other vulnerable children and adolescents (OVCA) living in institutional homes in India. They concluded that orphans and OVCA are more vulnerable to emotional and behavioral problems; thus, such children should be screened regularly for these disorders.

2.3 Protective Factors for Anxiety and Depression

Several studies have been carried out to identify protective factors that act as buffers against developing anxiety, depression, and other mental disorders even in the presence of significant risk factors. Oman and Lukoff (2018) reviewed theories and empirical evidence on the association between religion and spirituality, and mental health. They found that the majority of available evidence on this topic support the important role of religion and spirituality as protective factors against depression and anxiety for adolescents and adults in the US and several other countries. They also found that meta-analyses supported the efficacy of religion/spirituality tailored-treatments in improving psychological outcomes for individuals with existing disorders. They concluded that adequate attention should be paid to integrating religion/spirituality into healthcare systems, as substantial evidence demonstrates their favorable effects on mental health in various healthy and clinical populations.

Schug et al. (2021) conducted a study on the protective factors for depression and generalized anxiety in healthcare workers. They recruited 7765 participants in Germany and assessed them for symptoms of depression and generalized anxiety, social support, and optimism, as well as occupational and sociodemographic factors. They carried out multiple linear regression analyses to investigate the relationships between the constructs. It was found that irrespective of demographic or occupational risk factors, higher levels of social support and optimism were correlated with lower levels of generalized anxiety and depression. The researchers concluded that social support and optimism are vital psychological resources in preventing and dealing with depression and generalized anxiety.

Brinker and Cheruvu (2017) also carried out a study in the US on the impact of perceived social and emotional support in mitigating depression in adults with adverse childhood experiences (parental loss or separation, physical or sexual abuse etc.). They used data from the Behavioral Risk Factor Surveillance System (BRFSS) involving 12,487 adults with one or more adverse childhood experience. Logistic regression models were used for data analysis, adjusting for all possible confounders. The results showed that individuals who reported that they always received social and emotional support were 87% less likely to report depression, those who reported that they sometimes/usually received social and emotional support were 69% less likely to report depression, compared to people who reported that they never/rarely received social and emotional support. They concluded that social and emotional support are crucial protective factors against depression, and

that healthcare providers should facilitate the necessary social and emotional support for individuals with adverse childhood experiences.

3. METHODOLOGY

A quantitative, research-based study was conducted. The research was comparative and correlational in nature, as it compared the level of anxiety and depression of children in different care environment. It also examined the correlation between anxiety and depression to check for their comorbidity. Purposive sampling method (a non-probability sampling technique) was used for data collection in the study. This method allowed us to obtain data from the sample population that were close to hand and possessed the criteria of interest based on the aims and objectives of the research. The data was collected by visiting various schools and institutional homes, and having the best-fit participants manually complete the questionnaires.

3.1 Sample

A total of 200 participants from the age group of 8-18 years were selected for the study. The average age of the participants was 13 years. Of the 200 participants, 100 (50%) were orphans living in institutional homes and the remaining 100 (50%) were school pupils living with their families. 102 participants (51%) were females and 98 participants (49%) were male. 148 participants resided in Lagos state and 52 from other parts of Nigeria.

3.2 Measurements

The participants were asked questions via the questionnaire method. They were asked to state their age, gender, and school grade on the questionnaire, and they were given questions from the Revised Child Anxiety and Depression Scale-25 (RCADS-25), which was used to measure the participants' level of anxiety and depression symptoms.

The Revised Child Anxiety and Depression Scale-25 (RCADS-25)- This scale comprises of 25 items that measure the level of anxiety and depression in children and adolescents aged 8-18 years, with at least a third-grade reading ability level. Of the 25 items, 10 items measure symptoms of major depressive disorder (MDD) and 15 items measure symptoms of anxiety disorders (obsessive compulsive disorder = 3 items, social anxiety disorder/social phobia = 6 items, panic disorder = 3 items, generalized anxiety disorder = 3 items). RCADS-25 yields two subscale scores (Total Anxiety and Total Depression) and an overall internalizing score. Respondents rated each item on a 4-point Likert scale based on the frequency of symptoms: 0=never, 1=sometimes, 2=often, 3=always. RCADS-25 subscales have good to excellent reliability in clinical settings (Anxiety $\alpha = .96$, Depression $\alpha = .80$) and school-based samples (Anxiety $\alpha = .94$, Depression $\alpha = .79$). The scale also has a good to excellent internal consistency ($\alpha = .87-.95$) and acceptable to good test-retest reliability ($r = .78-.86$).

3.3 Inclusion and Exclusion Criteria

Children and adolescents aged 8-18 years who were orphans living in institutional homes and non-orphans living with their parents in Nigeria, with at least a third grade reading ability level

were included in the study. Excluded from the study were orphans who were having regular contact with their biological families via weekend or vacation visits; orphans whose duration of stay in the institutional homes was less than one year; and children who were suffering from intellectual disability, learning disabilities or serious medical illnesses that may interfere with their ability to comprehend and provide accurate responses to the items on the questionnaire.

3.4 Data Collection Process

Consent forms were sent to schools and institutional homes beforehand to obtain parents, schools and institutional homes' permission to have their wards participate in the study. Afterwards, schools and institutional homes were visited and the participants were given printed questionnaires to be manually completed. Some of the younger children (particularly those within the age range of 8-10 years) required some help in reading the content of the questionnaire. For this group of children, the researcher read each item from a spare questionnaire to the children, then each child circled the option that best fit their mood and thoughts on their questionnaires. Data was collected from 4 schools and 3 institutional homes across Nigeria, between 24th April 2022 to May 8th 2022.

3.5 Validity & Reliability

The primary potential threat to reliability and validity are the likely errors associated with the use of self-report questionnaires. Whilst self-report questionnaires are one of the most prominent assessment tools used in clinical psychology, they have important limitations (Demetriou et al., 2015). The respondents may have provided invalid answers to some of the

questions, especially sensitive ones. They may have responded in a socially acceptable way, rather than reporting the truth about their feelings and thoughts (social desirability bias). Also, some of the respondents may lack clarity about the meanings of the items and may have given different interpretations to the questions (Demetriou et al., 2015). Furthermore, some respondents may have given responses based on their mood at the time of responding, rather than how they feel over time. Attitudinal factors such as seriousness about the test and intrinsic motivation to participate may have also affected the validity of the responses.

To minimize the occurrence of the above potential threats, the participants were informed that the purpose of the questionnaire is to capture their unique experiences, and there were no right or wrong answers. They were also informed about the average time to complete the questionnaire, in order to boost their mental readiness. They were asked to rate their responses based on their mood and thoughts over at least the past 2 weeks, not just how they felt at the moment. The shorter version of the RCADS scales (RCADS-25) was selected to eliminate certain extraneous variables such as boredom and mental fatigue. Before the questionnaires were handed over to the participants, they were briefly enlightened about the importance of the study in increasing awareness about mental health of children and adolescents, in order to boost their intrinsic motivation to complete the questionnaires truthfully and efficiently. Participants were also assured of the anonymity and confidentiality of their data. To reinforce this, age, gender, and school grade were the only demographic data requested to be written on the questionnaires (no names). Also, the

questionnaires of each group of children filling at the same time were submitted to a paper box placed in a corner of the room, not directly to the researcher or caregivers. Participants were also told that they were free to ask for clarifications on any of the questionnaire items, and some participants did ask for meanings of certain statements, such as “what does it mean to feel worthless?”

3.6 Ethical Considerations

Key ethical guidelines were abided by throughout this study, and the rights and safety of the participants were duly protected as much as possible. The following ethical considerations were adhered to:

1. **Informed Consent:** The participants and their caregivers were clearly informed about the aims and objectives of the study and how the data obtained will be used. Consent forms were sent to the schools and institutional homes beforehand. The participating schools and institutional homes issued letters to authorize data collection on their premises. Verbal consent was also sought from each of the participants before data was collected, as they were given the liberty to choose to participate or decline. The opportunity to ask any questions or clarifications was also given.
2. **Right to Withdraw:** The participants and their guardians were educated on their rights to discontinue participation and withdraw the data they have provided at any point in time, without facing any penalty.

3. Confidentiality: To ensure anonymity as much as possible, the participants' names were not recorded, and the questionnaires were submitted in a paper box with a pool of other questionnaires. The data obtained was kept confidential.
4. Anti-Discrimination: Children and adolescents who met the criteria of interest in schools and institutional homes were given equal chance to participate, without any form of religious, gender or racial discrimination.

3.7 Data Analysis

The data for each participant was first coded and inputted into the excel scoring program (version 3.1) of the developer of RCADS-25. The scoring program converts the total scores of each child into T-scores using equations developed through research, while accounting for gender and grade. The data for all participants was then compiled in an excel sheet and exported to SPSS version 28.0 for analysis. The average (mean score) of the total sample was calculated. The mean scores of the two sample sub-groups (orphans and non-orphans) were compared. Pearson Product Moment Correlational statistics was computed to see if anxiety scores and depression scores (the two variables put into the analysis) were correlated. The significance of correlation was verified using Spearman Brown correlation (Spearman's rho) and Kendall rank correlation (Kendall's tau). $P < 0.01$ was taken as statistically significant.

4. RESULTS

4.1 Prevalence of anxiety and depression

Table 1 shows the average (mean) scores of the depression subscale, anxiety subscale, and total internalizing scale of the total sample of children and adolescents. The depression, anxiety, and total internalizing mean scores were 54.11, 60.90, and 59.04 respectively, indicating low prevalence of anxiety and depression symptoms. T-scores below 65 on the RCADS is considered to be below clinical threshold (low severity), 65-70 is considered borderline clinical threshold (medium severity), and scores greater than 70 are above clinical threshold (high severity). This shows that the prevalence of anxiety and depression is low among the sample population.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Depression (T-score)	200	31	80	54.11	11.215
Anxiety (T-score)	200	34	80	60.90	10.843
Total Internalizing (T-score)	200	31	80	59.04	11.114
Valid N (listwise)	200				

4.2 Comparison of the levels of anxiety and depression between orphans and non-orphans

Table 2 shows the average (mean) scores of orphans and non-orphans on both the anxiety and depression subscale. The mean anxiety scores of orphans and non-orphans were 62.29 and

59.51 respectively, while the mean depression scores of orphans and non-orphans were 58.69 and 49.53 respectively. This indicates that although both groups (orphans and non-orphans) have an average score below the clinical threshold, orphans presented more with symptoms of both anxiety and depression than non-orphans.

Table 2. Comparison of mean scores on RCADS

	Group	N	Mean	Std. Deviation
Anxiety (T-score)	Orphans	100	62.29	10.879
	Non-orphans	100	59.51	10.680
Depression (T-score)	Orphans	100	58.69	10.725
	Non-orphans	100	49.53	9.768

4.3 The correlation between anxiety and depression

Pearson's correlation was conducted between the scores of the Anxiety and Depression subscales of the Revised Child Anxiety and Depression scale. Table 3 depicts a moderate positive correlation between the levels of anxiety and depression, $r(98) = .57$ $p < 0.01$ indicating that there is comorbidity between anxiety and depression (i.e., the higher the level of anxiety, the higher the level of depression, and vice versa).

Table 3. Correlation between Anxiety and Depression scores

		Depression (T-score)	Anxiety (T-score)
Depression (T-score)	Pearson Correlation	1	.570**
	Sig. (2-tailed)		<.001
	N	200	200
Anxiety (T-score)	Pearson Correlation	.570**	1
	Sig. (2-tailed)	<.001	
	N	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

5. DISCUSSION

The present study was aimed to comparatively investigate the prevalence of the symptoms of anxiety and depression among orphans and non-orphans in Nigeria, and to examine if both disorders are co-morbid. The results indicated that there was low prevalence of anxiety and depression among children (both orphans living in institutional homes and non-orphans living with their families) in Nigeria. Majorly, the literature reviewed found a high prevalence of anxiety and depression among orphans. However, few studies supported the finding of this research. Omari et al. (2021) studied the impact of care environment on the mental health of orphans, and they found that orphans living in institutional homes were less likely to be diagnosed with mental health concerns, including anxiety and depression, than orphans raised in family-based care and orphans on the streets. Since the orphans that participated in

the present study were all being cared for in well-managed institutional homes, Omari et al. (2021) findings support the low prevalence of anxiety and depression found in the present study.

Furthermore, certain evidence-based protective factors may have also mediated the relationship between the variables studied. Brinker and Cheruvu (2017) found that social and emotional support significantly mitigated depression in individuals with adverse childhood experiences (including parental loss and separation). Schug et al. (2021) also found that regardless of demographic and occupational risk factors, social support and optimism were correlated with lower levels of generalized anxiety and depression. Nigeria is a collectivist society with a high sense of community. The orphans attended different schools in and around the communities, so they got to relate with other children and adults in the larger community. The institutional homes also had stable caregivers and low child-caregiver ratio. While orphanhood was a significant stressor that was expected to heighten the prevalence of anxiety and depression, perceived social and emotional support received by the orphans may have impacted the low prevalence of anxiety and depression found in the present study.

In addition, another study (Oman & Lukoff, 2018) noted that religiosity and spirituality are crucial protective factors in the prevention of psychological disorders, including anxiety and depression. Generally, there is a high level of spirituality and religious involvement in Nigeria, with Islam and Christianity being the two major religions. While the current straitened socio-economic conditions in the country and orphanhood were expected to lead to high prevalence of anxiety and

depression among children and adolescents in Nigeria, belief in a higher power and involvement in religious activities may have significantly acted as buffers against symptoms of depression and anxiety among orphans and non-orphans. Methodological issues (such as the use of non-probability sampling, participants giving socially desirable answers etc.) and sociodemographic variables (e.g., gender differences, age of admission and years of stay in the institutional homes) not accounted for in this study may have also caused a variation in the prevalence rate found in the present study, compared to other similar studies.

Although a low prevalence of anxiety and depression was found among children in Nigeria (orphans and non-orphans), the results further indicated that orphans living in institutional homes had more symptoms of both anxiety and depression than non-orphans. This finding is in agreement with majority of previous comparative studies conducted in other countries on level of psychological distress among orphans and non-orphans, such as the study of Shafiq et al. (2020) in Pakistan. Shafiq et al. (2020) also reported that symptoms of anxiety and depression were found to be more prevalent in orphans than non-orphans.

A positive correlation (.570) was found between anxiety and depression, indicating that both disorders were co-morbid. Previous similar studies have also demonstrated significant co-morbidity between anxiety and depressive disorders. Moffit et al. (2007) in their longitudinal study found that anxiety and depression were both cumulatively and sequentially co-morbid. The co-morbidity between anxiety and depression could be further justified with the fact that both disorders shared many common symptoms and had similar environmental and genetic risk factors. Kalin (2020) asserted that among the internalizing

disorders, depression and generalized anxiety disorder appeared to share the highest level of common genetic risk.

6. CONCLUSION

This study attempted to provide an insight into the emotional problems of children in Nigeria, particularly vulnerable groups of children such as orphans as there are very few studies on the psychological distress experienced by this group. The findings suggested that there was a low prevalence of anxiety and depression among children and adolescents in Nigeria. While the prevalence of anxiety and depression was generally below clinical threshold, orphans living in institutional homes still presented with more symptoms of both anxiety and depression than non-orphans living with their families. Anxiety and depression were found to be positively correlated (comorbid). In addition, social and emotional support, optimism, stable caregivers, and religion and spirituality appeared to be important protective factors against internalizing disorders, including depression and anxiety.

The research findings have practical and theoretical implications. Psychologists and counselors dealing with childhood psychological and adjustment difficulties can gain insight from this study into developing comprehensive therapeutic interventions that take into consideration the unique circumstances of orphans and non-orphans. The comorbidity found between depression and anxiety disorders also highlights the importance of assessing the overlapping symptoms of anxiety and depression (rather than either alone) since they frequently coexist. The Government and non-governmental organizations (NGOs) can utilize this research

findings to create routine mental health assessments and programs for orphanages and schools. Religious organizations may also utilize this research in developing faith-based counseling and mental health programs that incorporates spirituality to assist children and youths in their community. A symptoms guideline can also be developed, that orphans' caregivers and teachers can utilize to watch out for signs of emotional difficulties, so they can seek appropriate evaluation and intervention for the children at the budding stage of such disorders. Researchers can also make use of this research as supporting literature for studies related to this topic, and as a base to further explore mental health issues of children and adolescents.

However, this study has limitations. Although, the Revised Child Anxiety and Depression Scale (RCADS) is a valid and reliable tool to measure symptoms of anxiety and depression in children and adolescents (8-18 years), self-reported assessment tools are better used in addition to functional neuroimaging or structured clinical interviews for more accurate diagnosis (Ho et al., 2020). Also, the sample size was limited to 200 participants and selected through purposive sampling (a non-probability sampling technique); consequently, the external validity of the study may be questionable. Furthermore, due to cultural differences, certain items on the RCADS that are flagged as symptoms of anxiety and depression may be normal feelings and thought patterns in some participants' culture and religion. Lastly, the difference between the prevalence of symptoms in orphans and non-orphans may have been impacted by confounding variables; thus, a causal relationship between orphanhood, care environment, and symptoms of

anxiety and depression cannot be established. Further studies involving longitudinal follow-ups, larger sample size, and more standardized methodology are recommended to extend this research findings.

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APPENDICES

Appendix 1: Consent Form

The Department of Psychology at the International Open University (IOU) supports the practice of protection of human participants in research. The following will provide you with information about the study that will help you in deciding whether or not you wish to have your child/ward participate. If you agree to have your child/ward participate, please be aware that you are free to withdraw your child/ward at any point throughout the duration of the study.

This study aims to investigate the prevalence of anxiety and depression among children and adolescents residing in Nigeria, with a comparison between orphans and non-orphans. We will ask your child/ward to fill out a questionnaire consisting of questions relating to their thoughts and feelings. All the information provided will remain confidential and will not be associated with their names. If for any reason during this study you or your child/ward does not feel comfortable, they may stop filling the questionnaire and their information will be discarded.

Your child/ward's participation in this study will require approximately 5-10 minutes.

If you have any further questions concerning this study, please feel free to contact us via email at kafayat.a.azeez@gmail.com

Your child/ward's participation is solicited, yet strictly voluntary. All information will be kept confidential and your child/ward's name will not be associated with any research findings.

Please indicate with your signature on the space provided below that you understand your rights and consent to have your child/ward participate in the study.

Signature of Parent/Guardian

Appendix 2: The Revised Child Anxiety and Depression Scale-25 (RCADS-25)

Age: _____

Grade: _____

Gender: _____

Please put a circle around the word that shows how often each of these things happens to you, for at least the past two weeks. There are no right or wrong answers, so respond according to your own experiences, rather than how you think “most people” would respond.

1. I feel sad or empty	Never	Sometimes	Often	Always
2. I worry when I think I have done poorly at something	Never	Sometimes	Often	Always
3. I would feel afraid of being on my own at home	Never	Sometimes	Often	Always
4. Nothing is much fun anymore	Never	Sometimes	Often	Always
5. I worry that something awful will happen to someone in my family	Never	Sometimes	Often	Always
6. I am afraid of being alone in	Never	Sometimes	Often	Always

crowded places (like shopping centers, the movies, buses, busy playgrounds)				
7. I worry what other people think of me	Never	Sometimes	Often	Always
8. I have trouble sleeping	Never	Sometimes	Often	Always
9. I feel scared if I have to sleep on my own	Never	Sometimes	Often	Always
10. I have problems with my appetite	Never	Sometimes	Often	Always
11. I suddenly become dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
12. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)	Never	Sometimes	Often	Always
13. I have no energy for things	Never	Sometimes	Often	Always
14. I suddenly start to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always

15. I cannot think clearly	Never	Sometimes	Often	Always
16. I feel worthless	Never	Sometimes	Often	Always
17. I have to think of special thoughts (like numbers or words) to stop bad things from happening	Never	Sometimes	Often	Always
18. I think about death	Never	Sometimes	Often	Always
19. I feel like I don't want to move	Never	Sometimes	Often	Always
20. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
21. I am tired a lot	Never	Sometimes	Often	Always
22. I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
23. I have to do some things in just the right way to stop bad things from happening	Never	Sometimes	Often	Always
24. I feel restless	Never	Sometimes	Often	Always
25. I worry that something bad will happen to me	Never	Sometimes	Often	Always

SYSTEMATIC REVIEW OF LITERATURE ON SOCIETAL PERCEPTIONS OF THE QUALITY OF LIFE OF CHILDREN WITH AUTISM AND THEIR PARENTS

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ABSTRACT

The primary goal of this paper is to discuss how society evaluates the quality of life of children with autism (CWA) and their parents (QoL). Despite widespread beliefs about the universality of autism, there are strong scientific and humanitarian reasons to investigate the condition in non-Western countries like Kenya, as well as among other ethnocultural groups. The majority of reviews in the field of autism have mostly focused on inclusion. As a result, this article focuses on the perspective and/or associated notions of Children with Autism (CWA) and their parents, as well as the Quality of Life (QoL) of CWA and their parents. The systematic literature review included studies on parental perspectives on raising a child with Autism Spectrum Disorder (ASD) as well as cultural views toward their child's autism diagnosis. There were 23 papers found in the systematic review, however only five were assessed since they met the inclusion criteria. CWA behavioral features are the best predictor of cultural conceptions about parenting a CWA, according to a systematic research evaluation,

which has an impact on their quality of life. Finally, cultural views have a negative impact on how CWAs are perceived and how well their parents live. Future research should focus on the impact of parental understanding of their child's CWA diagnosis on QoL.

Keywords: Societal, Perception, Autism, Quality of life.

1. INTRODUCTION

Autism is a neurodevelopmental condition that causes difficulty in speech, communication, social interaction, behavior, sensory disorders, and intellectual capacity, according to Nandini et al. (2015, p3). Autism is a lifelong neurodevelopmental illness that can impede an individual's social, verbal, cognitive, and behavioral development and daily functioning, according to the American Psychiatric Association (APA, 2013). Social communication problems, limited interests, and repetitive behaviors are some of the symptoms (APA, 2013). Researchers and clinicians use the term "Autism Spectrum Diseases" (ASDs) to define a set of neurodevelopmental disorders characterized by qualitative impairments in social-communicative and repetitive behaviors, as well as restricting behavior and interest (Matson & Sturmey, 2011, p 37).

CWA is challenged in several developmental domains that are important in their QoL because of the extensive nature of this neurodevelopmental condition (de Vries & Geurts, 2015 p1). In *Models of Best Practice in the Education of Students Preschool and Elementary* (2011, p13), the Virginia Department of Education (VDOE) lists social interaction, communication, restricted repetitive stereotyped patterns of behavior, imitation, theory of mind, motor, sensory, and executive functions as characteristics of Autism.

Recently, there has been considerable writing on the subject of quality of life (QoL). The World Health Organization (WHO, 2012, p11) defines QoL as "individuals' assessments of their place in life in relation to their objectives, aspirations, standards, and worries in the context of the culture and value systems in

which they live." It is a comprehensive notion that encompasses a multifaceted view of a person's physical health, physiological state, amount of independence, social interactions, personal views, and linkages to key environmental elements .The WHOQOL Group (1995) defined QoL as "individual's subjective perceptions of both positive and negative dimensions of functioning [functioning itself (example , "are you healthy?"), evaluations of functioning (example , "do you feel well?"), and personalized evaluations of functioning (e.g., "are you stratified with your health?") on multiple domains" (physical, psychological, and social).

It should be highlighted that despite WHOQOL group QoL's acknowledgment of developmental domains, CWA and their parents still experience deviation and are far from realizing their QoL due to societal cultural concepts and beliefs about having a child with autism. "Attempts to address key issues connected to educational services provided to children with autism and other third-world nations are stifled by a lack of policies and enough money, as well as negative cultural attitudes about impairments" (Mutua & Dimitrov, 2001; Obiakor; Maltby, & Ihunnah, 1990).

The basic domains of QoL differ depending on the discipline and researcher. Physical well-being, material well-being, rights, social inclusion, interpersonal relationships, self-determination, personal growth, and emotional well-being are listed as essential categories in the field of intellectual disabilities by Schlock and Alonso (2002) QoL of model. Each of these indicators is made up of indicators that can be used to assess an individual's quality of life. For more than three decades, quality of life indicators have been used to improve outcomes and raise

standards for the administration and implementation of interventions for people with disabilities (Burgess & Gutstein, 2007).

2. REVIEW OF LITERATURE

De Varies and Geurts (2015) studied whether IQ, early development, current autistic characteristics, and daily Executive Functions (EFs) are connected with QoL in children aged 8 to 12 years with Autism Spectrum Disorder (ASD). The study's hypothesis was as follows: Do Children with ASD Have a Lack of Cognitive Flexibility? Is There a Difference in Speed Accuracy Tradeoff Between Children with and Without ASD? Is Switch Task Performance Linked to Stereotyped and Repetitive Behavior? This study included 35 children with ASD and 35 typically developing (TD) children who were age, IQ, and gender-matched. Children with ASD were recruited from numerous mental health clinics in the Netherlands, and they all had a clinical diagnosis of an ASD, such as autism or Asperger syndrome, according to the DSM-IV criteria. Children with a psychiatric or developmental problem, those taking psychotropic drugs, or those scoring above the ASD cut-off on the Social Responsiveness Scale (SRS) were excluded from the study. Both groups were also required to be between the ages of 8 and 12 years old, have an IQ score of 80, and be free of seizure problems.

Three children in the ASD group, as well as the age-, IQ-, and gender-matched children in the TD group, were excluded from participation due to an estimated IQ score of less than 80. Individual matching was effective, according to the researchers, because there were no significant group variations in age,

estimated Full-Scale Intelligence Quotient (FSIQ), or male/female ratio. The researchers claim to have discovered that children with ASD who perform poorly (i.e., incorrectly) on a switch task also exhibit more repetitive behavior in everyday life. According to the research, only a fraction of children with ASD have cognitive flexibility problems, and only a subgroup performed slower and was less accurate in the current investigation. Also, when transitioning from emotion to gender trials, children with ASD had larger switch costs in response speed than children without ASD. According to the authors, low QoL was connected to higher levels of autism symptoms and EF deficiencies, and this was attributed to their parents' lack of exposure to CWA due to cultural beliefs and social attitudes about parenting a CWA.

One of the most important contemporary debates in raising CWA is the impact of

culture on CWA's QoL. Rainy, Cuskelly, and Meredith (2016) looked into Indonesian cultural beliefs of autism spectrum disorder. The purpose of this study was to see how Indonesian moms from various backgrounds and without a kid with autism understood autism and how to parent such a child in the best way possible. The study used semi-structured interviews with nine Indonesian mothers to conduct a qualitative investigation. Understanding of autism, views about its causes, potential reactions to having a child with autism, perspectives of parenting a child with autism, and perceptions of parent-child connections were all explored. Their findings reflect traditional cultural ideas on appropriate behavior during pregnancy, karma, and God's purpose, all of which are not widely recorded in Western countries' literature.

In a recent study, Fong et al. (2021) compared Korean immigrant families to Canadian families of CWA to evaluate cross-cultural perspectives on the concept of family QoL. Semi-structured interviews with 13 Korean immigrant parents and 12 Canadian parents of CWA in British Columbia, Canada were used to do thematic analysis. Three themes were discovered by the researchers: family closeness, value orientation, and societal acceptance. Family relationships, support, emotional well-being, individual qualities, and comparisons to other families were all important aspects in defining family quality of life for Canadian families. In the discussion of their findings, the authors observed that cultural values and inequities may translate into various conceptualizations of family QoL, underlining the importance of cross-cultural and diverse viewpoints in the study and construction of future assessment instruments. The authors backed up their claim by referring to a number of previous studies that looked at cross-cultural viewpoints in CWA families.

CWA's and their parents' quality of life is constantly harmed by culture. A review of research on raising an autistic child was published by Enea and Rusu (2020). The researchers wanted to (a) figure out how parenting stress was used as an independent, outcome, moderator, and mediator variable in empirical studies, (b) figure out what predicts parenting stress in parents of children with ASD, (c) figure out how parenting stress relates to mental health, and (d) make recommendations for future research. 45 research met strict inclusion criteria after a thorough search for peer-reviewed articles on parenting stress. Problem behaviors and sensory issues in children are the biggest predictors of parenting stress during a two-year period.

Single young mothers with maladaptive coping mechanisms who have an ASD child with problem behaviors and sensory challenges are the ones who are most likely to have high levels of parenting stress and mental health problems. The researchers concluded that parenting stress has a negative impact on the mental health-related quality of life of parents. Future research should look into socio-cultural aspects that influence parenting stress in different cultures.

The cultural notion dominates the examination of CWA QoL. Super and Harknes (2020) studied culture and the perceptual organization of baby behavior in Kenya and the United States. To judge the "similarity" of behavioral items in the Neonatal Behavioral Assessment Scale, the researchers enlisted individuals of diverse cultural groups (total n = 100). (NBAS). NBAS experts, moms, and undergraduates in Massachusetts, as well as mothers and high-school students in rural Kenya, provided data. Data was collected using the Neonatal Behavioral Assessment Scale (NBAS). NBAS specialists were especially attentive to a dimension of State Control, as the scale underlines, according to the multidimensional scaling of their judgments. Kenyan mothers concentrated on a dimension of motor responsiveness in accordance with their concerns and practices involving motor development, whereas Massachusetts women grouped their judgments around cognitive competence abilities stressed in contemporary early development discourses.

A lot of material has recently sprung up on the topic of cultural perceptions about raising a child with a disability. Seo (1992) investigated how CWA's behavior tendencies are influenced by culture. She compared three CWA groups: a) 25 South Koreans,

b) 25 Korean Americans, and c) 25 children from the United States. Between the group of South Korean children and the group of American children, Seo discovered variations in social impairments and developmental disorders. She supported her findings by stating that the disparities were due to changes in symptoms rather than parental perception.

In Kenya and the United States, Wambui (2005) looked at the impact of culture on autistic behavioral symptoms. The Autism Behavior Checklist (ABC) and the Gilliam Autism Rating Scale (GARS) were employed. A Developmental History Questionnaire (DHQ) was also developed specifically for this research. Eighty people were matched for age and gender (40 African Americans and 40 Kenyans). A comparison sample of 20 typically developing youngsters, 10 from each culture, was used to adjust for perceptual differences between African American and Kenyan raters. For 80 people, gender and age were matched (40 African Americans and 40 Kenyans). Between Kenyans and African Americans with autism, multivariate analysis and independent t-tests indicated substantial differences in social interactions, communication, stereotyped behaviors, developmental abnormalities, and overall behavior disorders.

Kenyans with autism exhibited a definite trend of having more issues with all behavioral indicators of autism than their American counterparts. The autistic people were grouped into four age groups. Kenyans with autism had fewer difficulties on the sensory subscale of the ABC when they were 3–7 years old. Kenyans aged 8–12 had fewer issues with the GARS' social engagement. According to the researchers, there was no significant difference in symptoms between normal Kenyans

and those in the United States. The only difference between Kenya and the US was due to true differences in autistic behavioral symptoms, not to rater perception. An interesting finding was that at age 13–17, behavioral symptoms were fewer for both groups but increased at age 18–21 for both groups. Overall, the behavioral symptoms of autism increased by age for the Kenyans group and decreased with age for African Americans.

3. RESEARCH METHODOLOGY

Google Scholar, ERIC, EBSCO, Academia, and ResearchGate databases were utilized to search for papers on culture, autism, and quality of life for this systematic literature review study. Quantitative, qualitative, and mixed-method papers relevant to culture and QoL for CWA were included to acquire a thorough understanding of societal attitudes and QoL for CWA (Miles et.al. 2014). We followed the Preferred Items for Systematic Reviews and Meta Analysis (PRISMA) statement (Moher, Liberati, Tetzlaff, Altman, & The Prisma Group, 2009) to ensure that our review was systematic, and we completed the following steps: (1) defining relevant studies and establishing inclusion/exclusion criteria; (2) developing the search strategy; (3) identifying potential studies through searching and screening; (4) describing and appraising included studies; and (5) analyzing included studies. These procedures are explained below.

3.1 Identification of Relevant Literature Material

The search took place from 25th August 2021 to 25th November 2021 (Google Scholar and ERIC 25th Aug-25th Sept), EBSCO and PubMed (25th Sept- 25th Oct), and

ResearchGate (25th Oct- 25th Nov). There were no limitations on the year in which the book might be published.

3.2 Inclusion and Exclusion

Reviews of autism spectrum disorder, quality of life, and cultural perceptions of having a child with ASD were among the articles considered in this systematic literature review. Furthermore, the diagnostic criteria for CWA that were mentioned in the articles were not included in this study. Articles were included if they mentioned and further related to the key terms used during the search for the purpose of evaluating the influence of cultural conceptions on QoL of CWA and their parents in the context of educational services in Kenya. Articles largely focused on the following subjects were also excluded: teaching methodologies for CWA and the impact of CWA.

4. RESULTS

Figure 1 shows the 23 papers found using the search approach, which was published between 2000 and 2021. A total of 23 items were identified at the initial round of inclusion and exclusion. The number of articles was reduced to thirteen in the second step (screening), and five of them were eliminated in the third round (eligibility). In the systematic review literature search, this resulted in a final set of five papers being included.

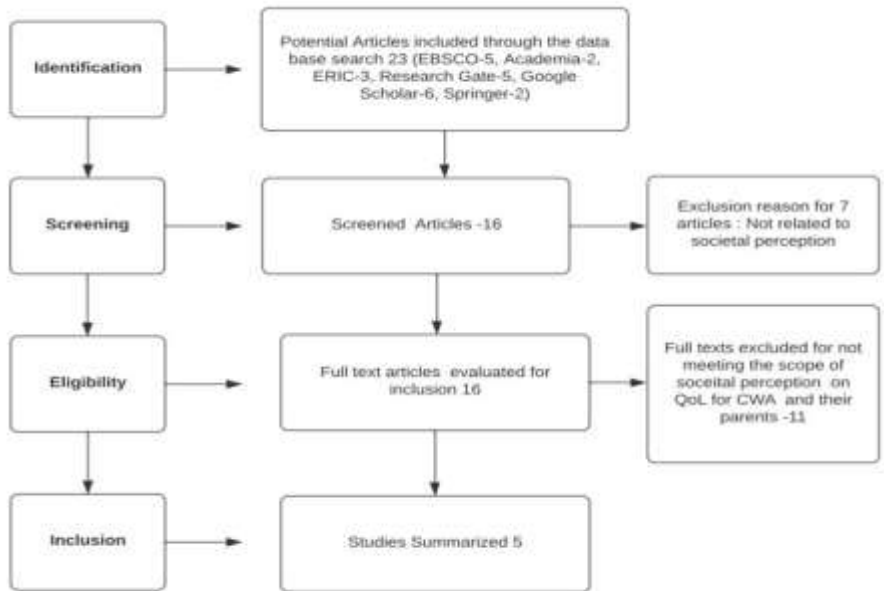


Figure 3. Result of literature search

Table 1. A Summary Table of Coherent and Contradictory Indications of Societal Perception on QoL of CWA and their parents

Author	Year	Search Word	Participants	Significant Findings	Search database
De Vries, M., & Geurts, H. M.	2015	Perception and Parental QoL	CWA aged 8-12	Low QoL was linked to higher levels of autism characteristics and EF deficiencies, according to the authors, and this was attributable to their parents' lack of exposure to CWA due to cultural beliefs and social perceptions about parenting a CWA.	Research Gate
Rainy, Y.E., Cusekelly, C., & Meredith, P.	2016	Perception and Parental QoL	Nine parents of CWA	Traditional cultural views regarding appropriate behavior during pregnancy, karma, and God's plan, all of which are not commonly recorded in the literature of Western countries	ERIC
Enea V., & Rusu, D.M	2002	Perception and CWA QoL	Systematic review 45 Articles were selected	Single young moms with maladaptive coping methods who have an ASD kid with problem behaviors and sensory processing problems are most at risk for high levels of parenting stress and poor mental health.	Google Scholar

Seo	1992	Perception and CWA QoL	75 participants	There were variations in social impairments and developmental disorders. The disparities were due to changes in symptoms rather than parental perception.	ERIC
Wambui respondents	2005		80 including 40 African Americans and 40 Kenyans	There was a significant difference in symptoms between Kenya and the United States. The difference was due to genuine differences in autism behavioral symptoms, not to changes in later perception.	Google Scholar

4.1 Tools used to Measure the Quality of Life in Children with Autism

Five tools were used to assess the QoL of CWA. The psychometric properties of the tools and the population in which the tools were used are described below. The Autism Behavior Checklist (ABC) and the Gilliam Autism Rating Scale (GARS), Full-Scale Intelligence Quotient (FSIQ), Neonatal Behavioral Assessment Scale (NBAS), and Social Responsiveness Scale (SRS).

4.1.1 The Autism Behavior Checklist (ABC)

The Autism Behavior Checklist is a self-administered, norm-referenced test designed to help diagnose people with autism,

as well as construct and manage educational programs for those on the spectrum. Its administration time varies based on the components used; the Autism Behavior Checklist might take anywhere from 10 to 20 minutes to complete. Component 1 is performed by a parent/teacher, and the findings indicate which of components 2-5 should be administered directly to the child. The test yields standard scores and percentile ranks. Based on split-half reliability, intrarater reliability was reported as a Spearman-Brown coefficient of .94, and interrater reliability as 95% agreement.

4.1.2 Gilliam Autism Rating Scale (GARS)

GARS is one of the most extensively used instruments in the world for assessing Autism Spectrum Disorder. The GARS-3 aids teachers, parents, and clinicians in recognizing autism and determining its severity in individuals (Karren, 2017). The GARS-3 is based on the American Psychological Association's (APA) 2013 diagnostic criteria for autism spectrum disorder, which were published in the Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition in 2013. (DSM-5). The GARS-3 generates standard scores, percentile ranks, severity levels, and Autism Probability. The measure is made up of 56 clearly stated items that describe the typical behaviors of people with autism. Restrictive/Repetitive Behaviors, Social Interaction, Social Communication, Emotional Responses, Cognitive Style, and Maladaptive Speech are the six subscales (Gilliam, 2014). The correlation coefficient between the GARS communication disturbance and the ABC language subscale was .63. The coefficient between social interaction on the GARS and the related ABC subscale was .69. Internal consistency was reported as quite high an alpha coefficient of .95.

4.1.3 Full-Scale Intelligence Quotient

The Intelligence Quotient (IQ) is a metric that assesses a person's cognitive abilities. The average of the scores is set to 100. The FSIQ test takes between 60 and 80 minutes to complete. If the supplemental subtests are administered, some children may take longer. The FSIQ score ranges from 40 to 160, with 40 being the lowest and 160 being the greatest. Typically, the average mean score is 100.

4.1.4 Neonatal Behavioral Assessment Scale (NBAS)

The NBAS evaluates a newborn's behavioral repertoire by scoring 28 behavioral items on a nine-point scale. It also includes a 20-item questionnaire that assesses the infant's neurological status on a four-point scale. It's been used to look into the effects of prematurity, low birth weight, undernutrition, and a variety of other pre-and perinatal risk factors, as well as the effects of prenatal substance exposure, environmental toxins, temperament, neonatal behavior in various cultures, prediction studies, and primate behavior studies (Brazelton, & Nugent) (2011). The Scale examines a wide range of activities and is appropriate for newborns and infants up to the age of two months. The examiner will have a behavioral "picture" of the infant by the end of the assessment, describing the baby's strengths, adaptive reactions, and developmental milestones.

4.1.5 Social Responsiveness Scale (SRS-2)

The SRS-2 is a 65-item rating scale developed by the Diagnostic and Statistical Manual for Mental Disorders to assess social behavior deficiencies in people with Autism Spectrum Disorder (4th ed text rev, DSM-IV-TR: American Psychiatric Association, 2000). To complete the record forms, it is believed that average reading ability is required. (Constantino & Gruber, 2021, p3).

5. DISCUSSION

Low QoL was connected to greater levels of autism features and EF deficiencies, according to De Varies and Geurts (2015), and this was owing to their parents' lack of exposure to CWA due to cultural beliefs and social attitudes regarding parenting a CWA, according to the authors. Because of this assumption, CWA is unable to receive critical therapies like occupational therapy, which would dramatically enhance their quality of life. These findings are consistent with those of Rainy et al. (2016), who discovered that a lack of exposure to their children due to a lack of discrimination from the community has a significant impact on the majority of parents' quality of life.

Rainy et al. (2016) discovered that there is growing concern that CWA and their parents face societal discrimination, which is a problem in most places of the world. Some parents avoid exposing and/or taking their children to important educational services such as specialized schooling, vocational programs, and even some home-based programs to improve their children's quality of life because they are afraid of being victimized by cultural norms. Their findings support those of Seo (1992), who said that "the difference in social impairment and developmental anomalies resulted from variances in autistic symptoms, not parental perception."

According to Enea and Rusu, CWA parents have parenting stress and mental health concerns as a result of their children's behavioral and sensory deficits (2020). The majority of their CWA have sensory integration difficulties, which makes executive functioning difficult. This has an effect on how CWA interacts with one another and does their daily jobs. This is one

factor that has an impact on their overall happiness. These findings are congruent with those of Wambui (2005), who discovered that when Kenyans with autism were 3–7 years old, they had fewer difficulties on the sensory subscale of the ABC. Kenyans aged 8–12, according to Wambui, had fewer concerns with the GARS' social participation. Furthermore, the study discovered that there was no discernible difference in symptoms between the two groups.

Parents of CWA in Kenya and the United States have distinct opinions, despite the fact that their behavioral indicators differ significantly (Wambui, 2005). Kenyan parents, according to this study, had a negative perception of the CWA's behavioral symptoms. As a result, they hide their CWA from the public eye, denying them access to educational and other related services such as occupational therapy and speech and language therapy, lowering their quality of life. The findings contrast with those of Enea and Rusu (2020), who discovered that single young moms with maladaptive coping methods who have an ASD kid with problem behaviors and sensory issues are more likely to have high levels of parenting stress and mental health concerns. The researchers came to the conclusion that parental stress has a negative impact on parents' mental health and quality of life.

6. CONCLUSION & LIMITATIONS

The systematic study of the literature has provided new and important information about society perceptions of CWA and their parents' quality of life. The new data relates to how parents feel about raising a child with autism, as well as how society regards CWA and their parents, all of which have a direct impact on a CWA's upbringing and, as a result, their

quality of life. It may be concluded that parents' attitudes on CWA resigning are diverse. The quality of life of CWA and their parents is harmed by society's cultural ideals.

Behavioral and sensory integration challenges intensify parental stress, which can lead to psychological and/or mental health concerns that negatively impact their children's quality of life. It is possible to conclude that parents' perspectives on CWA resigning are varied. CWA and their parents' quality of life is affected by society's cultural values. Parental stress is exacerbated by behavioral and sensory integration challenges, which can lead to psychological and/or mental health issues that severely impact their children's quality of life.

The database examined as a whole is inconsistent and constrained from a variety of angles. Despite the fact that research was conducted all over the world, a large number of papers, precisely 10, focus on the United States. Five studies come from China and Greece, four from the United Kingdom and Israel, and more come from the same researchers or even use the same samples. It's worth noting, though, that research is also coming from a further eleven countries, indicating a growing worldwide interest. Furthermore, there is a plethora of research on the impression of having a disabled child. The evidence base on public perceptions of CWA and their parents, particularly in the African context, is very limited, which may send the message to stakeholders that additional study on CWA and their parents' quality of life is needed. There was also an imbalance in the examined literature when it came to the investigation of distinct parental perspectives, as most studies used them as a proxy. The early literature search included a

modest number of research that used qualitative and quantitative approaches.

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SUSTAINABLE LAND MANAGEMENT FOR SUSTAINABLE AGRICULTURAL PRODUCTIVITY IN OYO STATE, NIGERIA

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ABSTRACT

Sustainable agricultural production has been one of the major concerns of average Nigerian farmers over a long period of time. This study examined sustainable land management (SLM) practices for sustainable agricultural productivity and farmers' sustainability using cross-sectional data and fuzzy logic to compute the composite farm level indicators. Data were collected from one hundred and seventy-six (176) farmers and Cobb Douglas production function, Tobit and fuzzy logic were used for the data analysis. The results revealed that the estimated parameters with Cobb Douglas production functions show that farm size used ($r = 0.0572$), years of farming experience ($r = 0.172$), farmers' age ($r = 0.240$), income ($r = 0.187$) and farm management experience ($r = -0.204$) were significant ($p < 0.01$) respectively with the exception of

source of irrigation ($r = 0.048$) with a different level of significance ($p < 0.10$); Tobit regression shows that farm size ($\beta = 0.0193$, $p < 0.05$), organic manure ($\beta = 0.0347$, $p < 0.10$), fertilizer application ($\beta = 0.1707$, $p < 0.01$), continuous cropping ($\beta = -0.0494$, $p < 0.05$), pesticide application ($\beta = 0.0807$, $p < 0.01$), income ($\beta = 0.0094$, $p < 0.05$) and mode of cultivation ($\beta = -0.0524$, $p < 0.05$) were the significant determinants of (SLM) while the fuzzy results revealed that total sustainable land use index (SLUI) was 0.276 indicating that farming was generally sustainable. Crop rotation (0.0085), use of herbicide (0.0079), land fallowing (0.0089), cover crop (0.0088) and industrial discharges (0.0089) are among contributive indicators which are used un-sustainably. It was therefore recommended, among other recommendations, that better agronomic practices should be encouraged and informal training through extension services should be conducted to educate farmers in order to have a sustainable increase in agricultural production in the study area.

Keywords: Agroforestry, Land Management, Sustainable Practices, Tobit, Fuzzy Logic, Nigeria.

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1. INTRODUCTION

Over the past years, Nigeria has dealt with very low yields per hectare due to soil and land degradation which has been one of the major problems of agricultural sustainability in the country's agricultural sector. Continuous loss of farmland to land degradation and soil erosion tends to have negative effects on agricultural sustainability and encountering challenges such as declining soil fertility, land degradation, low levels of farm productivity, low farm income, low outputs and food security (MoFA, 2016). An important issue of consideration in relation to SLM and smallholder crop production is the recent increase in herbicide use (Gazali and Awudu, 2020). As part of measures to reduce the drudgery associated with manual land preparation and weeding, many farmers are increasingly employing herbicides (Watkins et al., 2018).

Sustainable land management (SLM) has been defined as 'the adoption of appropriate land management practice that enables land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources' (FAO, 2009). Therefore, there is the need for an average farmer to operate various farmland management practices in order to enhance sustainable agriculture through soil and land conservation practices. Hence, this raises the research objectives which are to: examine the determinants of crop production; determinants of sustainable land management practiced by farmers, determine the status of sustainable land management practices (SLMP) among agroforestry farmers and analyze the contributive effect of

sustainable land management indicators to land sustainability among the agroforestry farmers in the study area.

2. REVIEW OF LITERATURE

Low agricultural productivity and land degradation are severe interrelated problems in the developing world. In Nigeria, land degradation takes a number of forms including depletion of soil nutrients, salinization, agrochemical pollution, soil erosion, vegetative degradation as a result of overgrazing and the cutting of forests for farmland (Eni, 2012). Land in Nigeria, like elsewhere, is faced with several environmental problems especially the ones resulting from human activities such as land destruction through agricultural practices unsuitable to the climate, slope and soil, extinction of animals and plant species through hunting, fishing and disturbance of habitats, prevention of forest regeneration through unplanned deforestation practices (Oyewo, 2018). Various governments in Nigeria have tried several ways and initiated policies and programs aimed at restoring the country's agricultural sector to its pride (Adama, 2016).

The prevalent extent of land degradation in Nigeria is alarming, thus the issue of management cannot be taken for granted, given that these resources constitute the productive base for Nigerian agriculture, and the basis of the livelihoods of many rural and urban households (Oyekale, 2012). However, a general understanding among sustainable agricultural farmers is that 'healthy' soil is a key component of farm sustainability, i.e., healthy soil will produce healthy crop plants.

Traditionally, agroforestry farmers have developed different soil conservation and land management practices of their own.

With these practices, they have been able to sustain their production for centuries thus the effects of resource exploitation have become widespread. There has been growing awareness that productive lands are getting scarce, land resources are not unlimited, and that the land already in use needs greater care. As a result of the increase in world population, other non-agricultural activities are competing for land space; hence there is progressive loss of land for food production. It was affirmed that over time, the demand for food and other agricultural products is increasing, requiring more land which is not available since the earth's land area is finite.

2.1 Fuzzy Sets Concepts

According to Sulo and Chelangat (2012) fuzzy sets concept was defined as X being a set and x being a subset of an element of X . A fuzzy subset A and X is defined as: $A = \{x, \mu_A(x)\}$ for all $x \in X$, where μ_A is called a membership function and is an application from X in $(0, 1)$. This means the function associates a real number in degree of belonging of X to A . The concept of land management is not sharply defined and multidimensional; thus, fuzzy set concepts can be used in the study of sustainable land management. If A is a fuzzy set, its membership to land management practices can only take the values between 1 and 0. Where, $Y(x) = (1)$, $Y(x) = (0)$ or $0 < Y(x) < (1)$, the membership function represents the degree of membership to the fuzzy subset. For the case of multidimensional analysis, increasing order of subjective evaluations can rank qualitative variables. This has been used by various authors such as Hossein *et al.*, (2009), in their research work 'Sustainable rangeland management using fuzzy logic: A case study in Southwest Iran'

by (Mir *et al.*, 2022) on the approach to identify limiting factors in assessing land suitability for sustainable land management.

An example is given by values attached to the findings of (Sulo and Chelangat, 2012) in their study, for instance, excellent, extremely good, very good, good, fairly good, average, fairly bad, very bad and worst in form of multidimensional responses. This concept can also be used to solve the problem of sustainable land management practices on smallholder cassava farmers' productivity in Oyo State Nigeria.

3. METHODOLOGY

3.1 The study area

This study was carried out in Oyo State, Nigeria. The State is located in the Southwestern part of the country, Oyo State consists of thirty-three (33) Local Government Areas grouped under four (4) agricultural zones of Oyo State Agricultural Development Program (OYSADEP). The zones are: Ibadan-Ibarapa, Oyo, Saki and Ogbomoso Zones. Oyo State covers a total land area of about 27,249,000 square kilometers with a total population of about 5.6 million (National Population Commission, 2006). As of 2016, the population of Oyo State was estimated at 7,840, 864 million based on demographic estimates released by the National Bureau of Statistics in 2017. It is situated between Latitude 7° N and 19°N and Longitude 2.5°E and 5°E of the meridian. The State is predominantly agrarian, annual mean rainfall is above 1000mm and the rainy season in the State averaged eight months in a year. Rain starts in Oyo State during the first week of March with storms. Mean temperature varies from daily minimum of 18.9°C to a daily

maximum of 35⁰C. Humidity is quite high in Oyo State; relative humidity in the State is 70 percent with a maximum of about 60 percent in the evening and a maximum of around 80 percent in the morning.

3.2 Sampling technique and sampling size

Multi-stage method sampling technique was used to collect data for this study through the use of well-structured questionnaires. The first stage was the choice of selecting the existing four Agricultural Development Program (ADP) zones in the State, namely, Ibadan-Ibarapa, Oyo, Saki and Ogbomoso zones due to the existence of agroforestry farmers. The second stage involved purposive selection of one Local Government from each of the zones where agroforestry farmers are concentrated. The third stage was the proportionate selection of the agroforestry farmers from the selected local governments, this comprises of 50, 46, 40 and 40 respondents from Oyo, Ogbomoso, Ibadan / Ibarapa and Saki zones respectively making a total of 176 agroforestry farmers. Lastly, structured questionnaires were distributed to collect data from a sample of one hundred and seventy six (176) agroforestry farmers from the study areas. The sample selected was based on the proportionate population of the agroforestry farmer's concentration and availability in the register of the Oyo State Agricultural Development Program (OYSADEP).

3.3 Analytical techniques

Multiple linear regression model (Cobb Douglass production function) was used to analyze the determinants of the crop output in the study area. A derivative of production function analysis was adopted to estimate the determinants of land

management practices on the level of crop production. Tobit regression analysis was used to identify the determinants of sustainable land management practices by the agroforestry farmers while fuzzy set theory was used to construct the index of sustainable land use practices and determine the status of SLMP among agroforestry farmers. Using fuzzy set theory, a set of composite farm level indicators was constructed in order to analyze different dimensions of sustainable land management which assume multidimensional responses which are discrete and continuous variables.

3.4 Model specification

$$Y = b_0 + b_1X_1 + b_2 X_2 + b_3X_3 + b_4X_4 + b_5X_5 \dots\dots\dots X_{11} + \mu \quad (2)$$

$$Y_i = f(X_{ij}, \alpha_j) \dots \text{(implicit form)}$$

$$Y = f(X_s)$$

$$Y = (X_1, X_2, X_3, \dots X_n)$$

Linear

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{11}X_{11} + e$$

Double log

$$\ln Y = a + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 \dots\dots\dots b_{11} \ln X_{11} + e$$

Semi-log

$$Y = a + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 \dots\dots\dots b_{11} \ln X_{11} + e$$

Exponential

$$\ln Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + \dots + b_{11}X_{11} + e$$

Where,

Where Y = the crop output (kg)

X₁ = Farming experience (years)

X₂ = Farm size (ha)

X₃ = Educational level (dummy)

X₄ = source of credit (dummy)

X₅ = Types of Land ownerships (dummy)

X₆ = land use duration (years)

X₇ = Age of respondent (years)

X₈ = farm income (Naira)

X₉ = farm management experience (years)

X₁₀ = mode of cultivation (dummy: local/manual = 0, mechanized = 1)

X₁₁ = source of water (dummy)

e = error term

b = Parameter to be estimated

a = Constant

Tobit regression

Tobit regression method was used to analyze the determinants of sustainable land management practices in the study area.

The model used for the estimation was given as:

$$SLMI_i = A + \beta_i \sum_{j=1}^{12} Z_j + \mu_i \quad (1)$$

$$SLMI_i = \beta_0 + \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + \beta_4 Z_4 + \beta_5 Z_5 + \dots + \beta_{12} Z_{12} + \mu_i \quad (2)$$

Where; SLMI = (Sustainable Land Management Index)

Z₁= Age (Years), Z₂ = Farming experience (years), Z₃ = Income (Naira), Z₄ = Farm size (ha),

Z₅ = Organic manure application (dummy), Z₆ = Fertilizer application (dummy),

Z₇ = Continuous cropping (dummy), Z₈ = Erosion runoff (dummy), Z₉ = Pesticide application (liter), Z₁₀ = Organic matter (dummy), Z₁₁ = Mode of cultivation (dummy), Z₁₂ = Educational level (years), μ = Error term, β = Parameter estimated, β_0 = Constant

Fuzzy Logic Model

According to Betti *et al.*, (2005) putting together categorical indicators of deprivation for individual items to construct composite indices requires decisions about assigning numerical values to the ordered categories and the weighting and scaling of the measures. Indicators of sustainable land use often take the form of simple ‘yes/no’ dichotomies. In this case X_{ij} is 0 ≤ 1

as used by Dagum and Costa, (2004) and adopted by Oyekale, (2012).

$$A = (a_1 \dots a_i \dots); \text{ and} \dots \dots \dots (3)$$

$$A: X = (X_1 \dots X_j \dots X_m) \dots \dots \dots (4)$$

$$X_{ij} = U_{\beta}(X_1(a_1)), 0 \leq 1 \dots \dots \dots (5)$$

$$W_j = \log[\sum_{j=1}^n g(a_i) / \sum_{j=1}^n x_n g(a_i)] \dots \dots \dots (6)$$

$$\mu_{\beta}(X_j) = \sum_{j=1}^n x_n g(a_i) / \sum_{j=1}^n g(a_i) \quad j = 1, 2, \dots, m \dots \dots \dots (7)$$

$$\mu_{\beta} = \sum_{j=1}^m \mu_{\beta}(X_j) W_j / \sum_{j=1}^m w_j = 1, 2, \dots, m \dots \dots \dots (8)$$

4. RESULTS AND DISCUSSION

4.1 Regression result of the determinants of crop productivity in the study area

From Table 1, different functional models were fixed for the determinant of crop output among the farmers. Four functional forms (linear, semi log, exponential and double log) were used, but the double log was chosen. The choice of the line as function is predicated on its confirmation to *a priori* expectation in terms of signs and magnitude of the coefficient, the number of significant variables and the coefficient of multiple determinations (Olayemi and Olayide, 1981) and the significance of the overall profitability as judge by the t-value. The regression result is as shown in Table 1. The results reveal that double-log was found to be the most suitable among others to explain the result of the analysis. Therefore, it was revealed that farm size used, years of farming experience, age of farmers

and income were positively significant at 1% level except for farm management experience which has a negative coefficient to the level of crop outputs but also significant at 1%. Source of water was also positively significant at 10% level. These imply that an increase in any of these variables will bring a proportionate increase in the level of crop outputs (Babalola *et al.*, 2013; Oyewo *et al.*, 2014) except for farm management experience which could bring about a reduction in the level of output due to the low level of years of farm land management practices experience and low level of education by the farmers which conform with the work of Oyekale, (2012). R^2 was 0.740 which shows that 74% of the variability in the level of outputs is associated with the explanatory variables specified in the model, while 26% could explain the variables that were not captured in the model.

4.2 Tobit regression of determinants of sustainable land management

The result in Table 2 shows the marginal effect of the variables used on the determinants of sustainable land management which revealed that farm size is positively related to sustainable land management (SLM) ($p < 0.05$). This implies that there is probability of increasing SLM with an increase in the application of this variable (farm size). Farm size is one of the factors influencing land use intensity, a unit increase in hectare of farmland marginally increase land use as asserted by Yusuf *et al.*, (2011). Farmers gross income is positively significant ($p < 0.05$) to (SLM). This implies that as agroforest farmer's income increases there is likelihood that SLM will be enhanced. This is in line with the *a priori* expectation because increase in farmers income will encourage the farmers in the adoption of

sustainable land management practices, this may however be due to the fact that farmer's gross farm income will encourage the farmer to operate an extensive land management system that can enhance farmland sustainability. This agrees with the work of Ogbonna *et al.*, (2007) and Ikechukwu and Nwakwo (2013) that increase in income will lead to increase in the use of Sustainable Farmland Management Practices and that higher income will give the farmers more money for possible adoption of farmland management practices. This was also supported by Agboola *et al.*, (2015) that farm income suggests that the larger the income earned, the greater the level of use of a particular technology and ease the capital constraint needed for soil-conservation investments.

Mode of cultivation and continuous cropping had negative relationship and significance ($p < 0.05$) to sustainable land management. This implies that as the mode of cultivation (manually) by the farmers is continually practiced there is likelihood that sustainable land management may not be enhanced. This may be due to the cultural practices that the farmers are used to and unable to adopt mechanized mode of cultivation which will enhance sustainable farming. Continuous cropping also has a negative effect on agroforestry farmer's sustainability because continuous cropping on the same portion of land without fallow (allowing the land to rest) may lead to soil nutrient loss and thereby reduce sustainable management and affect the crop grown. Fertilizer and pesticide are significant ($p < 0.01$) respectively while organic manure is also significant ($p < 0.10$). This implies that increase in any of these variables will increase the level of sustainable land management of the agroforestry farmers as these have positive relationship to SLM

and enhance agroforestry farmer's sustainability. Chi² value of 61.99 was significant ($p < 0.01$) indicating a good fit of the model used for the study.

4.3 Contributive effects of SLM indicators to agroforestry farmer's sustainability

The result presented in Table 3 reveals that land fallowing contributed relatively 3.51% to SLMP sustainability index because same pieces of farmland were used periodically for agricultural activities without allowing the land to rest which causes soil nutrients loss and degradation. Compaction and rooting had relative contributions of 3.47% to sustainability. This may be due to the fact that compaction affects the sustaining power of the crop root to penetrate soil because of the hardness nature of the soil due to surface land exposure. Relative contribution of addition of organic manure (3.0%) is higher than that of plot level application of fertilizer 2.9% because most of the farmers were able to sustain their production through the use of organic manure than fertilizer because it is readily available at the farmers' disposal, environmentally friendly, improves soil quality and rarely overdose. Residue cover had a relative contribution of 3.47% to land sustainability.

This shows that surface residue though present, did not totally cover the soil thus given room to soil or water erosion which also contributed relatively (3.48%) to sustainable land management with high possibility of being washed or blown away the topsoil affecting the soil fertility. Seed, labor and land use intensities; minimum tillage and profit per hectare had better and higher absolute contribution to sustainable land use

with 0.0049, 0.0051, 0.0065, 0.0075, and 0.0064 and relative contributions of 1.7%, 1.8%, 2.3%, 2.6% and 2.3% respectively. This shows that the agroforestry farmers' combination of these indicators contributes positively to land sustainability and could influence farmer's output positively. They also encourage soil conservation except for residue cover, wind or water erosion, compaction and rooting among others that contributes to land been unsustainable.

This conforms to the work of Agboola *et al.*, (2015) that factors influencing the use of land management and conservation practices by the farming household head were determined by combination of parcel/ plot level factor, human, physical and financial capitals as well as institutional factors. However, the total computed sustainable land use index (SLUI) of 0.2761 and mean computed (SLUI) of 0.0084 indicated that the agroforestry farmers were generally sustainable with the present combination of these farm level indices because the closer the index value is to zero, the better the farmers' sustainability.

5. CONCLUSION AND RECOMMENDATIONS FOR FUTURE STUDIES

The study considered different productive objectives in farmers' sustainable agricultural practices using fuzzy sets theory to compute the composite indicators of sustainable land management (ISLM) from selected farm level indicators. Cobb Douglas production function and Tobit regression were used to analyze the objectives of the study. It was therefore concluded that farming experience, farm size, age of respondents and source of irrigation and farm management

experience were the major determinants of crop production; the total sustainable land use index (SLUI) was 0.2761 indicating that agroforestry farmers were generally sustainable in their land use system considering the combinations of all the indicators because the closer the index value is to zero (0) and farther away from one (1) the more sustainable the farmers' practices. Also, the contributive effect of SLM indicators shows that seed, labor and land use intensities; minimum tillage, profit per hectare have better absolute contributions to sustainable land use management and enhance the sustainability of the agroforestry farmers except for land fallowing, residue cover, wind or water erosion, compaction and rooting among others contributed to land been unsustainable. Tobit analysis shows that farmer's income, farm size, organic manure, fertilizer and pesticide application and mode of cultivation were the major determinants of sustainable land management though continuous cropping and mode of cultivation were negatively signed which may have negative effect on agroforestry in the study area.

It is therefore recommended that agroforestry farmers should be sensitized on the need to be discouraged on manual cultivation and embrace mechanized mode of cultivation which may enhance farmers sustainable land management and in increase farmer's productivity. Also, continuous cropping could be encouraged if the present land is properly managed with the present combination of sustainable land management indicators and better agronomic practices since the available land is competing with other non-agricultural activities such as land tenure system. It was further suggested that this research work

could be carried out among other food crops in western and Sub-Sahara Africa.

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APPENDICES

Table 1: Regression analysis of the determinants of crop production in the study area

Variable	Linear	Double log	Exponential	Semi-log
Constant	7.106	-0.054	1.084	-76.377
= Farming experience	0.428*** (3.114)	0.172*** (3.800)	0.005*** (3.128)	13.911*** (3.197)
= Farm size	4.293*** (4.764)	0.0572*** (8.875)	0.045*** (4.266)	48.150*** (7.768)
= Educational level	-1.148 (-0.856)	-0.058 (-0.933)	-0.015 (-0.936)	-2.499 (0.419)
= source of credit	-0.647 (-0.629)	-0.005 (-0.075)	-0.002 (-0.196)	-2.541 (-0.421)
= Types of Land ownerships	1.275 (1.027)	0.088 (1.289)	0.011 (0.742)	11.594* (1.766)
= land use duration	0.046 (0.227)	-0.063 (-1-155)	-0.002 (0.011)	-5.060 (-0.961)
= Age of respondent	0.144 (1.474)	0.240*** (2.013)	0.003** (2.321)	10.155 (0.883)
= farm income	0.003*** (1.474)	0.187*** (2.647)	-0.000*** (3.760)	15.584** (2.292)
= farm mgt experience	-0.605*** (-3.014)	-0.204*** (-3.682)	-0.007*** (-2.785)	-16.757*** (-3.146)
= mode of cultivation	3.772 (1.474)	0.036 (1.460)	0.054* (1.815)	2.489 (-0.872)
= source of irrigation	4.758* (1.661)	0.048* (1.746)	0.040 (1.179)	5-216** (1.059)
Statistics	0.622 22.316	0.740 38.570	0.611 21.336	0.678 28.613

ce: author regression. (*) = 10%; (**) = 5%; (***) = 1% significant.

∴ Values in parenthesis are t-values

Table 2: Tobit analysis of the Determinants of Sustainable Land Management

Variable	Coefficient	dy/dx	Standard error	T-statistic
Constant	0.2022		0.0614	3.29
Z ₁ = Age	0.0009	0.0009	0.0092	0.10
Z ₂ = Farming experience	0.0009	0.0009	0.0012	0.77
Z ₃ = Income	0.0094**	0.0094**	0.0038	2.48
Z ₄ = Farm size	0.0193**	0.0193**	0.0079	2.45
Z ₅ = Organic manure	0.0347*	0.0347*	0.0208	1.67
Z ₆ = Fertilizer application	0.1707***	0.1707***	0.0273	6.25
Z ₇ = Continuous cropping	-0.0494**	-0.0494**	0.0222	-2.22
Z ₈ = Erosion runoff	0.0188	0.0188	0.0220	0.85
Z ₉ = Pesticide application	0.0807***	0.0807***	0.0253	3.20
Z ₁₀ = Organic matter	0.0473	0.0473	0.0319	1.48
Z ₁₁ = Mode of cultivation	-0.0524**	-0.0524**	0.0217	-2.41
Z ₁₂ = Educational level	0.0033	0.0033	0.0116	0.28
Sigma	0.1223			
Chi ² (12)	61.99***			

Source: Authors Data Analysis. * implies, p<0.10; ** implies, p<0.05; *** implies p<0.01.

Table 3: Contributive effect of SLM indicators to agro forest farmers' sustainability using fuzzy logic

SLM Indicators	*Absolute contribution	**Relative contribution (%)
Vigor of crop yield	0.0072	2.607750815
Trend of vegetative covers	0.0093	3.368344803
Residue cover	0.0096	3.477001087
Crop yield	0.0081	2.933719667
Labor productivity	0.0074	2.680188338
Profit per hectares	0.0064	2.318000724
Organic matter contents	0.0089	3.223469757
Drainage/infiltration of water	0.0095	3.440782325
Water holding capacity	0.0093	3.368344803
Aggregation of soil	0.0095	3.440782325
Earthworm/ soil life	0.0081	2.933719667
Compaction and rooting	0.0096	3.477001087
Crusting/emergency	0.0090	3.259688519
Tilth/ workability	0.0094	3.404563564
Wind or water erosion	0.0096	3.477001087
Salinity	0.0086	3.114813473
Plot level application fertilizer	0.0082	2.969938428
Addition of organic manure	0.0083	3.006157189
Mulching of crops	0.0095	3.440782325
Minimum tillage	0.0075	2.716407099
Cover crops	0.0088	3.187250996
Rotation of crops	0.0085	3.078594712
Land fallowing	0.0097	3.513219848
Irrigation Water level	0.0079	2.861282144
Irrigation Water quality	0.0085	3.078594712
Use of Pesticide	0.0096	3.477001087
Use of Herbicide	0.0079	2.861282144
Use of chemical poison	0.0075	2.716407099
Industrial discharges	0.0089	3.223469757
Land use intensity	0.0065	2.354219486
Labor use intensity	0.0051	1.847156827
Type of seeds	0.0089	3.223469757
Seed use intensity	0.0049	1.774719305
Mean Computed (SLUI)	0.0084	3.042375951
Total Computed (SLUI)	0.2761	100

Author computation

Note:

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