

**FROM BOOKS TO BOTS: AN ANTHROPOLOGICAL STUDY OF THE
ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN HIGHER EDUCATION
SYSTEM, PAKISTAN**



Submitted by:

Fariya Fatima Khan

MS Applied Anthropology

Enrollment no: 01-251221-005

Supervised by:

Ms. Sohima Anzak

Assistant Professor

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

BAHRIA UNIVERSITY, ISLAMABAD CAMPUS

JANUARY 2024

**From Book to Bots: An Anthropological Study of the Role of Artificial
Intelligence (AI) in Higher Education System, Pakistan**



Researcher

Fariya Fatima Khan

01-251221-005

Submitted in partial fulfillment of the requirements for the award of the degree of
MS Applied Anthropology at the department of Humanities and Social Sciences,
Bahria University Islamabad.

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

BAHRIA UNIVERSITY, ISLAMABAD CAMPUS

2024

Copyright Page

- 1.** The author of this thesis (including any appendices and /or schedules to this thesis) owns any copyright in it and he has given Bahria University, Islamabad the right to use such Copyright for any administrative, promotional, educational, and/or teaching purposes.
- 2.** Copies of this thesis, either in full or in extracts, may be made only in accordance with the regulations of the Bahria University Library. Details of these regulations may be obtained from the Librarian. This page must form part of any such copies made.
- 3.** The ownership of any patents, designs, trademarks, and any and all other intellectual property rights except for the Copyright (the Intellectual Property Rights) and any reproductions of copyright works, for example, graphs and tables (Reproductions), which may be described in this thesis, may not be owned by the author and may be owned by the third parties. Such Intellectual Property Rights and Reproductions cannot and must not be made available for use without the prior permission of the owner(s) of the relevant Intellectual Property Rights and /or Reproductions.
- 4.** Further information on the conditions under which disclosure, publication, and exploitation of this thesis, the Copyright, and any Intellectual Property Rights and/or Reproductions described in it may take place is available from the Head of the Department of Humanities and Social Sciences, Bahria University, Islamabad.

Plagiarism Undertaking

This is to certify that the intellectual contents of the thesis “From Books to Bots: An Anthropological Study of the Role of Artificial Intelligence (AI) in the Higher Education System, Pakistan”, are the product of my own research work except, as cited property and accurately in the acknowledgments and references, the material is taken from such sources as research journals, books, internet, etc. solely to support, elaborate, compare, and extend the earlier work. Further, this work has not been submitted by me previously for any degree, nor it shall be submitted by me in the future for obtaining any degree from this University, or any other University or institution. The incorrectness of the information, if proved at any stage, shall authorize the university to cancel my degree.

Signature: _____

Date: _____

Name of MS Scholar: Fariya Fatima Khan

Dedication

*I understand once again that the greatness of Allah always
reveals itself in the simple things*

Acknowledgement

My deepest gratitude to Allah, the Most Gracious, the Most Merciful, for guiding my steps and illuminating my path throughout this journey. Without His divine blessings, this accomplishment would have been truly unimaginable. To Him alone belongs all praise and glory.

I would mostly like to thank my elder brother, Faran Ali Khan, who supported my financial and emotional journey through my MS studies. I would like to thank my mother, Farzana Shaheen, for supporting me throughout my degree and I would like to thank my younger brother, Fasih Ullah Khan for supporting me morally. I would also like to thank my father, M. Asif Khan for being there.

I express my gratitude to my mentor, Ms Sohima Anzak, for her unwavering support, guidance, and motivation throughout my MS journey. I extend my thanks to my other educators for their academic and non-academic assistance, especially Dr. Asim Muneeb Khan, Dr. Latafa Aziz, Ms. Asia and Dr. Majid Hussain.

The credit also goes to Ms. Halla Waheed Aziz at FAST University, Ms. Faiza International Islamic University, Maria Bibi and admins of each institution's Instagram account for organizing interviews sessions.

I would also like to thank my best friend Halla Waheed Aziz and my friends Aiman Khokhar and Salman UI Haq for their constant moral support and keeping a check on me when my mental health was down. This thesis, would definitely not have been possible if it was not for them.



Fariya Fatima Khan

Abstract

The landscape of education is changing drastically, shifting from conventional book-based learning methods and towards the inclusion of artificially intelligent bots. Chatbots or bots, also known as conversational agents or virtual assistants, are computer programmes that replicate human conversations using text or voice interactions. They use artificial intelligence (AI) algorithms to interpret user inputs and respond appropriately, resulting in a dynamic and interactive experience across a variety of applications. The aftermath of this change goes beyond just adopting new technologies; it also brings about challenges, risks and implications of incorporating artificially intelligent tools into the core of education and its cultural components. An anthropological study of this phenomena is best suited for the growing incorporation of AI since it focuses on the interaction of culture, technology, and human behavior. Giving a holistic perspective on the cultural, social, and societal integration of AI in the higher education system, it offers a useful framework for comprehending these developments.

Recognising the importance of education in determining the value and use of AI, this study reveals the impact of AI diversity in Pakistani higher education. With a focus on a developing country facing resource constraints and a significant disparity in aligning with Western educational benchmarks, this study investigated the incorporation of artificial intelligence (AI) and its impact on student learning outcomes, academic behavioural patterns, and academic achievements within the framework of Pakistan's higher education system.

The study investigated the barriers to the smooth integration of AI in educational institutions. Using an anthropological perspective, the research looked at numerous aspects that influenced the adoption of AI technology, such as how schools were structured, the norms they followed, and what people felt. By identifying these problems, the research hoped to give practical insights on overcoming impediments and increasing the integration of AI in education. The findings raised crucial problems that might influence attempts to improve the effectiveness of artificial intelligence in education.

The study looked into teachers' opinions of AI, their degree of preparedness to incorporate AI technology into teaching approaches, and the training needs required to improve faculty competency in the quickly changing environment of AI in education. The findings demonstrated a

wide range of opinions among faculty members regarding AI, from enthusiasm and readiness to skepticism and worry. Educators that embraced AI emphasised its ability to improve teaching techniques and student engagement. However, a sizable proportion voiced worry about the anticipated complexity and potential job displacement related with AI implementation. The findings also revealed varying levels of faculty willingness to use AI into their teaching techniques.

The study thoroughly investigated the infrastructural landscape of higher education system of Pakistan. By concentrating on infrastructural factors, the study produced insights that might help policymakers and institutions optimise AI-powered support systems for educational programmes. The findings of this study demonstrated that AI-driven infrastructure support had an important influence in altering the educational environment within higher education institutions. The results are shown by a figure that depicts the flow of policies and their diminishing intensity inside each selected institute. Ethical issues were recognised as critical aspects, emphasising the importance of ethical and fair AI application in educational systems. Despite this, the majority of respondents expressed little to no concern about their private data being shared.

In conclusion, this study offers a holistic dynamics of AI integration in Pakistan's higher education system. The study adds to the ongoing discussion about the role of AI in defining the future of education in poor countries by providing useful insights into its social effect and recommending strategic interventions for advancement.

Key Words:

artificial Intelligence, higher education, implementation, digital divide, human interaction, AI consequences and outcomes, educational policies, technology integration.

Table of Contents

Copyright Page _____	iii
Plagiarism Undertaking _____	iv
Dedication _____	v
Acknowledgement _____	vi
<i>Abstract</i> _____	vii
List of Tables _____	xii
Table of Figures _____	xii
List of Abbreviations _____	xiii
1. CHAPTER ONE - INTRODUCTION _____	1
1.1. Artificial Intelligence (AI) And Chatbots _____	2
1.2. AI's Proliferation in Higher Education _____	4
1.3. Statement of the Problem _____	6
1.4. Rationale of the Study _____	7
1.5. Objectives _____	8
1.6. Research Questions _____	8
1.7. The Research Gap _____	9
1.8. Significance of the Study _____	10
2. CHAPTER TWO – LITERATURE REVIEW/THEORETICAL FRAMEWORK _____	11
Introduction _____	11
2.1. Historical Endeavors _____	11
2.2. The Terrains of AI in Education _____	14
2.3. AI in Pakistan's Educational Landscape _____	17
2.4. Ethical Considerations and Administrative Challenges _____	20
2.5. Theoretical Framework _____	21
2.5.1. Digital Natives _____	21
2.5.2. Governance Theory _____	22
2.5.3. Enhanced TAM or E-TAM _____	24
3. CHAPTER THREE - METHODOLOGY _____	25
Introduction _____	25
3.1. Research Design _____	25

3.2.	Digital Ethnography _____	26
3.3.	Universe and Locale of the Study _____	26
3.4.	Population Characteristics _____	27
3.5.	Sampling Technique _____	27
3.6.	Sample Size _____	28
3.7.	Methods of Data Collection _____	28
3.7.1.	Rapport Building _____	28
3.7.2.	Consent and Confidentiality _____	29
3.7.3.	Key Informants _____	30
3.7.4.	Participant Observation and Events Attended _____	30
3.7.5.	Interview Guide _____	31
3.7.6.	In-depth Interviews _____	31
3.7.7.	Focus Group Discussion _____	32
3.7.8.	Case Study _____	32
3.7.9.	Document Examination and Archival Data _____	33
3.7.10.	Ethical Consideration _____	33
3.7.11.	Issue of Reflexivity: Researcher’s Status and Self Identification _____	33
4.	CHAPTER FOUR – ADAPTATION AND IMPLEMENTATION OF AI IN HIGHER EDUCATION SYSTEM _____	36
	Introduction _____	36
4.1.	Socio-Demographics of Respondents _____	36
4.2.	Types of AI Tools Used _____	40
4.3.	Awareness About AI in Universities _____	43
4.3.1.	Perceived Familiarity vs. Actual Awareness for Adaptation _____	46
4.4.	Adaptation and Integration of AI Tools in Education _____	49
4.5.	Strategies for Incorporating AI _____	60
4.5.1.	Hands-On Learning Strategy _____	65
4.5.2.	Collaborative Learning _____	66
4.5.2.1.	Case Study – Uzi (BS-CS 2nd Semester University B) _____	67
4.6.	University Implementation of the AI _____	73
4.6.1.	University A and its Anthropomorphasizing ChatGPT _____	73
4.6.2.	University I and Its Technological Spectrum _____	74
4.6.3.	University F and Its Technological Spectrum _____	76
4.6.4.	University B’s Technological Spectrum _____	78
4.7.	Utilization of AI in Educational Practices _____	79
	Summary _____	84
5.	CHAPTER FIVE – INSTITUIONAL GOVERNANCE FOR AI INTEGRATION _____	87
	Introduction _____	87
5.1.	Structural and Personal Limitations in Adaptability _____	87
5.1.1.	Case Study – Ms. H from University F _____	88

5.1.2. Limited Skills and Need for Training to Use AI-Tools _____	91
5.2. Limitations Posed by Policies and Authorities _____	101
5.3. AI Implementation Decision-Making Processes _____	104
5.4. Ethical Issues in AI Adaptation _____	109
Summary _____	115
6. CHAPTER SIX - DISCUSSION AND CONCLUSION OF THE STUDY _____	117
6.1. Discussion _____	117
6.2. Conclusion _____	123
6.3. Limitations of the Study _____	124
6.4. Recommendations for the Future _____	124
Bibliography _____	126
APPENDECES _____	135
Appendix A _____	135
Appendix B _____	136
<i>INTERVIEW GUIDE FOR STUDENTS</i> _____	136
Appendix C _____	137
<i>INTERVIEW GUIDE FOR TEACHERS</i> _____	137
Appendix D _____	138
<i>INTERVIEW GUIDE FOR ADMINISTRATION</i> _____	138

List of Tables

Table 1: Gender Demographics	37
Table 2: Age Demographic	37
Table 3: Age Range by Generation.....	39
Table 4: AI-Tools Used.....	40
Table 5: Pilot Study (ChatGPT Vs. Internet Sourcing).....	49

Table of Figures

Figure 1: Proposal for the Dartmouth Summer Research (1955)	12
Figure 2: Generative-AI Based Student-Course Feedback Analysis Email.....	42
Figure 3: Discord server named #wholesome	52
Figure 4: Pattern Emerged from the Use of ChatGPT	55
Figure 5: Anthropomorphisizing of ChatGPT	56
Figure 6: Cheat Sheet for ChatGPT by Uzi and his Friends	72
Figure 7: Filtering of Policies from HEC to Students.....	105
Figure 8: Qualitative Google Survey Questionnaire.....	115

List of Abbreviations

AI:	Artificial Intelligence
UNESCO:	United Nations Educational, Scientific and Cultural Organization
FGD:	Focus Group Discussions
HEC:	Higher Education Commission
GenZ:	Generation Z
GenAlpha:	Generation Alpha
ICT:	Information and Communication Technologies
ML:	Machine Learning
HEI:	Higher Education Institutions
Insta:	Instagram (Social Networking Site)
FB:	Facebook (Social Networking Site)
CS:	Computer Science
CY:	Cybersecurity
ME:	Mechanical Engineering
BBA:	Bachelors in Business Administration
MBA:	Master in Business Administration
SPAIC:	Sino-Pak Artificial Intelligence Center
CAGR:	Compound Annual Growth Rate

CHAPTER ONE

INTRODUCTION

“The key to artificial intelligence has always been the representation.”

— Jeff Hawkins, 1957, Businessperson, Neuroscientist, Engineer.

The landscape of education is changing drastically, shifting from conventional book-based learning methods and towards the inclusion of artificially intelligent bots. Chatbots or bots, also known as conversational agents or virtual assistants, are computer programmes that replicate human conversations using text or voice interactions. They use artificial intelligence (AI) algorithms to interpret user inputs and respond appropriately, resulting in a dynamic and interactive experience across a variety of applications (Dale, 2016; Adamopoulou & Moussiades, 2020). The aftermath of this change goes beyond just adopting new technologies; it also brings about challenges, risks and implications of incorporating artificially intelligent tools into the core of education and its cultural components. An anthropological study of this phenomena is best suited for the growing incorporation of AI since it focuses on the interaction of culture, technology, and human behavior. Giving a holistic perspective on the cultural, social, and societal integration of AI in the higher education system, it offers a useful framework for comprehending these developments.

Artificial Intelligence (AI) is sometimes seen as value-free by its creators, (Forsythe, 2001) but anthropologists suggest that technology or technological tools are culturally bound with the values and environment of its creator, follower (people who work for the creator), and user (Hess, 1992). This implies that technology does have a cultural dimension that needs to be explored for better implementation of the technological tools within various fields. When talking about AI, the genuine value of AI can only be realised by understanding its societal and cultural components. These characteristics are moulded by factors such as usage, experience and situations, emphasising the significance of taking into account the larger social environment while developing and deploying AI systems. As AI has become a rapidly studied phenomenon, its value has been dispersed in many industries as well. This research focuses on the role of AI in the education sector to know its true value amongst students, teachers and administration in the Pakistani higher

education landscape. Since education plays a critical role in shaping the use and value of AI for the users and the creators, it is important for an anthropologist like myself to explore the social status of its diversity in Pakistan. However, to reach this point, an anthropological study for the challenges, effects, implementation and infrastructure utilization was required to determine its social status. This is especially important when working in a third-world country with limited resources and a significant gap in attaining Western educational norms. That is why, the present research study is an endeavor to understand the role of Artificial Intelligence in the higher education system of Pakistan, traversing the impact on student learning outcomes, implementation of AI in the higher education industry, infrastructural limitations and evaluating the faculty attitudes towards new technological interventions in higher education system of Pakistan.

1.1. Artificial Intelligence (AI) And Chatbots

Artificial Intelligence, commonly known as AI, is a prevalent and transformative technological frontier that has permeated every aspect of this contemporary society. The ability of a system to accurately read external data, learn from it, and apply that knowledge to accomplish particular activities and goals through adaptable change is known as artificial intelligence (AI) (Kaplan & Haenlein, 2019; Salehi & Burgueño, 2018). Initially grabbing the public attention through films like "The Terminator" (Cameron, 2001). AI transcended its fictitious roots to become a vital force across varied industries. It is the future that is constantly growing, (Mijwil M. A., 2022), with the changing state of the world. While the phrase "artificial intelligence" is commonly used to refer to the construction of computers, (Taylor, 1990), it is also used to describe computer systems which perform tasks that normally would require human cognition, encompassing perception, language understanding, reasoning, learning, planning, and problem solving, (Nelson, 2020). The fast growth of computing and information processing techniques has accelerated the development and implementation of AI (Duan, Edwards, & Dwivedi, 2019). The AI market itself is predicted to increase at a 76.9% CAGR from \$11.3 billion in 2023 to \$51.8 billion by 2028, (Rosebrock, 2023).

If we take a look at the history of AI, it presents the picture of this era's success and failures regarding AI-driven tech. These AI creations can be traced back from the fictional idea of "heartless" Tin Man from *The Wizard of Oz* and the humanoid robot that assumed the identity of Maria in *Metropolis* (Baum, 2008), to the latest trending human-friendly Chatbots, Chat-GPT

(OpenAI, 2020), of this era. But we all know that, the integration of AI proceeds beyond fictitious metallic robots and the discipline of science. Basically, AI is the future of technologies that claim to "assist" humans in order to improve human mental and physical abilities, (Greguric, 2014). It is growing at an increasing rate with various investors incorporating it in different sectors. Chatbots or bots on the other hand can be taken as an extension of AI technology that is a computer conversation system that uses natural language to communicate with users, (Shawar & Atwell, 2005).

In the light of the quote mentioned in the beginning, it's evident that the importance of AI goes beyond neural networking and algorithms. Instead, it is important to recognise the countless opportunities it provides to support, advise, help, and lead educational innovation. It is critical to understand that AI-driven tools are not neutral; rather, they reflect the values and cultural contexts of its users, and implementers. I prioritized the perspectives of these users and implementers in the higher education sector of Pakistan for this study. It is important to understand the challenges, risks, and infrastructural utilization of AI in a third-world country like Pakistan, so that future researchers may have an anthropological perspective on the role of AI in higher education of Pakistan.

The trajectory of educational progress is shifting away from the traditional teaching reliance on books and towards the use of chatbots, which are considered as significant entities shaping the future of education. This shift has an influence not only on Pakistani students, teachers, and administrative stakeholders, but also on higher education institutions across the world. The claim is based on empirical facts and intellectual debate. For example, (Larson, 2015), the rising incorporation of AI in educational contexts, emphasising its potential to improve learning experiences and reduce administrative operations. Furthermore, many researchers (Pérez, Daradoumis, & Puig, 2020) found that chatbots are good in facilitating personalised learning and providing timely support to students. Through the support of these empirical findings, this thesis prioritizes to add to the ongoing discussion on the transformative potential of AI, notably chatbots, in education. As technology advances, understanding and utilizing AI's potential in education not only challenge existing paradigms but also offer up new paths for learning and academic support.

1.2. AI's Proliferation in Higher Education

Nowadays, AI has been applied to a variety of disciplines, including visual and speech recognition, decision-making, natural language processing, and language translation, in a variety of forms, including computer programmes, apps, embedded control systems in equipment, and robots, (Lathuilière, Masse, Mesejo, & Horaud, 2019). Maybe the analogy that AI would take over the world just as smartphones revolutionised the way things were done in the past, is the best way to explain the rapidness of AI implementation. And in this scenario, the indication is towards the adaptation of AI in the education system. The revolutionary potential of AI in education has been highlighted in scholarly works, (Anderson, 2019), to show that AI is more than just a technological development but also a societal phenomenon, (Levinson, 2018). With the discipline of Artificial Intelligence in Education (AIED, 1997) having been founded for over 30 years, applications of AI in education have increased in recent years, attracting the interest of academics from both computer science and education. Take the example of "Yuki," Germany's first robot professor, which was launched in 2019 and has already begun providing lectures to university students at The Philipps University of Marburg, (Ameen, 2019).

The use of AI has become an integral part of the education system. Teachers and students use technology and AI applications, virtual and augmented reality and online learning platforms to enhance learning as well as teaching experiences, (Almusaed, 2023). In order to keep up with the world, digital literacy is beyond necessary and justified in the education system, driving towards the adaptations of new era technology in the education system, (Trujillo, López, & Pérez, 2011). Therefore, educationists have promoted the use of Information and Communication Technologies (ICT), new innovative technology and AI in the classroom, which is a fact that is maintained throughout the world in the 21st century education system, (Ghavifekr, 2016). Despite the grim image of AI-robots taking over the world, there are several perspectives from which the use of AI in education is considered as quite promising as well as grave and dark. For example, (Moses, 2021) envisions a more fair future for higher education in which AI is viewed as a third hemisphere of the brain that aids creative and cognitive learning processes. While some believe that, an AI revolution presents new types of risks, which may eliminate the human factor from this world, (Jensen, 2020). The Horizon Report (which is globally recognised report and an educational technology reference), estimate that artificial intelligence will be applied in higher education

within four to five years, which dates back to 2017, (Adams, et al., 2017). According to SmartPLs software reports conducted in 2021, artificial intelligence (AI) and machine learning (ML) are considered appropriate technologies implemented in higher education institutions (HEI) to develop skills among students, a collaborative learning environment, and an accessible research environment, (Ilić, Păun, Šević, Hadžić, & Jianu, 2021).

As we live in the post-COVID age, artificially intelligent applications have begun to proliferate in education and demonstrate that they are worthy, strong, and capable of completing the needed tasks in the most challenging situations. In the Pakistani context, the integration of artificial intelligence (AI) presents a momentous shift, where traditional pedagogical practises had been the cornerstone of higher education system. The country's cultural heritage and educational traditions are particularly important in the higher education system and different from that of the first world countries. Though the Pakistani society has started picking up with the AI adaptations, but it is still a long walk for Pakistan to be able to catch up with the global developments, (Tariq, Kamran, & Rehan, 2023). The face-to-face instruction, a dependence on textbooks, and a strong emphasis on teacher-student interactions are all characteristics of Pakistani education that are strongly ingrained in conventional practises, (Ahmed Awan, 2019). Pakistan's educational system differs in terms of its origins, teaching approaches, and curricula, (Nisar, 2009). This complex educational landscape also faces infrastructural issues and policy implementation issues for new technology incorporation. If we look at the budget for the incorporation of AI in Pakistani society (comparatively to the global market), the size of AI in Pakistan is considerably smaller, at a percentage of 0.12% (Statista.com, 2023), as the budget allocated by Pakistani government for Education sits at only one percent of the overall federal budget (Pakistan - Country Commercial Guide, 2022). Even though chatbots are being used increasingly often in higher education institutions for instructional and education purposes in the age of AI, (Mohd Rahim, 2022), it is still not confirmed if the usage of chatbots is successful in a third-world country like Pakistan. It is important to identify the extend to this endeavor. And so, it is crucial to critically assess the sociocultural dynamics it fosters as it increasingly sweeps the educational environment.

To traverse this complexity in the education system of Pakistan, this research uses anthropological methods to unfold the reality of AI in Higher Education System of Pakistan. The research identifies the difficulties, misconceptions, possibilities, adaptation, implementation and

prospects of AI in Pakistani higher education system. To address this issue thoroughly, the research uses digital ethnography method, which are well adapted to capturing the cultural subtleties and contextual complexities of AI adoption in Pakistani higher education. The use of digital ethnography allows this research to add to the developing conversation about technology in education within the Pakistani context by investigating the cultural adaptations, pedagogical changes, and ethical conundrums associated with AI. Diving into the potential loss of human interaction and personal connection between students and instructors due to heavy reliance on technology is also an aspect yet to be explored in Pakistan.

Now, despite rising interest and the deployment of AI in education around the world, there is a significant research gap with regards to understanding how AI impacts student-instructor relationships, policy implementation, misconceptions about AI, governing authorities and their role, infrastructural issues, and ethical considerations within the unique cultural context of Pakistani higher education. Since, education in Pakistan is as concerned with cultural Pakistani or religious Islamic components as it is with merely educational goals (Erdal, Amjad, Bodla, & Rubab, 2016), it is important to explore the perceived views on how AI can make the higher education system of Pakistan better and the biasness towards the usage of AI is to be explored as well.

1.3. Statement of the Problem

Artificial intelligence (AI) is perceived as sometimes altering the human behavior. As AI technologies become more prominent in educational settings, there is rising worry regarding their influence on traditional teaching and learning dynamics. AI is being introduced into Pakistan's higher education system, which represents a considerable departure from traditional teaching approaches. While the revolutionary potential of artificial intelligence in higher education is generally recognised globally, this research uses Digital Ethnography techniques to look into how AI has altered the landscape in higher educational institutes of Pakistan.

There are 236,492 institutions in the formal education system in Pakistan, with only 3,223 (1%) inter-degree colleges/universities, (Qadeer, et al., 2023). According to the data, the proportion of inter-degree colleges/universities is low in comparison to the overall number of educational institutions. This shows that Pakistan's official education system is significantly biased

towards basic and secondary education, with a comparatively limited number of institutions dedicated to higher education. Though this 1% higher education may seem to initially accept AI, but the lack in understanding of the true use of AI in Pakistani higher education is still present on the government and institutional level. Education in Pakistan is primarily reliant on face-to-face instruction, textbooks, and strong teacher-student relationships. The incorporation of AI raises concerns about the responsibilities of academics and students, as well as ethical concerns concerning administrative changes and financing regulations. Given that higher education system in Pakistan is inextricably tied with cultural and religious components, this research also attempts to investigate perceptions of AI's ability to improve Pakistan's higher education system and to investigate any biases that may present.

The overarching purpose is to shed light on the complex socio-cultural dynamics of AI adoption in Pakistani higher education. The research explores what are its obstacles, opportunities, and ethical elements in this specific context. It also investigates potential losses in human contact and personal relationships, and it makes recommendations for balanced and fair technological integration in educational systems. Finally, the goal of this study is to educate educators, policymakers, and academics on the influence of AI on education in Pakistan and to promote appropriate integration.

1.4. Rationale of the Study

The premise for the study derives from the need to thoroughly evaluate the integration of artificial intelligence (AI) into Pakistan's higher education system. Several aspects highlight the importance of this work. Pakistan's specific cultural and pedagogical traditions have long served as the foundation of its educational system. The arrival of artificial intelligence (AI) undermines these traditions, prompting an evaluation of how this technological revolution matches with Pakistan's educational past.

Second, the global predominance of AI's transformational influence, particularly in education, emphasises the importance of examining its consequences in the context of Pakistan as a representative of a third world country which was introduced to AI later as compared to first and second-world countries. AI is altering the future of education throughout the world, prompting the need to investigate its impact on Pakistan's higher education scene.

Furthermore, the study recognises the complex interaction between AI adoption and social processes. Understanding the possible societal changes caused by AI integration requires an anthropological approach. This study also includes ethical implications, as AI integration raises concerns about possible employment displacement in the Pakistani educational system. Moreover, the study as an anthropological perspective of the Pakistani society may open new horizons to the field of Digital Anthropology. It also acknowledged the struggles and viewpoint of a third-world country, i.e. Pakistan with the adaptation and implementation of new technologies.

The overall goal of this research is to give significant insights on the link between AI-technology and higher education, allowing for more informed decision-making and defining the future of education in Islamabad, Pakistan.

1.5. Objectives

1. To evaluate the impact of artificial intelligence (AI) integration on student learning outcomes and academic achievement.
2. To identify the structural and personal limitations in adaptation of AI of institutions.
3. To evaluate faculty attitudes, competencies, and training requirements about artificial intelligence in higher education institutes.
4. To examine AI-driven infrastructural support/facilities regarding the implementation of educational policies in the higher education institutions.

1.6. Research Questions

1. What is the influence of AI incorporation on student's performance?
2. How the universities in Pakistan are adapting to the needs of the 21st century technological innovations?
3. How teachers are bringing change to the traditional face-to-face methods by incorporating AI?
4. How and what are self-governing mechanisms used by the stakeholders to adopt the ethical use of AI?

1.7. The Research Gap

As discussed in the literature review, researchers (Ahmad, Rehman, Ali, Khan, & Khan, 2014; Ahmad, et al., 2021; Ariel, 2015; Ghotbi, Ho, & Mantello, 2021) have examined the larger landscape of AI in education, emphasising its revolutionary potential. However, the available research lacks a comprehensive study of AI's unique influence on student learning outcomes and academic accomplishment in higher education system of Pakistan. Furthermore, while the research acknowledges the potential benefits of AI integration (Mijwil M. M., 2021; AIED, 1997; Mijwil M. A., 2022; Seo, Tang, Roll, Fels, & Yoon, 2021), there is a lack of understanding about the structural and human constraints that institutions may confront while adapting to AI. Identifying these limits is critical for gaining a comprehensive knowledge of the issues associated with adopting AI in educational contexts. Ahmad et al.'s work emphasises the importance of examining these limits in further detail in order to develop viable ways for successfully incorporating AI into higher education.

Furthermore, the literature review found a lack of research concentrating on faculty perspectives in higher education institutes on AI. Faculty attitudes, competences, and training needs all play an important role in the effective implementation of AI systems. Understanding how educators view AI and the abilities they have or need is critical for establishing focused training programmes. Ahmad et al.'s research paves the way for a more in-depth investigation of these faculty-related issues, revealing insight on the human side of AI adoption in education. It does not provide an in-depth examination of the infrastructural support and amenities enabled by AI for the implementation of educational strategies in higher education institutions. The function of artificial intelligence in developing and sustaining the infrastructure necessary for efficient policy execution is largely unknown. This gap in the literature highlighted the need of researching how AI helps to develop supporting frameworks and facilities within educational institutions.

This review emphasised the need for additional research that focuses on the impact of AI on student outcomes, identifies and addresses limitations in AI adaptation, investigates faculty perspectives, and looks into the role of AI in shaping infrastructural support for educational policy implementation.

1.8. Significance of the Study

This study is significant because it investigates the integration of AI into Pakistan's higher education system, which is a cultural shift from established practises. The study concentrated on the obstacles that hampered the seamless integration of AI in educational institutions. The study took an anthropological approach and looked at institutional structure, governing regulations, and individual viewpoints for the adoption of AI technology. It identified these obstacles and provided practical solutions to solve them in order to improve the integration of AI into education. The findings shed light on critical aspects that might help inspire methods for improving the effectiveness of artificial intelligence in education.

Beyond Pakistan, it adds to the global conversation on artificial intelligence in education by giving light on issues and potential in similar regions. It also looked at the ethical concerns of AI integration and emphasises the significance of an anthropological viewpoint for further researches. Recognising that technology has limitations in replacing in-person encounters, the study proposes a comprehensive strategy to embracing technology. The goal is to strike a balance between the advantages of AI-powered innovations and the distinct traits of human engagement in education.

CHAPTER TWO

LITERATURE REVIEW/THEORETICAL FRAMEWORK

Introduction

The literature review for this study comes from both theoretical and empirical perspectives. Prevalent study on AI is often found in books, essays, and other publications, but very little has been written from the perspective of Pakistan's Higher Education system. One of the major gaps that I discovered was that while learning outcomes without the use of AI may not have been effected in previous years (before 2020), but right after the creation of the all-famous ChatGPT (OpenAI, 2020), the social and practical outcomes and application of learning and teaching drastically changed. Researchers (Ahmad, et al., 2021) have identified the future prospects that AI might bring to the educational landscape but AI-centric impact on student learning outcomes and academic achievement, structural and personal limitations in adaptation of AI, faculty attitudes, competencies, and training requirements about artificial intelligence in higher education institutes and AI-driven infrastructural support/facilities regarding the implementation of educational policies in the higher education institutions through an anthropological lens, has yet to be explored. The current research work has identified the aforementioned gaps and is likely to contribute significantly to the existing body of knowledge in the relevant sector.

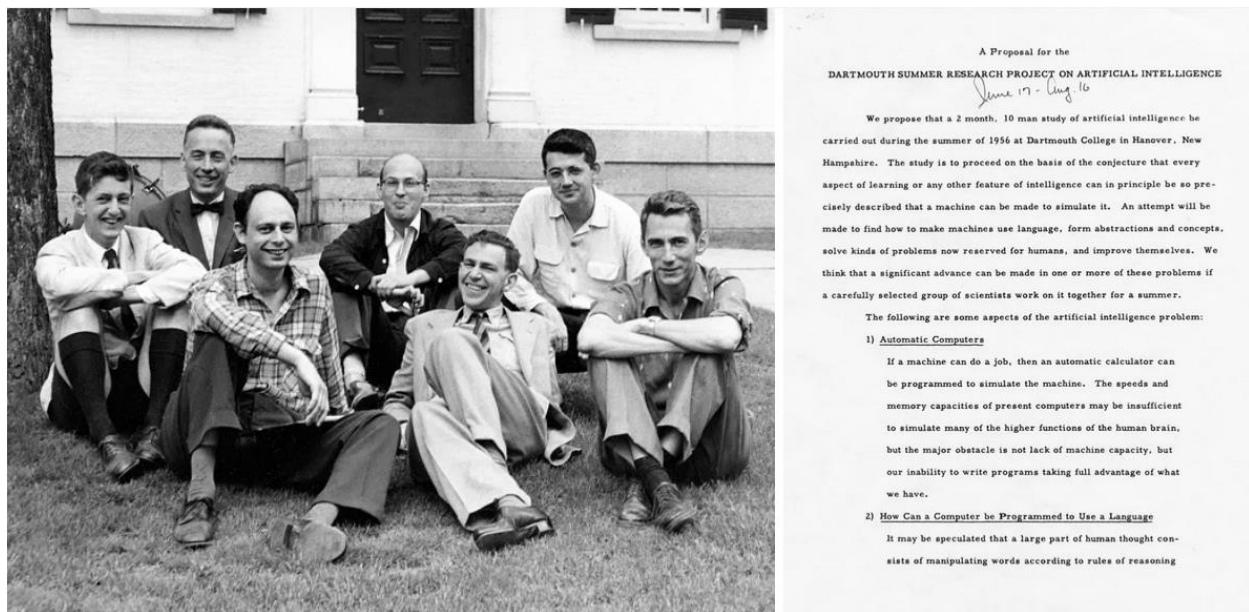
2.1. Historical Endeavors

In an era marked by tremendous technology, many countries have diverted their attention to one of the major technological breakthrough, Artificial Intelligence (AI). AI is the most blooming and vital technology in current and future generations (Yigitcanlar, Mehmood, & Corchado, 2021), which is growing at an astounding rate and provides several natural advantages to economies, cultures, societies and individuals (Chen, Hu, Karuppiah, & Kumar, 2021). This growth of technology further led to claims about the growing number of devices that may deliver "intelligent services" using techniques such as traditional machine learning or current deep learning, (Hwang, Xie, Wah, & Gašević, 2020). That is the reason why AI has been given so much importance for its efficiency and abilities to perform human tasks better than humans in the 21st century. Additionally, this ever-evolving area of science not only drives productivity and innovation, but it also pioneers cutting-edge services, allowing us to readily attain precision and

efficiency in all of our endeavours (Ahmad, et al., 2021; Mhlanga, 2021). It also necessitates your attention and conviction in its potential for gaining significant improvements in executing large-scale functions with scalability and modernism (Belgaum, Alansari, Musa, Alam, & Mazliham, 2021; Singh, et al., 2020). But to know how this innovation seeped into the education sector, we must first know the historical rollercoaster it went through for its inception.

During the early 20th century, fantasy novels first introduced the concept of artificially intelligent robots to the world. This concept can be traced back to iconic examples such as the "heartless" Tin Man from *The Wizard of Oz* and the humanoid robot that assumed the identity of Maria in *Metropolis*, (Baum, 2008). The 1950s brought a generation of scientists, mathematicians, and philosophers who had culturally internalised the idea of artificial intelligence (AI) into their scientific practices. The term Artificial Intelligence (AI) was created in the mid-20th century at the Dartmouth Conference in 1956 (McCarthy, Minsky, Rochester, & Shannon, 1955).

Figure 1: Proposal for the Dartmouth Summer Research (1955)



Source: AI Magazine. Vol. 27 No. 4: Winter 2006.

Terming this age as the “*Second machine age*” (McAfee & Brynjolfsson, 2018) would not be a surprise as it characterises the development of machines in taking over the jobs which were solely partaken by human beings. Consequently, to this rapid inclination towards technology,

much of the world's population has changed their behaviors as a result of technological improvement. People's habits of connecting, interacting, reading, writing, and staying informed have changed as a result of the usage of new technology, (Hinojo-Lucena, 2019). In order to enable the functionality of AI-driven technology, computers at that time required necessary upgrades and fundamental modifications. Before 1949, computers were unable to fulfill a crucial requirement for intelligence; while they were capable of executing commands, they lacked the ability to store them, (Anyoha, 2017). Approximately five years later, Allen Newell, Cliff Shaw, and Herbert Simon's "Logic Theorist" provided evidence for the notion of AI.

The Logic Theorist was a programme financed by the Research and Development (RAND) Corporation that was supposed to replicate human problem solving abilities, (Gugerty, 2006). Given the historical background of the inception of artificial intelligence (AI) (Mijwil, Mutar, Filali, Aggarwal, & Al-Shahwani, 2022; Mijwil & Abttan, 2021), it can be described as a technical science that researches and develops ideas, methods, and techniques, as well as systems capable of emulating the human mind (Bryndin, 2020). This discipline creates intelligent machines that replicate human intelligence and produce responses similar to human reactions. Machine learning (Faieq & Mijwil, 2022) and deep learning (Mijwil & Al-Zubaidi, 2021; Al-Zubaidi, Mijwil, & Alsaadi, 2019) are the two most important fields of artificial intelligence. Deep learning evolved as a potent AI technique in the 2000s (LeCun, Bengio, & Hinton, Deep learning, 2015). Deep learning employs neural networks with several layers, allowing the system to learn complex patterns and correlations in data (Mijwil & Salem, 2020). In short, humans were trying to mimic the intricacies of the human brain. This method has resulted in major advances in image recognition, natural language processing, and robotics (Collins, Dennehy, Conboy, & Mikalef, 2021).

Significant developments in computer science and data analysis have characterized the history of AI. Advances in computer technology, such as GPUs, and the availability of massive quantities of data have fueled the development of AI. AI is currently utilized across a wide range of applications and fields, including but not limited to self-driving vehicles, virtual assistants, medical diagnostics, and the development of medications (Cioffi, Travaglioni, Piscitelli, Petrillo, & De Felice, 2020).

Early AI pioneers envisioned robots capable of emulating human intellect, laying the framework for future research into intelligent agents, problem solving, and symbolic thinking. Among those individuals was Alan Turing, a brilliant polymath from Britain, who delved into the realm of artificial intelligence and explored its computational potential. Turing postulated that if humans can leverage available information and reasoning to solve problems and make decisions, *why wouldn't machines be able to do the same?* The basis of his 1950 study, titled "Computing Machinery and Intelligence," laid the groundwork for this concept. In the study, he outlined the methodology for constructing intelligent computers and devising a framework to assess their level of intelligence (Copeland, 2023). In contrast to the initial excitement around Artificial Intelligence (AI), the 1970s and 1980s were characterised by a difficult time known as the AI Winters. During this period, the field experienced failures as early efforts, generally marked by overly ambitious ambitions, failed to yield the promised advances. These disappointments resulted in disillusionment, decreased funding, and a perception of stagnation in AI research (McCorduck, 2004). However, the 1990s saw a notable rebound in AI, characterised by the introduction of novel paradigms that energised the research. Emerging technologies, most notably the paradigm shift towards machine learning and neural networks, spurred this rejuvenation. This renaissance (LeCun, Bengio, & Hinton, 2015), highlighting the invention of Convolutional Neural Networks (CNNs) as a watershed moment in computer vision. CNNs revolutionised picture identification and processing by proving the usefulness of neural networks in extracting hierarchical features from complicated data sets. This accomplishment not only rekindled interest in AI, but also provided the framework for following advances, affecting a wide range of applications from medical imaging to driverless cars. *But how did it enter the world of education, consequently, higher education systems?*

2.2. The Terrains of AI in Education

The growth of AI has been rapid, moving beyond the realms of fiction, where machines mimic human features, and into a practical arena where it provides several industry-specific benefits. This includes advancements like Google's search engines, self-driving cars, and autonomous weaponry (Ariel, 2015). The use of technology in education may be traced back to the first generation of computers and its following upgraded versions (Schindler, Burkholder, Morad, & Marsh, 2017). Educators were seen using computers in classroom, research, grading

systems, administration, and a variety of administrative responsibilities. Similarly, students used computers for study, research, and problem solving, among other things. Furthermore, computers have been used as teaching tools, similar to libraries and labs, and for maintaining student databases (Jones, 1985).

The true incorporation of AI into education is the culmination of a revolutionary journey that began with ground-breaking attempts to construct intelligent tutoring systems. Donald Bitzer, a pioneer in educational technology, was instrumental in developing PLATO (Programmed Logic for Automated Teaching Operations) at the University of Illinois in the 1960s. PLATO was a pioneering computer-based education system that included features of intelligent tutoring (Woolley, 2016). Despite modern technological limits, PLATO lay the groundwork for eventual AI applications in education. PLATO was envisioned as a platform for computer-assisted education that would provide students with interactive learning experiences (Collins, Brown, & Newman, 1987). Touch-sensitive plasma display screens were included in the system, allowing pupils to interact with instructional information in a dynamic and interactive manner (Tinker, 1967). PLATO's importance stems not just from its technological advancements, but also from its early realisation of the potential of computers to improve the learning process. PLATO's legacy goes beyond its immediate effect, influencing the development of following intelligent tutoring systems and impacting the debate on AI integration in education (Shaffer, Doube, & Tuovinen, 2003). The system's emphasis on individualised training and interactive learning experiences anticipated the fundamental ideas that underpin present AI-driven educational systems (Anderson & Dron, 2012). With the advent of artificial intelligence (AI), a system in which machines are meant to imitate humans, the use of technology in education has evolved significantly. But as previously stated, the use of AI in education cannot be overstated. AI applications in education include Yuki and Sophia, the humanoid robots (Retto, 2017).

AI technology is currently undergoing a transformational journey within educational institutions, drastically simplifying instructors' responsibilities and increasing their efficiency (Lynch, 2018; Wogu, et al., 2019). Education has gradually developed through time, shifting from blackboards to whiteboards and now adopting projection displays, multi-media and computer applications/projections as a common tool in educational institutions. Furthermore, AI applications in education have garnered substantial and broad attention, particularly during the Coronavirus

(COVID-19) epidemic (Mijwil, Alsaadi, & Aggarwal, 2021). These applications (apps) pushed governments to apply them in their educational institutions, therefore expediting the diffusion of scientific information while conserving time, resources, and dollars, ultimately winning the approval and satisfaction of several education experts. To summarise, artificial intelligence may find application in a variety of educational institutions (Sun, Anbarasan, & Kumar, 2020; Ghotbi, Ho, & Mantello, 2021), assuming a deep understanding of the value these applications provide to educators and students alike.

Artificial intelligence has various educational benefits (Gao, Li, & Liu, 2021; Schiff, 2020), including personalised learning for instructors and educators based on their unique needs. This service saves time and effort by removing a huge number of papers by automatically correcting learners' responses. Frequent assessment of students, undertaken immediately or on a regular basis by the teacher, to determine the amount of skill learning. Offering the benefit of remote education (Pregowska, Masztalerz, Garlińska, & Osial, 2021), also known as virtual learning (Greenan, 2021), through platforms that enable the creation of digital classrooms, with Google Classroom being the most renowned among them. The ability to create and modify teaching resources to meet educational demands. It allows teachers and students to communicate more effectively when using educational apps. It also allows kids to learn more and discover new things in education by interacting with teachers from all around the world. To identify and solve students' inadequacies, assign assignments depending on their study ability. Achieve excellent classroom management while balancing e-learning and conventional education without severely harming either. Separating AI applications by protecting user data, avoiding leaks, and warning users of any account vulnerabilities as soon as possible (Zulfa, Sihabuddin, & Widhiyanti, 2022), all while offering rapid problem-solving with appropriate assistance. Furthermore, artificial intelligence applications stand out by providing advantages to students with special needs (Köse & Güner-Yildiz, 2020).

To understand how this AI mania is developing within a distinct cultural and pedagogical framework, it is necessary to zoom in on Pakistan's educational environment on AI in education for the sake of this research.

2.3. AI in Pakistan's Educational Landscape

The rich cultural and educational tradition of Pakistan has a significant influence on the adaptation and implementation of AI in different fields of education. Pakistan's educational environment differs significantly from Western ways due to a high emphasis on traditional pedagogical methods such as face-to-face instruction and dependence on textbooks (Iqbal, Ashiq, Shafiq Ur Rehman, Rashid, & Tayyab, 2022). These cultural and historical subtleties impact conceptions of artificial intelligence and its application in educational settings.

In Pakistan, education is inextricably linked to interpersonal interactions between instructors and pupils. Respect and trust are essential components of the teaching process. This cultural focus on the human side of teaching and learning creates possibilities as well as problems for AI integration (Mahmood, Sarwat, & Gordon, 2022). To acquire acceptability and efficacy inside the Pakistani educational context, AI technologies must overcome these cultural complexities. Furthermore, the conventional hierarchical structure common in Pakistani educational institutions impacts decision-making processes and technological innovation acceptability (Khan & Jabeen, 2019). Understanding how these hierarchies interact with AI deployment is critical for effective adoption.

Pakistan must find a balance between protecting its cultural and educational legacy and embracing the revolutionary potential of AI in education as it continues to grow in response to globalization and technology improvements. Bridging this gap necessitates a sophisticated strategy that honours cultural traditions while capitalising on the benefits of AI-driven educational breakthroughs. A significant focus has been placed on Pakistan's educational system in studying the rising enthusiasm for Artificial Intelligence (AI) within diverse cultural and pedagogical contexts. This section dives into prior literature to give context and understanding for the current research.

“Education is a fundamental human right and every child is entitled to it”, (Qadeer, et al., 2023). These are the words of the latest statistical report (Educational Statistical Report 2020-2022) presented by the Government of Pakistan on the situation of Education in Pakistan. But this phrase has an ironic tone to it since they contrast with the current situation of the higher education system. Pakistan's higher education system has a long and varied history and accomplishments,

but it still faces significant problems in the 21st century. Pakistan's Educational Law sits on the basis of Article 37-B of the country's 1973 Constitution (The Constitution of Islamic Republic of Pakistan, 2012), which states that the government is responsible for eradicating illiteracy. This law has not been updated since 2012 and unfortunately, education has not been prioritised to receive proper attention that it deserves in our national priorities. Despite the constitutional mandate, Pakistan's education system has experienced major obstacles, especially in terms of prioritisation and resource distribution (Ahmad, Rehman, Ali, Khan, & Khan, 2014). The use of technology in education, especially the incorporation of Artificial Intelligence (AI), has become a global priority due to the vast growing technological world. But despite these barriers, the Pakistani Government and Higher Education Commission (Higher Education Commission, 2020) of Pakistan recognised the need of updating educational techniques and preparing students for the digital age through 'The National Education Policy 2020', (Government of Pakistan, Pakistan Vision 2025 Secretariat, 2020). This strategy lays the groundwork for AI integration by connecting Pakistan's educational objectives with global frameworks like UNESCO's Education framework 2030, (UNESCO, 2022).

All the information above shows that Pakistan has taken steps into incorporating new technological innovations at a start, *but what about AI-specific initiatives?* Higher educational institutes are taking steps into improving and incorporating AI in their courses and syllabus. Initiatives such as the Prime Minister's Digital Pakistan Vision (Government of Pakistan, 2020) have emphasised the role of technology in education, with the goal of closing the digital gap and modernising the learning experience. Despite these efforts, the policy falls short in a number of areas, necessitating strategic planning in order to fully use its possibilities, (Shuja, Ali, Khan S., Burki, & Bilal, 2022). Given the limitations noted about the integration of information and communication technology (ICT), particularly AI-driven technologies, into the education system of Pakistani public institutions, a strategic approach is critical, (SHAIKH & KHOJA, 2011).

In 2018, the Ministry of Information Technology and Telecommunication released the National Artificial Intelligence Policy, which outlined Pakistan's AI vision (Government of Pakistan, 2020). This strategy establishes a framework for AI integration in a variety of industries, including education. However, its efficacy is dependent on overcoming the obstacles which begin with e-learning adoption in Pakistan (Kanwal & Rehman, 2017). Overcoming these obstacles is

critical for the effective use of AI-powered educational systems and its incorporation in Pakistani education system. Despite these hurdles, Pakistan has achieved impressive progress through a combination of governmental and private efforts (Government of Pakistan & MOITT, 2022), including:

- The Presidential Initiative for Artificial Intelligence and Computing (Government of Pakistan, 2022) was established in 2009.
- The CENTAIC (Pakistan Air Force, 2020)
- The Sino-Pak Artificial Intelligence Center (SPAIC), (PAF-IASST, 2021)

But still, there seems to be a lack of implementation with regards to AI-education. The majority of people believe that weak governance, a lack of institutional reform and training, and a lack of resources are the most significant impediments to sustainability at Pakistani public universities, and many researchers give justification for making recommendations to enhance sustainability, (Bukhari, Said, Gul, & Seraj, 2022). Quality assurance criteria are important in determining the quality of AI integration in higher education which is outlined by The University Grants Commission of Pakistan's (Zubair, Jabeen, Salman, Zahid, & Irfan, 2019) commitment in Vision 2025. Furthermore, knowing human development indicators such as the UNDP's Human Development Indices (Dawn News, 2018) is critical for implementing AI-driven educational programmes in Pakistan since these metrics represent the larger societal context.

Pakistan's higher education system (HEC, 2003), sits at the crossroads of tradition and technical progress. The difficulties and potential of AI integration are uncanny, and the government's policy frameworks (Government of Pakistan & MOITT, 2022) show a commitment to using AI to improve education. But looking at the policy, everything seems to only cover the basics of integrating AI into the educational system of Pakistan. Issues such as addressing infrastructural issues, faculty preparation, and developing a culture of technology adaptation, remain untapped factors for AI adaption in Pakistan. As a result of these unexplored factors, the future of universities is uncertain, with prospective developments such as the emergence of virtual universities, competency-based education, and growing engagement with industry raising concerns about universities' role and ability to adapt to changing needs.

2.4. Ethical Considerations and Administrative Challenges

In the context of Pakistan's higher education system, the incorporation of AI raises a number of ethical concerns and administrative issues that must be carefully considered. Ethics plays an important role because it ensures that AI legislation capture its potential while reducing its hazards, (Müller & Vincent, 2023). One of the most serious problems is the possibility of political influence and prejudice in educational policies and choices. Political issues and beliefs can influence educational policy, which in turn can influence the acceptance and execution of AI-driven projects (Ahmad, Rehman, Ali, Khan, & Khan, 2014).

There is significant evidence that educational decisions have frequently corresponded with the beliefs and ambitions of political leaders throughout history (Tribukait, 2020). The situation at Pakistani universities is no different. This influence can have a substantial impact on the prioritization and allocation of resources for educational programmes, particularly those incorporating artificial intelligence (Seo, Tang, Roll, Fels, & Yoon, 2021). As a result of political influence, biases and inequities may be introduced into the educational system, thus impeding the egalitarian deployment of AI technology (Holmes, Persson, Chounta, Wasson, & Dimitrova, 2022). Recognizing the pervasiveness of political influence in education, it is critical to maintain vigilance in policymaking to ensure the unbiased and successful use of AI in education.

A case study on institutions such as the Higher Education Commission (HEC) exemplifies the issue of political patronage and its ramifications for educational decision-making (Siraji & Junaid, 2021). This case study demonstrates how political patronage may infiltrate the workings and decision-making processes of higher education institutions, possibly influencing educational activities and financing policies. The study emphasises the need of preventing political involvement in educational institutions, emphasising that AI adoption should be driven by educational requirements rather than political goals. If that is the case, then AI-driven technology is bound to be politically driven throughout higher educational institutions in Pakistan.

A multifaceted approach to dealing with AI technology's social, ethical, and policy issues is required, including increasing public access to correct information in the form of fact sheets and ethical value statements on trusted webpages (e.g., government agencies), collaboration and

inclusion of ethics and AI experts in both research and public debate, and consistent government policies or regulatory frameworks for AI technology, (Ouchchy, Coin, & Dubljević, 2020).

Understanding the biasness and political intervention as an ethical breach by the students, faculty and the administration is still to be explored. While some studies touch on faculty and student perceptions of AI technology, further research could focus specifically on their perceptions and attitudes toward AI in education. Understanding these perspectives is crucial for aligning AI initiatives with the needs and expectations of key stakeholders.

The literature review examined at both theoretical and empirical perspectives to investigate the impact of artificial intelligence (AI) on Pakistan's higher education system. While previous studies on AI have mostly focused on worldwide trends, this study discovered a substantial vacuum in understanding the unique impact inside Pakistan's educational system. Notably, the introduction of ChatGPT technology in 2020 was a watershed moment in the social and practical consequences of learning and teaching.

2.5. Theoretical Framework

2.5.1. Digital Natives

Prensky's theory of digital natives (Prensky, 2001), introduced by Marc Prensky in 2001, contends that people who have grown up with digital technology from an early age have distinct features and learning preferences when compared to those who have not. Prensky (2001) defines digital natives as those who have immersed themselves in the digital environment and speak fluently about new technology and innovation. Prensky explained a few characteristics that go along with my thesis. These characteristics include:

- The exploration of digital natives group and digital immigrant group.
- Digital natives thrive on rapid satisfaction that they get from using new technology. This has been firmly entrenched as a result of their exposure to technology's fast-paced nature.
- The reliance on technology for communication and interaction.
- Their adeptness at multitasking and parallel processing is another noteworthy trait.
- Digital Natives prefer graphics over text.
- Instantaneity and impatience.

- Resistance to traditional teaching methods.
- Their comfort with digital tools influences their adaptability to new technologies and their overall digital literacy.

In my thesis, I explored the characteristics of these different groups to gain a deeper insight into their choices and behaviours in the higher education. These people thrive on instant gratification, a tendency that has been profoundly established as a result of their exposure to technology's rapidness in the past few years. Incorporating this understanding into my thesis, this gives a better understanding of the expectations of rapid outcomes and what affects their learning experiences and involvement in an academic context.

Digital Natives do best when linked to networks, relying on technology for communication and information access. In my thesis, I investigated the ramifications of this attribute, specifically how using networked techniques (i.e. social media) might improve collaborative learning settings in term of AI in the higher education. Their adeptness at multitasking and parallel processing is another noteworthy trait. In the context of my research, the description of Digital Natives' instantaneity and impatience is consistent with the prospective use of AI chatbots. These features underscore the Digital Natives' need for instant access to information and speedy communication, which is consistent with the capabilities of AI chatbots. Resistance to traditional teaching approaches, particularly those used by Digital Immigrant instructors, is also a key focus of my research.

2.5.2. Governance Theory

Elinor Ostrom's governance theory (Ostrom, 2011), often known as the "Ostrom's Institutional Analysis and Development (IAD) Framework," is based on her extensive study into shared asset governance and collaborative action. Her research questioned the established view that common-pool resources (such as forests, fisheries, or irrigation systems) are naturally susceptible to misuse and deterioration, rather arguing that, in specific circumstances, communities may successfully oversee these resources through self-governing institutions.

Ostrom's theory focuses on circumstances in which numerous people or organisations have common interests in a common-pool resource. The term "resource" might refer to educational

infrastructure, access to quality education, instructional materials, technology tools, or digital platforms in the context of AI application and integration in Pakistan's higher education system.

The importance of collaborative action among resource users for good governance. In the case of AI deployment, many user of AI-tech within the higher education system, such as educational institutions, government agencies, teachers, students, and technology suppliers, must collaborate and cooperate.

The need of building and executing adequate institutional frameworks to support collaborative action and resource stewardship. Establishing rules, norms, and procedures that control resource utilization, decision-making processes, and dispute resolution methods is part of this. Ostrom contended that governance should be organised at several levels, with decision-making authority spread across various layers of organisations. This decentralised strategy promotes adaptability, local knowledge, and the capacity to handle a wide range of needs and settings.

Ostrom developed an assortment of principles for design which can help self-governing entities succeed. These values comprise of limits, proportional rule-making power, effective monitoring, graded penalties for rule violators, dispute resolution methods, and respect of resource users' rights to self-organization. Using Ostrom's governance theory to guide the development of institutions and processes that effectively manage resources and address the collective action challenges associated with AI adoption in Pakistan's higher education system would entail investigating how these principles can guide the development of institutions and processes that effectively manage resources and address the collective action challenges associated with AI adoption.

The theory would provide a framework for analysing issues like establishing rules and norms for AI use in education, involving relevant stakeholders in decision-making, developing mechanisms to ensure transparency and accountability, and designing systems that allow for adaptive management and continuous learning in a third world country like Pakistan.

The study would investigate how partnerships between individuals and self-governing institutions may be utilised to guarantee the responsible and sustainable adoption of AI in

Pakistan's higher education system, encouraging quality, equity, and moral considerations in universities and policy making.

2.5.3. Enhanced TAM or E-TAM

The technologies Acceptance Model (TAM) is a theoretical framework that attempts to explain and predict how people accept and embrace new technologies. In 1989, Fred Davis introduced it (Davis, 1989), and since then, it has gained significant traction. The model (TAM) posits that users' behavioral objective to adopt a technology is influenced by two key factors: perceived utility (PU) and perceived ease of use (PEOU).

Over the years, the Technology Acceptance Model (TAM) has experienced various improvements and additions. One notable advancement is the addition of external variables to the model. External factors such as impression of external control, outcomes demonstrability, and system accessibility are included in the suggested model, known as Enhanced-TAM or E-TAM. These factors were included because they were relevant and often used in earlier research projects. Another advancement in the TAM model is the addition of (Abdullah & Ward, 2016) General Extended TAM for e-learning (GETAMEL). External elements in GETAMEL include experience, subjective norm, pleasure, computer anxiety, and self-efficacy.

The E-TAM model is made up of two main parts: the original TAM constructs of perceived usefulness and perceived ease of use, as well as external variables (Experience, Subjective norm, Enjoyment, Computer Anxiety, Self-efficacy, Perception of external control, Results demonstrability, and System Accessibility).

In this research, higher education as a concept is integrated to identify the use, adaptation and implementation of AI-driven technology in higher education institutions. Not only that, but the idea also concerns educational policies and their incorporation in the higher education system of Islamabad, Pakistan.

CHAPTER THREE

METHODOLOGY

Introduction

Notably, as written in the literature review, the gap focuses on the third-world country and its infrastructural landscape, the research methodology employed in this study was critical in gathering and interpreting data collected from respondents. Chapter three of this study focuses on the fundamental approaches employed to perform the research. Because this is a primary research, its value resides in its direct and firsthand exploration of the research subject, resulting in original data that meets the objectives of this study. Unlike secondary research, which analyses existing data, primary research collects new and unique information. I have collected the data from sixty-one respondents, present in four different universities. The study technique is mostly based on digital ethnography. The value of this technique stems from its capacity to give a comprehensive grasp of the study topic. This chapter presents the location, research participants, and a range of methodologies and tools used to improve reliability and validity, laying the groundwork for the next data analysis. Two pilot studies preceded the main research, acting as the first step in this thorough investigation.

3.1. Research Design

This research uses a qualitative approach to evaluate the role of AI-driven technologies in higher education system (specifically universities in Islamabad) in Pakistan, in order to create a comprehensive grasp of the issues pointed out throughout this research. This is accomplished through digital ethnography conducted with the help of case studies, in-depth interviews and focused group discussions with important stakeholders including administrators, faculty members, students, IT employees, and other relevant staff members involved in AI-technology decision-making or deployment. It employs both the virtual and the physical world data for a comprehensive collection using both analog and digital ethnographic methods.

Digital ethnography used in this research compliments the study of AI cultures and communities created online, and the alterations in student, teacher and admin's behavior when using AI. Digital ethnography allowed for data triangulation from sources, which improve the

overall validity and comprehensiveness of the study findings. The qualitative data provides interesting stories and insights. When using Digital Ethnography, the immersion of Digital spaces reflects AI cultures and communities online. This aligns with the immersive and contextual nature of digital ethnography.

3.2. Digital Ethnography

Digital ethnography (Coleman, 2010; Keith, 2017; Jeffrey & Eric, 2019; Pink, et al., 2016) is a research approach that applies classic ethnographic ideas to digital surroundings. This research aid digital ethnography to understand the implementation, adaptation and structures of AI-driven tools in the higher education system of Pakistan. It entails gathering rich, unstructured data from digitally influenced participants via observations, narratives and case studies. The study examined social interactions in both virtual and real-world situations. It also included an analysis of learning management systems and AI approaches. Communication with the respondents was undertaken through both online and offline channels. All of these factors contributed to a thorough analysis of the study objectives.

One of digital ethnography's primary aspect is its capacity to capture the holistic nature of digital practises both offline and online. Hence, for this research digital ethnography provides chances to comprehend higher education experiences and practises in the era of Artificial Intelligence (AI), giving nuanced and context-rich knowledge that supplements qualitative techniques.

3.3. Universe and Locale of the Study

This study is centered around Islamabad, Pakistan's Federal Capital, which is strategically placed between 33° - 28' and 33° - 48' north latitude and 72° - 48' and 73° - 22' east longitude (Google Maps, 2023). The choice of Islamabad is significant because it serves as the capital for policy planning and implementation procedures, notably in higher education, which is controlled by the Higher Education Commission (HEC, 2003). The main headquarter for HEC is located in Islamabad. This city has a strong presence of higher education institutions, which contribute to its reputation as an educational hub.

The selected universities in Islamabad play an important role in this study, covering both the public and private sectors and include departments of Humanities, Social Sciences, and Science. Notable institutions include University B (Semi-government), University F (Private Sector), and Universities A and I (Government). These universities serve as important focus points for the research, presenting distinct viewpoints on the impact of AI integration in various educational contexts.

3.4. Population Characteristics

This study's target group includes students, teachers, and administrators from University A, University B, University F and University I who are actively using AI-driven technologies in both digital and real-world situations. The population is segregated based on diverse positions within these academic institutions to guarantee thorough representation. A pilot research at each institution with selected key informants such as class reps, administrative faculty members, university community pages, Instagram and Facebook administrators, and teachers. These informants are critical in target population and locale familiarity, who are firmly immersed in the AI ecosystem inside the academic context.

3.5. Sampling Technique

A stratified sampling technique has been utilized to draw sample from the target population. Stratified sampling entails segmenting the population into subpopulations that may differ significantly. Initially, the locale of study was stratified into 4 universities. Their stratification was affiliated with Government, Semi-Government and Private sector universities. Furthermore, respondents were chosen from different disciplines to further stratify their opinions based on their educational background. A total of sixty-one participants were involved from which Forty-Six respondents were selected through stratified sampling and interviewed through an interview guide. The inclusion criteria seek to capture rich and diverse experiences that adds dimension to the study aims. Importantly, no age restrictions apply to the selection of responders. This strategy provides a diverse range of opinions from various age groups, allowing for a thorough examination of how AI adoption crosses generational barriers within the academic setting. Before conducting the in-depth interviews, a qualitative survey was distributed amongst Fifteen individuals from the selected locale to expand the scale of opinionated data. This categorization

allowed for a more concentrated analysis of the function of AI-technology in many disciplines of research. At first stage, the researcher prepared a list of universities that contributed to the notion of promoting AI. The second stage involved selecting the universities on the basis of their stratification (Government, semi-government and private) and technological advancements. Due to limited time and resources, only 4 universities were selected. Along with that, I conducted a pilot study in each university to identify key-informants and participants, as well as finding the limitations for this study. Using stratified sampling, the researcher has vast knowledge and data for a broader but a conclusive result. The use of stratified sampling technique ensures a systematic selection of participants from various strata as well as the inclusion of people who may be well-connected within the higher education community, (Wu & Thompson, 2020). This strategy allowed for a more in-depth investigation of the research issue and makes it easier to acquire varied opinions.

3.6. Sample Size

For stratified sampling, fixing a specific sample size in the beginning is typically not done since both the sampling process and the sampling size are dependent on the type and structure of the data. In qualitative research, the data gathering procedure is often ended when the researcher believes that the replies are comparable at a certain time. The saturation occurred after conducting sixty-one interviews. The decision to put an end to collecting data after sixty-one interviews was based on the idea of data saturation. After conducting sixty-one interviews, I determined that the results were sufficiently varied and representative, covering a wide spectrum of opinions on the integration of AI in higher education.

The emphasis was on the quality and depth of the data acquired rather than the number, ensuring that the study reached a saturation point at which more interviews were regarded unlikely to materially improve the results.

3.7. Methods of Data Collection

3.7.1. Rapport Building

Rapport building in anthropological study is the process of developing a favorable and trustworthy connection between the anthropologist and the persons or cultures being researched.

It is a vital component of fieldwork, allowing access to the cultural environment, developing insight, and gathering useful data.

I spent over three months doing ethnography by carefully building relationships with participants in order to facilitate open and meaningful interactions. As an Instructor at University F, I discovered that utilising my existing contacts with Class Representatives substantially aided the organisation of the study. Having trained them since 2022, a foundation of trust and rapport had already been established, which streamlined the study's coordinating process. To widen the scope of my investigation, I contacted each university's official Instagram accounts. This digital platform proven to be an efficient means of communication. Through contacts with the administrators of these accounts, I attempted to build a favorable rapport. These meetings were not only important in securing their support for the research, but also served as a formal introduction to the study's aims. The admins of the official Instagram accounts helped me connect with other participants. Their support served as a critical introduction, allowing me to interact with informants, who, in turn, created a calm and favorable environment for interviews. This procedure of introductions was critical in creating a setting in which participants felt comfortable discussing study subjects openly.

Throughout the study interviews, the emphasis was on keeping a participant-centric approach. The rapport created beforehand was critical in creating an environment in which informants felt free to disclose their viewpoints, experiences, and ideas. This participant-focused technique not only improved the quality of the data obtained, but also guaranteed a collaborative and mutually beneficial research environment.

3.7.2. Consent and Confidentiality

Before completing formal interviews, each respondent provided express consent following a full description of the research aims. It was emphasised that the collected data will be used solely for research reasons. Given the sensitivity of the material revealed during the interviews, pseudonyms were used solely for instructors and administrators. It means that fictional names were employed instead of their true identities to protect their privacy and confidentiality. Teachers and administrators showed a significant wish to keep their identities private. Respecting this desire not only upheld ethical norms, but also promoted open and honest communication during interviews.

3.7.3. Key Informants

Throughout my study at four different universities, I carefully selected important informants who helped with participant engagement and recruitment. My previous connection as a teacher at University F made it simple for me to interact with the six class representatives, who were essential intermediaries for gaining access to possible interview subjects. I contacted the Instagram group administrator at University B, where I was a student, and she was crucial in helping me get in touch with the right people. Similarly, University I found that working with a visiting faculty member helped guide participation. Lastly, I replicated University B's strategy at University A by using contacts within the admin group on Instagram to find and interact with participants. Among the sixty-one responses were these important informants as well. A total of 9 key informants helped in gathering participants and were part of the in-depth interviews.

3.7.4. Participant Observation and Events Attended

Participant observation is a research approach often employed in anthropology and other social sciences that involves researchers immersing themselves in the everyday lives and activities of the people or groups being studied. In participant observation, the researcher immerses themselves in the social context under investigation, participating in the community's or culture's activities, interactions, and experiences.

As a University lecturer and MS scholar, I approached participant observation from two perspectives, leveraging both my academic and research backgrounds. My position as a teacher provided a smooth absorption into the community under investigation, allowing me to explore and interact with participants through existing ties. Building on the rapport established in my teaching position, I easily blended into the participants' everyday activities, obtaining significant insights and experiences. My status as an MS scholar added methodological rigour to the participant observation process, ensuring that acute observations were made while maintaining a nuanced awareness of the study aims. This dual viewpoint enabled me to watch people in both official and informal contexts, promoting trust and transparency. The insights gained from these observations, along with my academic experience, not only enhanced the data gathering process but also aided a smooth transition to the interview phase. The trust built via participant observation provided a

firm foundation, allowing me to conduct interviews with ease and guaranteeing a thorough grasp of the complexities of the community under examination.

Furthermore, active participation in a seminar on the integration of AI tools, given at University B on December 15, 2023, contributed to a better knowledge of AI deployment inside that institution. Participation in webinars, Discord chatrooms (#chatGPT, #wholesome, @clyde), and virtual study sessions were an important aspect of the research. These virtual encounters gave a detailed overview of the case study and the use of AI by students, professors, and administrators from diverse educational institutions. A comprehensive grasp of the issue was obtained by analysing institutional viewpoints, discourses, and the official attitude on AI technology integration via document analysis. This comprehensive study not only allowed for a more in-depth exploration of AI procedures, but it also improved the research's general rigour and dependability.

3.7.5. Interview Guide

Three carefully constructed interview guidelines were created for this study, one for each of the three target populations: administrators, teachers, and students. These semi-structured guides facilitated in-depth conversations on the various viewpoints, experiences, convictions, and ideals surrounding AI in higher education by facilitating open-ended questions. The guides' qualitative methodology made it possible to examine varying perspectives and the cultural relevance of AI technology in the context of academia. With sixty-one participants, the study achieved saturation through the use of stratified sampling, guaranteeing a thorough representation of the various roles and viewpoints within the university community.

3.7.6. In-depth Interviews

Interviewing key informants, teachers, administrators, IT personal and students one-on-one was the main focus for conducting in-depth interviews. The interview guide that I made for this study comprised of semi-structured questions, allowing for open-ended inquiries and in-depth discussions on the perspectives, experiences, beliefs, and ideals about AI in higher education. A total of three interview guides were made. Each consisted open-ended questions for each category of respondents (students, teachers and administration) in this study. This qualitative data gathering approach enabled the investigation of subjective perspectives and the cultural meaning of AI-

technology. Since the sampling technique used for this study was stratified sampling, the saturation point was concluded at sixty-one participants.

Each interview session was audio-recorded with the participants' consent to ensure adequate recording of their replies and data integrity. Field notes were also obtained during and after the interviews to record nonverbal clues, contextual observations, and interview-related remarks. The interviews were performed in person, based on the participants' preferences and logistical constraints. The acquired interview data underwent extensive qualitative analysis utilising standard theme analysis approaches.

3.7.7. Focus Group Discussion

Conducting four Focus Group Discussions (FGDs) was critical to this study because it allowed participants from various educational institutions to engage in group talks, encouraging the interchange of viewpoints and the creation of common ideas. Each FGD consisted of 6-5 participants. FGDs provided a unique chance to explore the communal aspects of participants' experiences and perspectives. The FGDs served the objective of encouraging debate and creating a collective knowledge of the group's AI-related experiences, views, and worries. These FGDs further helped in navigating respondents for the in-depth interviews. These FGDs are part of the sixty-one respondents that further were part of the in-depth interviews.

3.7.8. Case Study

The goal of a case study is to get a thorough grasp of the unique subject being investigated. This enables researchers to investigate complicated events, behaviors, or phenomena in their natural surroundings, which is especially useful when seeking insights beyond surface-level observations. The inclusion of two case studies is significant in my work because it allowed for a more nuanced analysis of the impact of AI integration in higher education in a specific, real-world situation. Case study is an important instrument for gaining a comprehensive and complete understanding of the dynamics and ramifications of AI in the higher education institutions you have chosen for your research. This study included two case study; one on a student who was observed using AI-driven tools and the other for an instructor over the span of three months. The case studies provided great depth and granularity to the study. By studying experiences and

viewpoints, the study got a thorough knowledge of the multidimensional impact of AI integration in higher education.

3.7.9. Document Examination and Archival Data

This study relied heavily on a thorough examination of relevant documents related to AI technology in higher education. This included reviewing essential papers such as the Pakistani government's AI policy, which was presented in 2022, as well as the administrative regulations of each physical educational institution. The policies that were employed by each institution and their cultural/religious effects on these policies were a crucial component of the study.

3.7.10. Ethical Consideration

During the research, all main ethical norms were observed. Respondents were asked to provide informed consent. Respondents' participation was entirely optional, and they were free to leave at any time. The data's privacy and confidentiality were protected. The responders' and their organisations' identities are protected. In this case, pseudonyms were used. The responders' dignity was not jeopardised in any way.

3.7.11. Issue of Reflexivity: Researcher's Status and Self Identification

In this section, I have briefly introduced myself and my status of being an English Instructor at University F and an MS student at University B. I attempted to describe how I developed a feeling of my varied social status and experiences, which contributed significantly to the design and presentation of the current research study on the role of AI in higher education system of Pakistan. As a female in the field and less experience in the education sector as a teacher, I had to face difficulties meeting and interviewing experienced colleagues, teachers, peers and administration in related field of computer sciences and artificial intelligence.

I have provided various narratives formed during and before the interviews. These narratives reflect my social standing and how the society perceives a female in the field of science. Exploring the realm of Artificial Intelligence in the field of education as a woman has been an exciting but challenging experience. Engaging in the complexity of learning more about the function of AI on a daily basis required a constant combination of curiosity and perseverance. While navigating the halls of academia, I found myself following in the footsteps of my

predecessors, despite the fact that the setting has not consistently supported inclusion for women. The prevalent cultural structure, which is particularly male-dominated in Pakistan, has posed hurdles for women pursuing professions in scientific disciplines. Despite these challenges, my passion to contributing to and advancing in my chosen profession remains unwavering. This decision reflects a larger desire for gender equality throughout the scientific community, particularly in areas where cultural norms may impede women's professional ambitions in research. The inclusivity can be seen through HEC's (HEC, 2021), annual report of men and women in the STEM fields. This reflects a male predominance in the STEM sector, which may result in disparagement or derision for women who enter the subject.

When men were encountered during interviews, they exhibited a range of sentiments. Some showed real enthusiasm for the topic, seeing the relevance of understanding AI infrastructure in institutions. However, a slight undercurrent of skepticism existed, owing to established gender norms that put a woman's skill in a technically focused sector into doubt. In certain cases, I saw a deliberate attempt to legitimise or undermine my role, which reflects deeply established ideas about gender roles in research. Interactions with women, on the other hand, frequently reflect a shared interest in the possible influence of AI on education. There is a palpable enthusiasm to debate how technology, especially artificial intelligence, may improve learning settings. However, these discussions are occasionally coloured with an awareness of cultural expectations, with some women expressing surprise or wonder at the fact that a female researcher is doing this study, which is a rare event in their experience. Instances of slight bias appeared, being addressed to administrative personnel rather than being thought to be the researcher. There were times when respondents were taken aback because they anticipated a male researcher. These incidents, however, were opportunities to understand prejudices held in the society and highlight the value of varied viewpoints in the research environment.

Throughout my anthropological investigation, I maintained an unbiased and consistent approach, crossing cultural expectations and preconceptions to gain actual insights regarding the dynamics of AI in Pakistan's higher education system. While revealing the complexities of AI integration, the study also serves as a microcosm for wider discussions about gender roles and expectations in the realms of technology and research. Despite these challenges, my passion to contributing to and advancing in my chosen profession remains unwavering. This decision reflects

a larger desire for gender equality throughout the scientific community, particularly in areas where cultural norms may impede women's professional ambitions in research.

CHAPTER FOUR

ADAPTATION AND IMPLEMENTATION OF AI IN HIGHER EDUCATION

Introduction

Pakistan's educational practises have improved drastically since the past 10 years as mentioned in the literature review (Government of Pakistan, 2022; MIIT, 2022). Even though the utilization of AI into education is still new, it is gaining popularity throughout. Automation on the other hand has been an integral part of the education system. Throughout my fieldwork, it was evident that students were utilising AI-tools to help them with their coursework or research based projects. The data collected through digital ethnography and interviewing sixty-one respondents resulted in the formation of the themes described in chapter four. Each theme contributes to forming an anthropological landscape of the role of AI in the higher education of Pakistan. This approach enabled in-depth research, providing for nuanced insight into participants' experiences and opinions.

Chapter four begins with the discussion of the emergence of the adaptive nature of students towards AI, considering the characteristics of the digital divide. This section presents the findings which portray the emerging themes for adaptation and implementation of AI in the higher education system of Pakistan. I have attempted to identify and investigate the role of AI in different courses of the selected universities as much as possible. By first conducting a pilot study, I had the enclosure for the direction of this research, along with identifying the target sample that would best suit my research. The pilot study presented a theme that showed the adaptation and adaptive evolution of AI through social media platforms, university students, and university infrastructure. I sought to summarise the micro-level of integration, implementation, and infrastructure knowledge of artificial intelligence based on students, teachers and administrators' lived experiences.

4.1. Socio-Demographics of Respondents

The socio-demographic profile of respondents is critical for comprehending and interpreting study findings. For the current research study on the function of AI in the Higher

Education System, several socio-demographic variables were investigated. The socio-demographic profile of 61 respondents (Students, Teachers, and Administrators) includes several socio-demographics (background), mainly focusing on age and gender.

Table 1: Gender Demographics

University	Total No. of Participants	Percentage of Male Participants	Percentage of Female Participants
University A	11	72%	28%
University B	15	73%	27%
University F	22	63%	37%
University I	13	23%	77%

Source: Fieldwork Notes

Table 1 depicts the percentage of male and female participants from each university. I have identified and illustrated various responses received via online google forms for the initial study of the research. The demographics received through those initial responses complimented the demographics received during in-depth interviews. A male majority was seen throughout the interviews conducted. University A presented a total of 72% of male participants. University B, F and I presented 73%, 63% and 23% of male participant. The reason for University I to show less male participants was because I, as a female was only allowed to interview female section of the university. Females, on the other hand were in fewer numbers. University A, B, F and I had 28%, 27%, 37% and 77% of female participants. My observation through the interviews made me realise that whenever the subject of AI was mentioned to female participants, they seemed to be intimidated by the subject. Men on the other hand were keen on participating and talking about AI and its role in the education system because they seemed to have confidence in answering questions related to it. According to the aforementioned status of women in the technological field in the literature review, it was prominent that men tend to be more active in the technological areas as compared to women.

Table 2: Age Demographic

AGE IN YEARS	PERCENTAGE OF RESPONDENTS
20-25 years	67%
26-31 years	15%
32-36 years	11%
37-41 years	5%
42-46 years	2%

Source: Fieldwork demographics

Table 2 illustrates the percentage of respondents with respect to their age. In the research, one of the qualifying characteristics is the respondent's age, which is used to comprehend and assess the general orientation and construction of reality shared by respondents. It also aids in the analysis of their ideas, perceptions, experiences, and behaviours about the use of artificially intelligent instruments for academic purposes. The idea of age, categorization of age groups, and generations are defining variables in the current study to understand the nature and structure of the link existing between the AI and its pursuit via age. These demographics work the digital native theory in action. The minimum age limit of my respondent was 20-25 years, while one of my senior-most responders' maximum age limit was noted as 35 years in the google survey form. However, the maximum age during the in-depth interviews was recorded at 45 years (2%). The majority of the respondents (67%) fall under the age bracket of 20-25 years. It is quite interesting that the current study has captured diverse responses from various age groups as well as various occupational status. Neil Howe and William Strauss' *"Generations: The History of America's Future, 1584 to 2069"* (Strauss & Howe, 1992) and *"The Fourth Turning,"* (Howe & Strauss, 1998) established in the subject of Sociology of generation in 1991 has been characterised as a complete theory on the nature, structure, and articulation of the idea of generation as a sociological phenomenon.

Table 3: Age Range by Generation

Sr. No.	Generations	Birth Year	Ages
1.	Generation Alpha	2013 and Beyond	0 – 12
2.	Generation Z	1997 – 2012	13 - 26
3.	Millennials	1981 – 1996	27 – 42
4.	Generation X	1965 – 1980	43 – 58
5.	Boomers II	1955 – 1964	59 – 68
6.	Boomers I	1946 – 1954	69 – 77
7.	Post-War	1928 – 1945	78 – 95
8.	WWII	1922 – 1927	96 – 101

Source: U.S. Census Bureau and Pew Research Centre

Generations are groups of people that were born at around the same time. We may learn about them by looking at when they were born, their age ranges, and the time period in which they lived. Cultural generation is a novel concept in the study of these social groups. Generation Alpha, Generation Z, Millennials, Generation X, Boomers II, Boomers I, Postwar, and WWII are the eight generations shown in the table above. Each group has its own features based on comparable life experiences, such as lifestyle, tastes, beliefs, values, use of technology, flexibility, media habits, and job expectations. I investigated the significance of the term "digital natives" by reviewing the contents of interviews and surveys conducted during fieldwork. Clearly, the demographics of the respondents indicate to Generation Z and Millennials leading the way in the effective integration of AI-tools. As illustrated by the respondents' proven ability and familiarity using AI-tools, the Digital Native Theory is extremely relevant in the context of Generation Z and Millennials. These

generations, having grown up in an era of widespread digital technology, have an inherent comfort and ease in navigating and exploiting modern technical tools, which aligns with the core aspects of the Digital Native Theory.

4.2. Types of AI Tools Used

It is difficult to present an accurate number of types of AI in Pakistan because the area of artificial intelligence is vast and ever-changing. Since the research only focuses on four universities, the data that was collected does not represent Pakistan's state holistically. However, a set evolved during the fieldwork for the types of AI utilised and the tools that accompanied students, instructors, and administrators, which contribute considerably to the higher education sector and play an important role in giving information and help to learners/educators. Participant observation revealed that these tools made it simple to overcome all of the problems they experienced, forming a new impact direction for education and changing the rules of play and roles in the educational process. I will be going through the three types of AI that emerged during the fieldwork.

Table 4: AI-Tools Used

Types of AI	Tools	Used By
Generative AI	ChatGPT & Bard	Students and Teachers
Smart Chat-Bots	@Clyde is the smart chat-bot for Discord	Students
Assessment and Evaluation AI system	AI-Systems (No specific name)	Administration and Teachers

Source: Field Notes

The use of AI tools was seen to be limited as a result of AI's recent realisation that AI can help assist in education. ChatGPT arose as a key tool, owing to the late realisation of AI's existence in educational support. ChatGPT, a generative AI tool, ranked highest in terms of utilization during my fieldwork. The literature review highlights that following the tool's surge in popularity, both students and teachers, along with the administration, expressed a keen interest in incorporating it

as a valuable resource. Students utilised this generative AI tool to help with a variety of academic activities and information collection.

“I’ve utilised ChatGPT to create compelling material and generate lesson plan ideas.”

(Marry: August, 2023)

“Yeah, we have a tool called ChatGPT. I’m sure you’ve heard of it, as it was debuted in 2020. It greatly facilitates research and writing. Makes things a bit easier.”

(Adam: August, 2023)

“I’m sure everyone has heard about ChatGPT. But I’ve been using this other tool that google mimicked. It’s called Bard and its similar to ChatGPT”

(Eric: August, 2023)

“Have you used Discord’s Smart Chatbot? It’s like talking to a human because it answers all the questions very naturally.”

(Haideez: August, 2023)

The generative AI type was seen to be used more than other types. It seemed that students were fond of utilizing easy AI tools that assisted them in their educational endeavors. Students rely on generative AI technologies for research aid, idea development, and academic writing support. Participant observation and in-depth interviews revealed a thorough grasp of the major function of ChatGPT (generative-AI tool) in the everyday academic endeavours of both students and faculty members. I observed that students depended heavily on ChatGPT for a variety of activities, demonstrating its flexible value in the educational landscape. Notably, the generative AI tool became a critical resource for research help, aiding in the discovery of academic issues. Students were seen using ChatGPT to produce ideas, seek information, and deepen their grasp of many subjects, highlighting its value as a complete research tool. The phrase *“Makes things a bit easier”*, demonstrated the fact that students rely on things that give rapid results rather than doing things themselves. It was observed that the statement given by students were mostly aged 20-25 years. It

is a perfect illustration of how people in this age cohort perceive and embrace technology. This discovery is consistent with the notion of being a digital native, which is a phrase widely used to characterise people who grew up in the digital age, surrounded by numerous technology advances. The digital native notion is especially relevant in this case, as it shows how easily these pupils adapt to and embrace digital technologies such as ChatGPT. The digital native attitude emphasised a preference for technologies that produce rapid and effective outcomes.

Figure 2: Generative-AI Based Student-Course Feedback Analysis Email

Generative-AI based student-course feedback analysis

Mon, 14 Aug at 4:27 PM

Dear Faculty members

I hope this message finds you well. We are excited to announce a significant enhancement to our student-course feedback analysis process at the School of Computing.

In the next few moments, an email will land in your inbox from the official academics NU email account of the School of Computing. This email is specifically related to the groundbreaking automated student-course feedback analysis and its subsequent dissemination.

We have streamlined this process to ensure that you receive valuable insights even when there may not be explicit comments provided by students. If you have been involved in teaching during the Spring semester of 2023 and have received feedback from at least six students, the script-based system will generate an analysis tailored to your courses. This analysis is designed to provide you with meaningful feedback that can help enhance the teaching and learning experience.

We are committed to continuously improving our educational offerings, and this automated analysis is a pivotal step towards achieving that goal. Your dedication to our students' growth and your commitment to excellence in teaching make this initiative truly impactful.

Thank you for your continued support and dedication to academic excellence.

Source: Gmail.com

Moving beyond the student perspective, the participant observation included faculty members who were seen using the Assessment and Evaluation AI system for various objectives. Faculty collaboration with the AI system was primarily aimed at expediting assessment procedures and improving educational results. Observations revealed that teachers used the Assessment and Evaluation AI system as a strong tool for effectively generating and marking examinations, getting insights into student performance trends. The participatory nature of the observation allowed for a more nuanced view of how the assessment and evaluation AI system effortlessly blended into the academic landscape, serving not just as a tool for student evaluations but also as a significant asset for instructors seeking pedagogical innovation. As I have mentioned before in the reflexivity section

that my status as an instructor at University provided me with in-depth knowledge of the University's infrastructure and administration's integration of Assessment based AI systems. As observed, University F demonstrated a proactive approach to AI by not only establishing a student-course feedback mechanism but also implementing seminars and courses that promote the use of AI-tools in the education system. This innovation not only illustrates the institution's dedication to leverage innovative technology, but it also highlights the potential for AI to improve administrative operations and individualised student evaluation. Faculty members were informed via email about an innovative approach for integrating student feedback, endorsed by Dr. K, the Head of the institution. The email reflected Dr. ASM's vision for embracing this new method. However, it was observed during my time as an instructor that the teachers were not used to the system yet. Even though it is a generative-AI but it is used as an assessment and evaluation based AI based system. Special training for the faculty and administration was needed for the incorporation of this system, as teachers expressed the need to learn the *"futuristic ways"* of teaching.

"I believe that every teacher needs to adapt to the futuristic ways. If the students are taking help from AI, why not teach them and even us properly to use the tools"

(Instructor E: September, 2023)

The expression "adapt to the futuristic ways" suggests a proactive approach, emphasising the significance of keeping up with technology changes. The instructor's sentiment, "If the students are taking help from AI, why not teach them and even us properly to use the tools," encapsulates the idea that educators are not pessimistic about AI integration; rather, they see it as an opportunity to improve their teaching methods and effectively guide students in the use of these advanced tools. The observed involvement demonstrated a proactive approach by educators, students, and administration in leveraging AI capabilities to expedite operations and improve educational results. Even though, most of the respondents were aware about only one tool, it seems like a start to a new era of education in Pakistan.

4.3. Awareness About AI in Universities

Adapting to and accepting developments in technology inside educational institutions is a complicated process that includes not just the incorporation of new tools but also the academic

community's understanding and use of these resources. The degree of awareness and information that students and instructors have about accessible resources is inextricably tied to the successful adoption of technology in an educational context. Understanding the features, advantages, and prospective uses of developing technology is part of this awareness. The interaction between adaptability and awareness becomes a critical part of maintaining a technologically enriched learning environment in this scenario. Each university had a different approach towards the adaptation process.

Additionally, University F actively engaged in enhancing students' awareness of AI tool utilization. Seminars were organized within the university to educate students on the proper use of AI tools, aligning with the institution's commitment to technological proficiency. A recent seminar by the university, focused on the Presidential Initiative for Artificial Intelligence and Computing (PIAIC), which aims to revolutionise education, research, and industry by implementing cutting-edge technology. Keynote speakers of PIAIC.org and CEO of Panacloud (Pvt.) Ltd., Executive Director of Ovex Technologies (Pvt) Ltd., Islamabad were present in the seminar. The seminar emphasised the need of adjusting to technological developments, emphasising the need for higher education system knowledge. Mr Z, one of the notable speaker from the seminar stated that

"Embracing the transformative potential of AI in education requires a harmonious balance between adaptability and awareness."

(Mr Z: September, 2023)

Although there were rumours about an AI system at University A, the students appeared to be unaware of it. This discrepancy between rumour and real awareness highlights the importance of open communication and information transmission inside the university. With the introduction of AI text generating technology, Islamic universities are at a crossroads of difficulties and potential. Students faced the task of acquiring AI literacy, which included applicability, authenticity, accountability, and agency. This literacy seems to be critical for their performance in an increasingly AI-influenced workplace. In the context of University B, a fascinating observation surfaced about students' lack of knowledge of the existing AI centre present in their university, despite the vast resources provided. The university's AI centre offers a possible location for

students to connect with and comprehend cutting-edge technology. However, due to a significant lack of knowledge, this excellent resource appears to be underutilised. Several pupils expressed ignorance regarding the AI-centre's existence and services. This raises concerns regarding the efficacy of university communication channels and the extent to which students are informed about available resources.

"I heard something about an AI centre here, but I have no idea where it is or what it does. They should probably publicise it more effectively."

(Eric (LLB): October, 2023)

"Wait, we have an AI centre? I had absolutely no notion. I've been struggling with my programming assignments; if only I'd known, this may have been a game changer."

(Akhi (BS-CS): October, 2023)

University B students blame the lack of knowledge of the AI centre mostly on communication problems within the university's administrative systems. Many people are frustrated and perplexed since knowledge on such vital resources is not widely distributed through official means.

"Honestly, I had no idea we had an AI centre until recently. The university just does not provide adequate information. They should make an attempt to inform us of these developments."

(Fin (LLB): October, 2023)

"It's not that they hide it from us, but the information doesn't reach us effectively. Perhaps they require improved communication tactics, such as more announcements or emails."

(Zoe (BS-CS): October, 2023)

"We can't blame ourselves for not knowing if they don't tell us. It's clearly a communication problem on their end. They should make certain that all students are aware of such vital resources."

(Zubi (BS-CS): October, 2023)

The stated problem of insufficient knowledge of the AI centre at University B highlights a larger difficulty in the adaptation of AI in higher education i.e. ineffective communication methods inside educational institutions. The students' conclusion that the university's communication channels are inadequate indicates a substantial barrier to properly incorporating AI into the educational landscape. Students must be well-informed about available resources and encouraged to explore novel technology in order for AI tools to be effectively implemented. AI's potential advantages are limited not just by a lack of understanding, but also by students' capacity to adapt to these transformational technologies. This topic emphasises the need of clear and transparent communication tactics in supporting the smooth integration of AI into educational settings. On the other hand, it was expected of teachers to promote new technology in an educational environment but rather than embracing the potential benefits of AI help, teachers at University B opted for a more restricted approach, forbidding students from utilising ChatGPT for assignments. This approach not only prevented students from experimenting with new tools, but it also damaged the student-teacher relationship.

4.3.1. Perceived Familiarity vs. Actual Awareness for Adaptation

During the in-depth interviews, it was hard to navigate through a list of students suitable for answering questions about AI. Most of them at the initial stage seemed to be intimidated by the topic itself but after careful consideration and constant persuasion, they seemed to be at ease in answering questions regarding the role of AI in higher education. It seemed as if they had found a new sense of confidence. This confidence was mostly seen when I used the name of the AI, 'ChatGPT'. This confidence in knowing about AI led me to find a similar pattern amongst students about the perceived familiarity with AI and the actual awareness about it. The theme uncovers at students' initial display of confidence in their knowledge of AI in higher education. It examines situations in which students express their familiarity with AI, with the goal of determining the extent and accuracy of this apparent knowledge. The study analyses this subject at government, semi-government, and private institutions, taking into account possible differences in resources and knowledge bases.

This theme emerged after a detailed investigation at four representative universities: University I (Government), University F & University B (Semi-Government), and University A

(Private). The variety of the types of institution added a dynamic element to the study, revealing differences in resource availability and knowledge distribution across students. This diversity has a significant impact on the landscape of perceived familiarity. As the researchers conducted informal talks with students, it became clear that professions of confidence in comprehending AI were common. However, delving deep into this confidence revealed that these expressions did not always correspond to the students true awareness. This discrepancy was most apparent when students addressed specific AI technologies. Despite their confident affirmations, several students revealed knowledge gaps, indicating a possible discrepancy between perceived familiarity and the depth of real understanding.

During the in-depth interviews conducted in the chosen institutes, students presented narratives that likely revealed their true standing when it comes to adapting AI tools in their education. When asked *“How familiar are you with the concept of artificial intelligence?”*, some of the narratives presented a pattern that aligned with the E-TAM Model, mentioned in the theory section.

“I suppose I'm quite familiar with artificial intelligence. It's useful for a few projects. We have been religiously using ChatGPT since we got to know about it. Like a lot of other people, I felt a sense of relief when I started using it. I got to learn a lot about AI through ChatGPT.”

(Fin - LLB from University B: October, 2023)

“AI is fascinating; we're still learning about it. We have also used ChatGPT. ChatGPT was given a moniker by some of my class fellows, who called it ‘ChatterBot’.”

(Akhi - MBA from University A: October, 2023)

“I recall talking about AI tools in class and thinking, yes, I know what I'm talking about. The first thing that came to my mind was ChatGPT. We use it for various assignments. It's similar to a fast brainstorming tool.”

(Sher - CyberSecurity from University F: August, 2023)

As observed by the interviews above, when the term 'ChatGPT' was mentioned, numerous students' confidence in addressing AI grew noticeably. Their understanding of artificial intelligence is mostly focused on this specific technology, which is widely used for assignments

and projects. Individuals with a sole emphasis on ChatGPT have a heightened understanding of AI subtleties, but those engaged in technology-related areas do not.

“It's basically our generation's thing, especially when it comes to ChatGPT. But I'm not sure if everyone knows what AI truly is. Only students from Computer science field or maybe engineering might know what it really is. We have access to some sophisticated resources at AIR and that's why we are familiar with AI, but I'm not sure if this is the case everywhere.”

(Billy - BS-Mechanical Engineering from University A: August 2023)

“I think I know what it is as a CS student but there are still gaps to fill. People don't know much about it and just think it's a cheating tool. I think the first step in knowing ChatGPT is to first introduce AI to students. This could involve making them aware of its existence and its potential applications rather than making it a compulsory part of the curriculum.”

(Uzi – (BS-CS) from University B: October, 2023)

Several notions emerged from a deeper inspection of this discussion. The alignment with the E-Tam Model comes first. The subject of "Perceived Familiarity vs. Actual Awareness" can be closely related with the Enhanced Technology Acceptance Model (E-TAM). The E-TAM, an extension of the TAM, investigates the factors that influence users' acceptance of new technologies. It goes beyond typical TAM by taking into account external elements that may influence consumers' perceptions and behaviours. Even when gaps in knowledge were exposed during the FGD, participants' statements of confidence in comprehending AI aligned with the original TAM's fundamental components of perceived utility (PU) and perceived ease of use (PEOU). The E-TAM's external factors became more crucial when the FGD highlighted occasions where students exhibited expertise with AI. Experience, Subjective norm, Enjoyment, Computer Anxiety, Self-efficacy, Perception of external control, Results demonstrability, and System Accessibility are all factors that contribute to a more nuanced understanding of users' attitudes and behaviours towards AI. For example, the students' comments about utilising ChatGPT and giving it human-like nicknames may represent the technology's pleasure and subjective standards. Furthermore, the use of AI in education aligns with the E-TAM's emphasis on context-specific characteristics. Disparities in expertise and resources across institutions (government, semi-government, and private) might impact students' perceptions and interactions with AI. The external

factors in the E-TAM provide insight into why students, regardless of educational experience, may be confident in their comprehension of AI. For example, University F, noted for its robust technical environment, outperforms other institutions in terms of technological breakthroughs and AI resources. In contrast, despite the fact that University B has an AI-Centre, many of its students are ignorant of its presence. In addition, investigating the implementation of AI-driven technology in higher education institutions corresponds with the E-TAM's emphasis on results demonstrability and system accessibility. These external factors show the participants' experiences with ChatGPT and their conversation about AI tools in order to determine how practical outcomes and accessible perceptions impact their adoption of AI in an educational environment.

4.4. Adaptation and Integration of AI Tools in Education

During the pilot study, the pattern of adaptation emerged spontaneously and remained an important focal point throughout the subsequent in-depth interviews. It encompasses the dynamic interplay between students, AI tools, and social media platforms, providing insight on the varied ways in which technology integration manifests itself within the educational landscape. As students got more involved with AI, particularly ChatGPT, platforms such as Discord became increasingly important, impacting the adaptation cycle of AI in educational contexts. I will go over each stage of the data collection step by step, explaining the apparent manifestations of AI tool adaptation across all modes of data collecting.

The pilot study was conducted inside University F's BS-CS programme (*Computer Science – Section A & C*), with 60 students divided into two groups of 30 each. Group A (ChatGPT) used ChatGPT to generate material and received direct help based on user input. Group B (Internet), on the other hand, participated in typical internet research, which required users to actively filter and analyse material from numerous sources. Time, reasoning, quality, quantity, resources, facts, creativity, originality, assistance, and autonomy were among the assessment categories.

Table 5: Pilot Study (ChatGPT Vs. Internet Sourcing)

Categories	Group A (CHATGPT)	Group B (Internet)
1. Time	Faster	Slower

2. Reasoning	Relies on pre-programmed logic, may lack depth.	Allows for critical thinking and synthesis of diverse information from various sources.
3. Quality	Moderate	Higher
4. Quantity	More	Less
5. Legitimate Resources	Fewer or AI generated narrative	More resourceful and legitimate
6. Creativity	Limited	Higher
7. Originality	Less - Restricted by predefined patterns in the model.	More - Allows for a more original combination of information.
8. Assistance	Provides direct assistance based on user input.	Requires user to filter and assess information from various sources.
9. Autonomy	Less - Relies heavily on ChatGPT's suggestions.	More - Requires users to independently assess and synthesize information.

Source: Field Notes

The results showed that Group A generated more material with ChatGPT, creating roughly 1200 words in 30 minutes, but Group B needed 90 minutes to create approximately 945 words using standard internet research. Group A, while efficient, has possible limits in depth, quality,

inventiveness, and originality owing to its reliance on pre-programmed logic, according to discussion. Using traditional research methods, Group B highlighted strengths in these areas, emphasising the significance of a balanced approach. The result indicated that AI integration tactics in education should be optimised, recognising the effectiveness of AI tools while appreciating the capabilities of conventional research methodologies for a thorough understanding. Future research directions were offered to investigate effective AI integration tactics in educational situations.

Through participant observation, I interacted with students throughout the exercise, carefully observing their emotions and narratives. The students in Group A who used ChatGPT displayed a combination of interest and curiosity about the AI tool's potential. Many people praised the quick content production and the ease of immediate support depending on user input. However, there were a few occasions where the AI-generated material did not quite match their expectations but they did not seem to really care as they were mostly keen on completing the task at hand relying solely on ChatGPT. While conversing with each other, some of the students from Group A were whispering remarks such as:

"Let's not get into intricacies and get the task done with. It's too hard finding legitimate sources online."

(Group A – Marry)

"How would the teacher know if this is a legitimate source or not. Let's just write it."

(Group A – Addy)

"It's like texting a super-smart friend or having a tech-savvy writing buddy. You know what I mean? Ideas were pouring, and I was able to explore many approaches in no time. It was like technological wizardry! Only it made me have super-powers."

(Group A – Abby)

"By the way, we used Discord for our prompts."

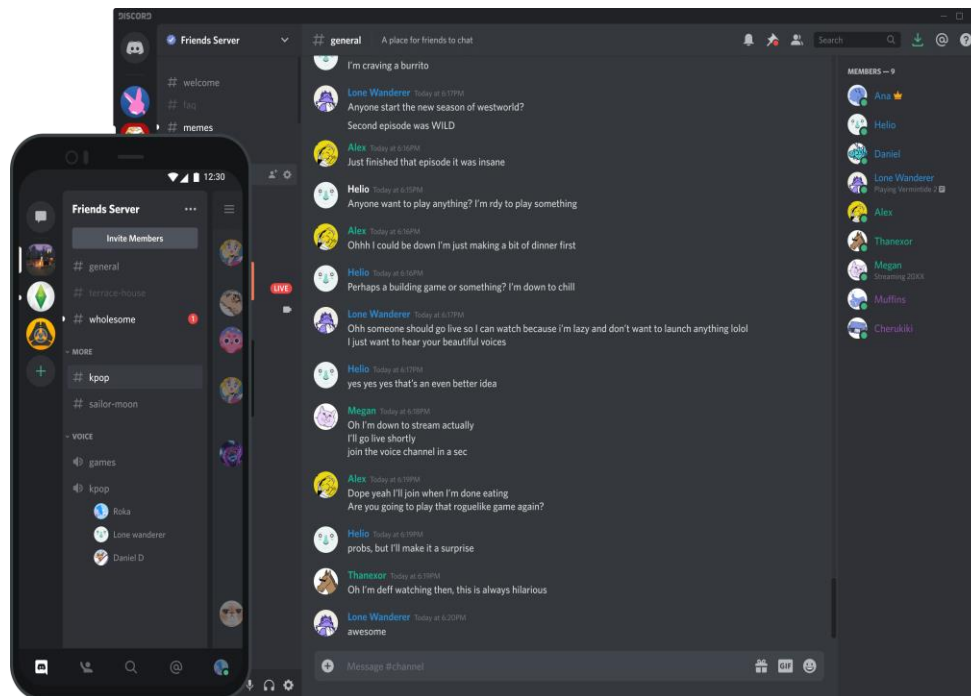
(Group A – Haideez)

"Discord is an instant messaging and social platform that let's us interact through voice calls, video calls, text messaging, and media and files. We can communicate in private or in virtual communities known as 'servers'. We've joined a few of tech related servers that teach us how to operate them correctly. You know, there is one for ChatGPT prompts as well."

(Group A – Adam)

Students displayed a natural ease in engaging with ChatGPT as youngsters born in the age of technology, coinciding with their assumed familiarity with digital technologies. The ease with which students integrated ChatGPT into their essay-writing process demonstrated their familiarity with technology. Some of the narratives presented by these students seemed to show that their way of expressing their feelings about ChatGPT was intriguing. In terms of prompts, there was a significant tendency in which some students chose more basic questions, which was most likely affected by their experience with digital communication platforms. While Discord was not directly mentioned in the survey, students did use numerous digital platforms for collaborative

Figure 3: Discord server named #wholesome



Source: Discord

conversations. This was when I first learned about Discord as a researcher. When asked what discord is, their response was really fascinating.

Students in Group B, on the other hand, indicated dissatisfaction with the job since they relied only on traditional online research. Throughout their stories, a common theme developed, emphasising their ability to think analytically and their experience with manual information retrieval. They expressed significant delight with the breadth and depth of knowledge obtained through these classic research approaches. While several students acknowledged the time-consuming aspect of their technique, they emphasised its resonance with their ease in traversing the enormous universe of internet resources. Some claimed that Group A's usage of an AI helper gave them an unfair edge, creating debate among Group B members concerning the equality of study circumstances. Even though Group B was prohibited to use ChatGPT, but they utilized other social media platforms such as Instagram, Facebook, Discord and Medium, reflecting their inclination towards digital modes of collaboration. Participants from Group B were dissatisfied with the restriction on utilising ChatGPT. Several students expressed their worries, claiming that using a AI assistant would have been a more efficient choice than the time-consuming procedure of gathering information from the internet.

“Honestly, it felt like we were back in the stone age. ChatGPT could have made life so much simpler. Why not use the technology we have?”

(Group B – HS)

“I understand the 'traditional research' vibe, but time is precious.” We could have been more productive if ChatGPT had been there. It's like having a super-smart virtual assistant at your disposal.”

(Group B – Zoe)

“I know we're supposed to learn the 'old-school' way, but in reality, we'd be using AI tools.” It is useful. It works well. Aren't we planning for the future? Isn't that more practical than the traditional ways?”

(Group B – Sadi)

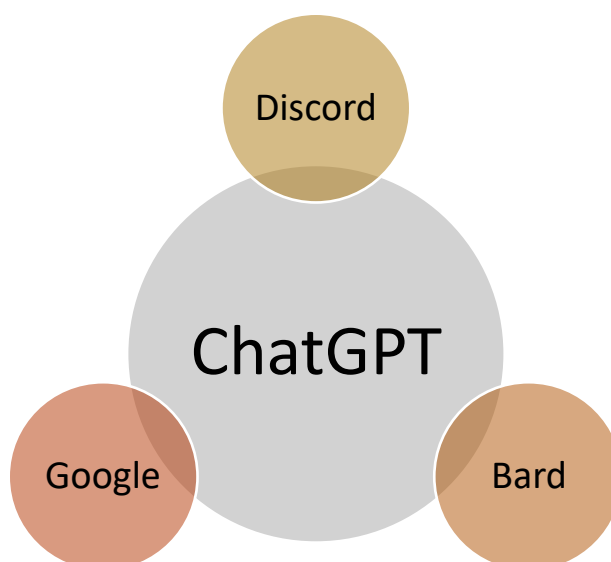
The accounts of students highlighted flexibility to various technology tools, demonstrating their skill in harnessing digital resources for academic objectives. As digital natives, these students interacted with ChatGPT, a technical tool, with natural ease and comfort. Their use of digital platforms such as Discord for collaborative conversations, as well as the ease with which they integrated ChatGPT into their essay-writing process, demonstrates their comfort with digital technology. Group B students, on the other hand, although being probable digital natives, reported unhappiness with the typical online research technique. While their stories demonstrated analytical thinking and expertise with manual information retrieval, they also expressed a need for more efficient technology tools. This creates an interesting dynamic in which digital natives emphasise efficiency and creativity in their academic responsibilities despite their ease with technology.

During the pilot study, the repeated use of the phrase 'Discord' among students sparked natural curiosity, motivating an investigation into the relevance of this social platform within the framework of the research. As students engaged in collaborative conversations and used different digital channels for prompts, including Discord. It became clear that this platform played a significant role in their connection and communication. The interest in Discord had sparked concerns about its perceived usefulness for students, implying a larger examination into the function of such digital communication platforms in moulding students' experiences and preferences, particularly in the field of AI-assisted education. This study is a good starting point for understanding not only the technical elements of AI technologies, but also the collaborative and communicative settings that digital natives are naturally drawn to. The pilot study revealed a trends of students' interaction and adaptation ChatGPT (generative AI) and social platforms, as well as their competency for online navigation of data.

I have created a Radial Venn for this pattern to show the overlapping relationship of social networking platforms and ChatGPT when used by the students. A Radial Venn diagram depicts overlapping relationships and their link to a central idea in a cycle. *Figure 4* below is a visual representation of the adaptation of the sites/technological applications that helped students in the pilot study, forming an interesting pattern of observation. ChatGPT, a conversational AI model is at the core of assisting and guiding students through the given task. Discord, at the top of the diagram indicates that even though it is a platform for communication, digital natives *i.e.* students of this era, rely mostly on this platform to engage in communities that help understand the use of

AI. Google search engine, on the left, which was once considered the most used entity of the internet realm is now considered as a backdrop or last resort for information retrieval system. Bard is positioned on the far right, owing to its similarities to ChatGPT. While Bard was not generally known among students, a significant percentage continued to interact with this AI helper. Surprisingly, even students from Group B resorted to using Bard, maybe to avoid the teacher's scrutiny, in the expectation that the teacher would be unfamiliar with it. At the lower end of this technological spectrum, the supervising teacher, who was available to advise and help the students, exhibited a degree of assistance that was not as strong as expected, as seen by their demeanour and interactions with the instructor.

Figure 4: Pattern Emerged from the Use of ChatGPT

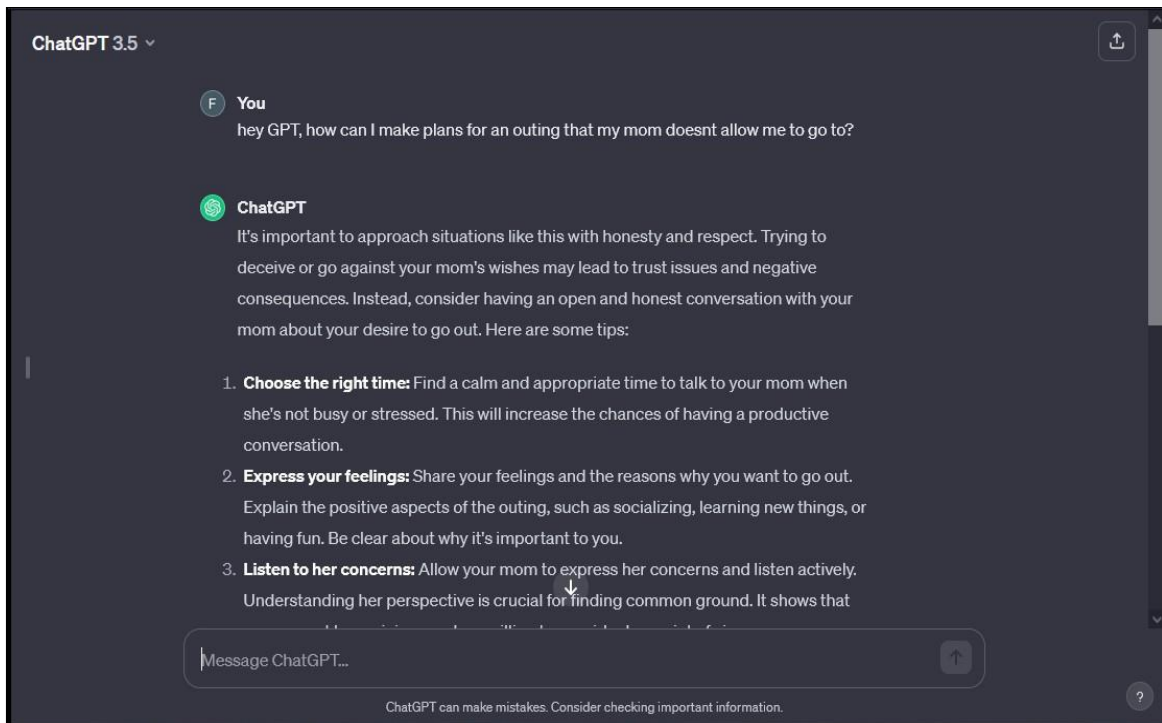


Source: Field Notes

This observation during the field work showed that there is a strong link of AI with social networks. The collaborative use of ChatGPT on platforms such as Discord demonstrated a community attitude among students, where debates and insights were exchanged. This potentially assisted each student in understanding and creating material for their assignments. Notably, sites like Discord, Insta and FB developed as digital communication channels, emphasising their importance in enabling study-related conversations and coordination. The interconnection of AI with social platforms produces a symbiotic relationship for students that mimics human-like bonds.

ChatGPT, for example, acts as a virtual assistant, reacting to instructions and offering information similar to human interactions. Simultaneously, social apps like Discord encouraged students to feel a feeling of community and cooperation. The combination of these technologies enabled students to not only converse with AI but also exchange experiences, advice, and prompts via social channels. By merging cognitive contact with AI and the social dynamics of a collaborative digital area, this networked ecosystem replicates a human-like relationship. To further investigate if this phenomenon is true or not, online google survey forms and monitoring of social platforms was done to identify the objectives of this research.

Figure 5: Anthropomorphizing of ChatGPT



Source: OpenAI (ChatGPT)

During their course work, the dynamic process by which students adapt to and use AI, notably ChatGPT, with the use of social media platforms was quite obvious. The adaptation cycle is characterised by a reciprocal connection in which students seek assistance in producing prompts from platforms such as Discord and other social networking platforms. This iterative method is a modern approach to academia in which students use AI technologies as well as social media to improve their assignment procedures. Students ranging in age from 19-28 years old and pursuing

undergraduate degrees demonstrated noteworthy ability in using ChatGPT for their intended goals. A few even uploaded a reference guide, commonly known as a '*cheat-sheet*', which they discovered on Twitter (a prominent social media network). This guide acted as a resource for creating ChatGPT-specific prompts, assisting these students with their assignments and academic projects.

“When I had an assignment on neural-networking, I used ChatGPT for the assignment but at one point, it was giving vague answers to my questions. So, I thought it was a bogus tool but after some time I found out that in order to get the best outcome from a free AI-tool, I have to make the input more appropriate. For instance, if you want detailed responses, you phrase your questions in a certain way. So I started navigating through social media platforms and stumbled upon a cheat-sheet on twitter. After that, I use it religiously whenever I take help from ChatGPT for my assignments.”

(Basil - BS-AI from University F: August, 2023)

This comfort with technology and ease in using digital tools into their academic work are traits associated with digital natives. The ease of implementing ChatGPT in assignments traces towards the Digital Native Theory in the context of ChatGPT adaption among students aged 19-29. Having grown up in the digital age, this age group is inherently more at ease with and motivated to adopt new technologies. Digital natives are distinguished by their familiarity with and intrinsic comprehension of digital tools, which allows them to quickly adapt to and incorporate developing technology into their daily life. In the instance of ChatGPT, because they are digital natives, these students are more likely to use the programme for their tasks. The ease with which they browse ChatGPT and produce prompts indicates not just comfort with the technology but also an instinctive awareness of how to use it properly. This fluency extends to their interactions with artificial intelligence systems such as ChatGPT. For example, when questioned about their experience using ChatGPT, students were keen to answer as it had now become a daily routine for them.

"It's almost automatic, you know?" I grew up surrounded by technology, so utilising ChatGPT for assignments feels natural to me. I don't have to beat a sweat to acquire the cues I need."

(Ijlal - BS ME from University A: October, 2023)

"It's not just about using technology for us; it's about integrating it seamlessly into our workflow. ChatGPT is simply another weapon in our armoury, and it's quite simple for someone like me who has always worked with computers."

(Emi - BS CY from University F: August, 2023)

"I observed a shift in our approach to doing assignments. It's not just about research; it's about how we can frame questions creatively to get the most out of ChatGPT. It's almost like us and the AI are working together."

(Yaan - BS IT from University F: August, 2023)

"To be honest, I was hesitant at first. But then I noticed my classmates using ChatGPT and decided to give it a try. It's now a crucial part of my educational routine. The learning curve is short, and the outcomes are outstanding."

(Eric - LLB from University B: October, 2023)

There is no doubt that it is easy for digital natives to utilise new technological tools. Moreover, digital natives not only use new technology but also find ways to maximise its use in their academic endeavours. These students highlight the shifting expectations in a digital-native culture. The adaptation process always starts with skepticism and then leading towards acceptance. A natural skepticism typically traverses the cultural mentality during the early phases of implementing innovative technologies such as ChatGPT. This skepticism stems from unfamiliarity with modern techniques, worries about possible downsides, and, in some cases, a preference for older ways. Students doubt ChatGPT's utility and dependability, questioning how it fits into established learning and problem-solving standards.

However, a noticeable shift happens when people see their friends benefiting from these technological tools. Peer influence is critical in the adoption of technology, particularly in a society steeped in digital activities. Positive experiences provided by other students who have used ChatGPT for academic purposes produce a social proof impact. What was originally a unique or unfamiliar instrument developing credibility through peers' practical and effective deployment.

The expression *"benefiting from these tools"* implies that skepticism decreases as people see the actual benefits. These interviews indicate how ChatGPT improves assignment efficiency, assists in the generation of new ideas, and improves the overall quality of academic work. As shown in the narratives above in which students offer examples of how utilising ChatGPT not only makes academia easier to handle, but also improves the quality of their production. The normalisation of technology is an important part of changing views about ChatGPT. As more people in the cultural environment embrace and incorporate ChatGPT into their academic routines, the technology becomes a routine and accepted component of the toolset. What was first viewed with skepticism has evolved into a resource that is widely used for a variety of academic reasons.

Students between the ages of 29 and 37, on the other hand, engage with ChatGPT while taking a more manual approach to data collection for projects, indicating a nuanced pattern in their interaction with AI technologies. This study points to a transitional period in which ChatGPT integration is present but not as deeply embedded, indicating a unique age-related digital literacy effect.

"I've been doing research for years, and while ChatGPT is convenient, I prefer the traditional method for certain aspects. It's not because I'm distrustful; it's just what I'm used to. I want to be certain about the data, and manual research provides me with that assurance."

(Shah - University I – PhD English Literature – 34 y/o: September, 2023)

"I began my academic career when these AI tools were not widely available. So I utilise ChatGPT, but I have to perform the groundwork manually. It strikes a balance between the ancient and the new. The personal touch in research can sometimes feel more reliable."

(Umai - University I - PhD Mathematics - 38 years old: September, 2023)

"I use ChatGPT for quick insights, but when it comes to in-depth research, I trust my hands-on skills. For some things, it's like having a high-tech helper, but I still want to go deep into the data on my own. It all comes down to control and certainty."

(Umi - University B - MS Project Management - 29 years old: October, 2023)

One possible explanation for this tendency is that people in the MS age group built their academic and research habit before AI technologies became widely available. As a result, their

approach to data collection for assignments may be anchored in traditional approaches, such as manually searching academic literature, conducting interviews, or relying on established databases. The desire to keep these techniques might be due to familiarity with them and a perceived efficacy in their academic procedures. The term "*transitional phase*" implies that these individuals are adjusting to the existence of AI tools in their academic scene, such as ChatGPT. Individuals in the MS age group are negotiating a transition in their academic techniques, as opposed to the younger generation, who may have grown up with such tools. While they appreciate ChatGPT's possibilities, they may nevertheless prefer manual data collection, maybe due to a sense of control or faith in traditional research methodologies. The finding corresponds with the wider idea of digital literacy, which recognises that people of different ages may have differing degrees of experience and comfort with developing technology. The varied pattern in ChatGPT interaction within MS age range demonstrates a synthesis of conventional and current methods to academic work. Shah's preference for traditional research methodologies shows a reliance on recognised research methods, emphasising the need of data assurance. This is consistent with the idea that people's decisions are shaped by their experiences prior to mass AI adoption. Umai agreed, attributing the manual method to familiarity and the perceived credibility of hands-on study. The key factors that emerged during these interviews were control, dependability, and a desire for data assurance. The transition period illustrated their growing adaptation to AI technologies while remaining connected to existing research approaches. This careful balance may result in both challenges and benefits, providing vital insights into the dynamics of introducing AI into academic operations.

4.5. Strategies for Incorporating AI

Based on the interviews conducted during the fieldwork, the theme of '*strategies for integrating AI*' surfaced as a pivotal factor influencing the adoption of AI in the education system. Throughout the field work, the revelation that strategic AI incorporation goes beyond the planned absorption of AI technology into education was evident but it also suggested the changing dynamics among students, faculty, and university administrators in each institution. Students applied hands on learning strategy when adapting new AI-tools and technologies.

In the context of University B, University A and University F through many projects, it has strategically embraced Artificial Intelligence (AI) integration. The establishment of an AI Centre

of Excellence in University B demonstrates the university's dedication to AI research and development. In an interview with Dr. S (University B), she emphasised the AI center's top-down support, which came from the Chief of the head governing bodies of the institute. This method simplified operations, reducing procedural delays and emphasising the significance of AI inside the organisation. One noteworthy tactic is to engage in commercialization initiatives in which University B gives AI solutions to high-profile organisations, notably in defence and forensics. Taking the example of ChatGPT, a generative-AI tool that can be incorporated in daily routine, she gave a paradoxical aspect of artificial intelligence (AI):

“In this short amount of time, we have had a few successes. We have already begun a commercialization effort in which we are delivering AI solutions to one of the organisations. I can't give the name of that firm because of secrecy, but it's a very high-end investigation agency to which we provide our AI solutions. Hopefully, we will deploy four projects in the last week of November.”

(Dr. S: October 2023)

“Actually, the difficulty or benefit of AI is that whatever comes naturally is no longer regarded true intelligence, even if it was once deemed actual intelligence. As a result, everything that becomes common, whether it was initially AI, is no longer considered AI. So, AI needs to be something that is not in routine. So in that automation, if something is getting in routine, people won't consider it. So they always fascinate AI as something out of routine. So, yes, there is always a margin when you can support the ongoing automation, when you can actually multiply the effect of that.”

(Dr. S: October 2023)

AI is no longer viewed as true intelligence as technology grows increasingly widespread and integrated into ordinary work. The phrase emphasises the fluidity of the notion of AI. Many analysts believe that once a technology becomes ordinary and part of daily operations, it loses its status as AI. The idea here is that AI is most appealing and recognised when it is viewed as something unusual or outside of the typical stream of operations. When students utilise ChatGPT, they tend to link AI with non-routine or unusual jobs or procedures. As a result, when AI performs

outside of the anticipated or usual bounds, there is a certain interest and acknowledgement. This practical application demonstrates the university's commitment to tackling real-world problems with AI. In addition, the university admin hoped for cooperation with business partners, recognising the need of bringing practical skills into AI research, as narrated by Dr. S. There was no doubt that a cultural shift could be seen towards the adoption of AI but the positivity that the faculty of University B showed towards incorporation towards AI was not reflected through student narratives. It was as if two different forces of the universe came together in one place, which was University B. However, the true impact and recognition of AI occur when it is used to augment and magnify the benefits of existing automation, emphasising AI's transformational potential in certain circumstances.

The strategic integration of AI-powered interactive platforms is presently happening at University B, a semi-government university equipped with a specialized AI center. Collaborative initiatives between universities and educational technology companies are actively designing platforms that are adapted to students' different learning needs. These platforms included adaptive exams, virtual simulations, and real-time feedback systems, enhancing the whole educational experience. This current initiative demonstrates a concentrated effort by University B to harness AI technology to improve the learning environment. But this triggers the student-teacher dynamics as each teacher presents a different opinion regarding the use of AI in education. Let's take ChatGPT as the ever-growing example for incorporating generative-AI into education.

"It's interesting to see the university embracing AI, but I'm curious about how it will affect our interactions with teachers. Some support it, while others have reservations. I guess we'll have to adapt and see how it plays out in our classes."

(Umi - MS Project Management: September, 2023)

"I value innovation, but I'm wondering if tools like ChatGPT will eventually replace traditional teaching methods." Face-to-face contacts with teachers provide a personal touch that I cherish. AI is nice, but technology should not overwhelm the importance of the teacher-student relationship."

(Zubi (BS-CS): October, 2023)

“What student-teacher relationship? Was there any to begin with? ChatGPT is just another tool in this rule-less education system of Pakistan where rule is manipulated and shaped by the authority that does not even know the definition of education.”

(Fin (LLB): October, 2023)

“These tools are still ambiguous to use. The other day one of my friend was scolded for using ChatGPT for his assignment even though I saw him use it only for guidelines and not the whole thing. I think its still going to repeat the cycle of crushing the innocent and the clever getting away with everything. The world and its hierarchy never stops you know”

(Eric (LLB): October, 2023)

The approach to AI used at University F is remarkable. As a Tech Driven Institute, it has generated high-achieving alumni who are more focused on the applied side of the TECH sector to tackle real-world challenges. Many students and teachers have highly praised the environment of University F in producing highly professional individuals. But the pattern of incorporating AI in a private sector was totally different from that of a government or semi-government university. Most of the affiliations that I have observed throughout were from foreign countries. The collaborations and initiatives by University F could be seen as a global achievement for Pakistani Education system. Teachers mostly were enthusiastic about this tech-driven university and its futuristic curriculum that makes a student ready for the professional world:

“Being in the education sector, it's nice to see proactive AI incorporation into our curriculum. The introduction of AI-powered interactive platforms into student’s learning has provided a dynamic element. For example, adaptable learning routes that cater to individual growth are now available, making the learning experience more personalised. Immersive simulations enable us to actually apply theoretical concepts, bridging the knowledge-to-reality divide.”

(Ms. H - Instructor: September, 2023)

“What particularly interests me are the collaborative AI-driven initiatives. Working on projects involving cutting-edge AI technology not only improves student’s abilities but also provides them with a look into the future of technology.”

(Dr. K (HOD): September, 2023)

"University F has witnessed remarkable success stories in terms of AI incorporation. One significant example is the creation of an AI-powered student assistance and student evaluation system. This system analyses students' academic performance and behavior using machine learning algorithms, delivering personalised recommendations for improvement. The results have been excellent, with a considerable rise in student involvement and academic accomplishment. Moreover, our work with industry partners has resulted in successful AI initiatives that address real-world difficulties. For example, our students collaborated on an AI-based healthcare solution, showcasing the university's dedication to promoting innovation and tackling social concerns with modern technology."

(Dr. ASM (Associate Professor): September, 2023)

The teachers recognise the transformative influence of AI-powered interactive platforms on students' learning experiences, emphasising the dynamic nature. The customizable, adaptable learning paths have been praised for their role in offering a personalised educational experience that caters to individual progress. Notably, the use of immersive simulations is praised for its capacity to bridge the theoretical knowledge-to-reality gap, allowing students to apply acquired concepts effectively. However, at University B, the excitement is not shared by the students.

International University I is a government university, mostly influenced by the predominating religion Islam. Religious stigmas often caused by worries about ethical implications, religious beliefs, and cultural norms are the highlighted points of such universities. Most of their high-end research revolves around the cultural and religious values incorporating the idea of Artificial Intelligence.

"As a lecturer here, I've seen a surge in student interest in investigating how Artificial Intelligence may revolutionize Islamic finance. Students frequently wonder about using AI to create algorithms that adhere to Sharia rules for financial product innovation and risk management systems. There is a strong desire to combine traditional Islamic financial concepts with current technical breakthroughs. The focus of the discussions is on guaranteeing ethical and Sharia-compliant financial solutions using AI applications. I advise students in studying AI's potential to produce

creative and morally good financial solutions, emphasising the compatibility of AI with Islamic beliefs.”

(Dr. AMJ (Senior Lecturer): September, 2023)

"While AI in education has enormous potential, there is concern about how it might influence student behavior." Students must actively participate, think critically, and pursue individual learning. Although AI's personalised recommendations are useful, there is concern that students may grow overly reliant on them, limiting their study of different topics and inventive thinking."

(Ms. Fai (Visiting Faculty): September, 2023)

Adding AI tools for educational assistance in International University I's education system was not rejected only because of cultural differences or the university's atmosphere. Rather, various problems in incorporating AI in universities were identified, including fast changes in communication, socio-cultural impacts influencing views towards AI, and the necessity for multiculturalism to be included. These obstacles, however, were not limited to cultural differences, but also included larger dimensions such as changing knowledge, socio-cultural variables, and educational attempts to promote diversity and respect. While cultural factors may influence the adoption of new technologies, the decision to incorporate AI into higher education is frequently influenced by a variety of complex factors such as sustainability challenges, workforce preparation, and the potential impact on educational paradigms.

4.5.1. Hands-On Learning Strategy

Students used a hands-on learning strategy when they first knew about AI tools. They first gathered knowledge about new tools from classmates, friends, and teachers in their academic circles. This knowledge acquisition was a social process, and digital natives found it especially appealing. This was observed due to its user-friendly nature. ChatGPT was initially made a user-friendly tool, hence students found its appeal in its interactive nature. In contrast, teachers who discovered ChatGPT later than their students, highlighted concerns about its use in academics.

After absorbing this information, students naturally used the tool in their academic work. Their confidence in utilising it rose particularly when they discovered that their teachers were ignorant of the technology. This made plagiarism detection difficult as well. As time passed and

teachers learned about ChatGPT, students actively sought out new and comparable technologies for their studies. However, greater reliance on such technologies resulted in behavioral changes and deteriorated relationships with instructors. The relationships between students and instructors changed as students experimented with new tools for their academic endeavor.

I saw numerous behavioural shifts among students when they engaged with new technology. Students gained confidence and a sense of freedom after effectively applying new tools such as ChatGPT to their academic work. This increased autonomy was especially obvious when students identified a knowledge gap between themselves and their professors. The emergence of AI tools caused a shift in the approach to academic activities. Students become more reliant on technology for aid, changing their conventional ways of inquiry and problem solving. As instructors grew more aware of these resources, the relationship between students and educators changed. The early advantages acquired from adopting novel tools by students had faded, affecting the conventional teacher-student relationship. The analysis of the data collected from the fieldwork indicated a continuing search for technical solutions that are compatible with their academic requirements. Concerns have been raised about the possibility for over-reliance on such technologies and the ramifications for actual learning and critical thinking was not observed through teachers but not the students. This dichotomy emphasised the ongoing exploration and adaptation to technological solutions, implying a complex and changing connection between students and educational technologies in the quest of academic achievement.

4.5.2. Collaborative Learning

Recognising the importance of AI and its potential in education, students devised a novel way to incorporate it into their academic endeavours. The technique primarily involves collaborative learning via online groups, particularly on platforms like Discord and Instagram. During the fieldwork, I observed students adapting to collaborative and interactive learning settings in order to properly comprehend the intricacies of AI. The collaborative groups on Discord and Instagram were designed to suit various learning methods and preferences. Discord, which is recognised for its real-time communication capabilities, allowed students to participate in text and voice debates, promoting a dynamic exchange of ideas with students from other universities and fields. Instagram's visual and multimedia features enabled the sharing of instructional information, lessons, and insights in a more visually attractive style.

The choice to use a collaborative learning method was rooted in the recognition that AI is a multidisciplinary discipline that requires ideas from various viewpoints. The development of Discord and Instagram groups enabled users to engage in real-time discussions, share instructional resources, and ask questions of a community of peers with varying degrees of knowledge. This not only allowed for a more in-depth study of AI ideas, but it also served as a platform for actual problem solving and knowledge application. This strategy can be seen through the case of the student from University B.

4.5.2.1. Case Study – Uzi (BS-CS 2nd Semester University B)

From August 25th till November 30th (2023), I had spent time with Uzi Ahmed to understand the student's perspective and use of AI-tools in higher education. Uzi, a first-semester Computer Science student at University B, had found himself on an unanticipated adventure in which his ambition collided with institutional obstacles in the integration of Artificial Intelligence (AI). Many students, including Uzi, did not know about the existence of an AI-Centre, which was envisioned as a potential magnet for innovation, inside the university perimeter. Uzi intended to dig into the broad universe of AI in his search for knowledge about it and mostly doing his assignments sufficiently by saving time, seeing its uses beyond the bounds of the classroom. However, his enthusiasm was greeted with difficulties when he found the ubiquitous issue of insufficient understanding of the AI centre, a subject that connected with his own experiences. Conversations with other students revealed a common feeling of being in the dark about available options.

"I've heard rumours about some AI resources, but honestly, I don't know where to find them. This information should be made more available by the university."

(Sushi (Uzi's Peer): September, 2023)

This view reverberated throughout the campus, highlighting a common need for improved communication. Uzi's encounters with students and teachers indicated an alarming lack of knowledge regarding the AI center's capabilities. This collective ignorance greatly limited students' capacity to use the revolutionary potential of AI technologies for their academic endeavours. The university's disconnected communication processes emerged as a serious impediment to adopting to modern technology. Despite these obstacles, Uzi remained unfazed.

However, his desire to incorporate AI into his academic life was thwarted by institutional constraints. Conversations with academics revealed a cautious attitude regarding the use of AI in assignments. He related an occasion in which one of his teachers stated:

"We encourage originality. The widespread use of AI technologies may blur the distinction between human effort and automated aid."

(Uzi's Teacher: September, 2023)

Uzi, undeterred, took a calculated approach. Recognising the necessity of AI aid while adhering to institutional rules, he carefully navigated through coding tasks.

"I see AI as a brainstorming tool," Uzi remarked in a conversation with a lecturer. *"It aids my knowledge of complicated ideas, but I make certain that the end product shows my unique insight and creativity."*

Uzi's experience at University B exemplifies the greater issue of AI adaptation in educational contexts. The story underlines the critical need of excellent communication in realising the full potential of AI technologies for students. Uzi's tenacity in incorporating AI in the face of institutional constraints encourages reflection on the necessity for universities to bridge the gap between available resources and student understanding. Throughout his first semester, he experienced a variety of viewpoints on the use of AI in academic projects. Conversations with his classmates revealed a range of opinions. A group of students gathered in the university cafeteria debated the usage of artificial intelligence for homework.

"I tried using AI for writing assignments, you know, generating paragraphs and stuff. However, it was hazardous. Teachers are likely to flag it as plagiarism."

(Allie (Uzi's classmate): September, 2023)

This dilemma stuck a chord with Uzi, who saw the delicate line between using AI as a tool and avoiding academic errors. He expressed his worry to his lecturer during a class session to which the professor exclaimed:

"It's tricky. But the problem with you guys is that you only rely on these tools now. Khud k demaghy sy kaam to krna nahi (Don't want to work on things with your brain yourself)."

(Uzi: September, 2023)

The teacher's tone expressed a very discouraging attitude, not only demeaning the use of AI-tool but also degrading the student. This incident highlights a misunderstanding of the role of artificially intelligent tools in used for education. Rather than inhibiting innovation, educational settings should encourage students to experiment with and accept new technology. Uzi's instance shows the need of recognising different learning methods. AI may be a useful and efficient learning aid for some pupils. Demeaning such options ignores the diversity of individual methods to learning. Uzi, undeterred, developed a scheme. He used AI to improve his comprehension of logical structures and algorithms during coding tasks.

"AI helps me grasp complex coding concepts faster," he remarked in a conversation with a friend. "It's like having a coding teacher available at all times. However, I never use it to produce whole code parts. That is the point at which I draw the line."

(Uzi: November, 2023)

When it came to writing projects, however, the issue took a more complex turn. Uzi acknowledged that the university valued uniqueness in written material, and that AI-generated writing may be interpreted as a violation of that ideal. In an open talk with his flatmate, Ali, he stated,

"For writing assignments, I avoid AI. The risk is not worth it. But it's a game changer for coding."

The challenge to strike a balance between academic integrity and the benefits of AI was a recurring topic throughout Uzi's journey. As he began work on a project that required file management and data storage, skills not previously addressed in his curriculum, he encountered a new hurdle. The course's scant direction compelled him to seek answers from AI. Uzi had joined several online platforms other than his own coursework to gain a better understanding of artificial intelligence. He shared his project idea with students during a virtual study group session on Discord.

"I wish we had more guidance on these topics. Using AI for self-study feels like a hack, but it's sometimes the only alternative."

(M. Ali (CS Student from Szabist in the online group on discord): November, 2023)

Uzi sought refuge in his peers' shared problems. Despite institutional obstacles and the necessity for cautious integration, he remained committed to leveraging AI for educational enrichment. Conversations within and outside of the classroom revealed a shared need for a more comprehensive and supportive approach to incorporating AI into the educational experience. Uzi's case study serves as a microcosm of the growing connection between students and technology within the academic environment as he accepted the difficulties and opportunities given by AI at University B. He realised that integrating AI required more than just individual resolve, but also a joint effort to transform institutional methods and communication systems.

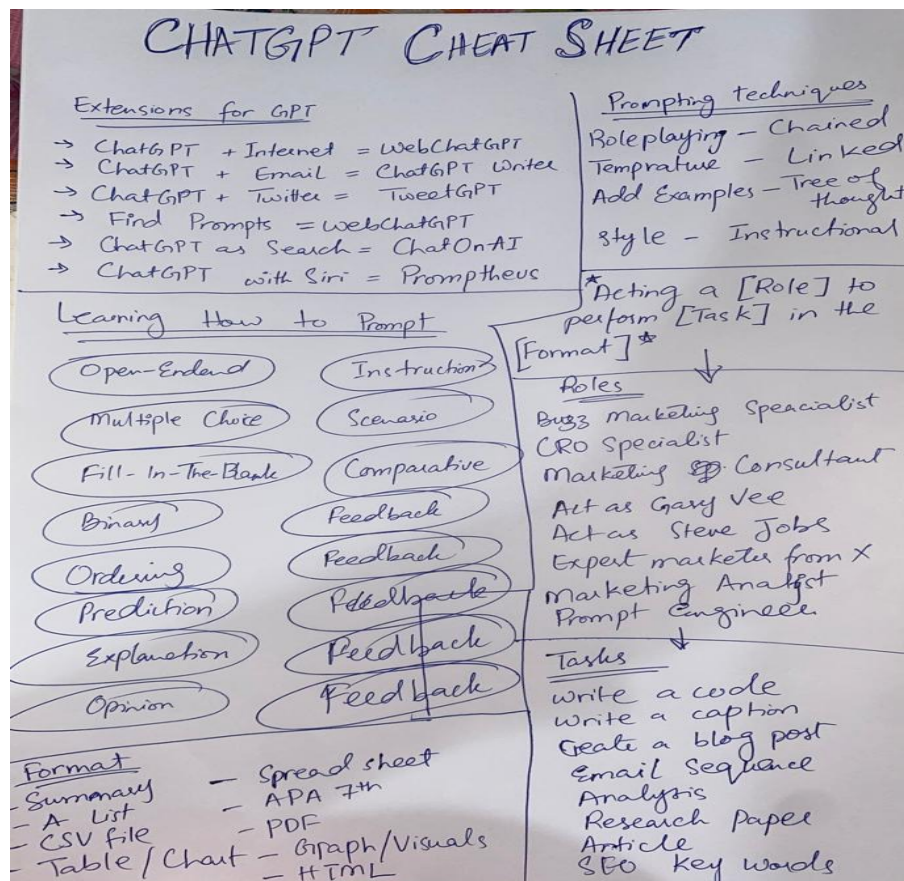
During the monitored time, Uzi's routine was a mix of academic rigour and a thirst for information. His days as a first-semester Computer Science student were filled with lectures, coding exercises, and the relentless goal of understanding Artificial Intelligence (AI). His day-to-day existence unfolded as a dynamic connection between the academic curriculum and the undiscovered frontiers of AI investigation. Uzi began his day with intense coding sessions, delving into the complexities of algorithms and logical frameworks. The early morning hours provided him with a peaceful setting that allowed him to concentrate, creating the groundwork for his practical coding talents.

Uzi's routine was heavily influenced by his official schooling. Classroom discussions with teachers and classmates provided a variety of opinions on the incorporation of AI in education. These conversations shaped his knowledge and solidified his desire to investigating AI's possibilities. Following lectures, Uzi engaged in lively talks with his peers in the campus cafeteria. These discussions gave insights into the varied perspectives of students on the usage of AI for academic tasks. Uzi joined virtual study groups on sites such as Discord as the day continued. Beyond his studies, these meetings proved critical for investigating AI issues not addressed in the curriculum. The shared struggles and ideas in these online networks fueled his determination. Uzi's devoted period for AI investigation became the late-night hours. He searched internet platforms, including the AI center's resources he encountered along the way, in search of solutions to complex

issues and to broaden his knowledge beyond the bounds of traditional schooling. I stayed online with him on video calls during the night as he explored through options to integrate AI in his education to work more effectively. During these meetings, I stumbled upon a conversation where these students were talking about a cheat sheet for ChatGPT. When truly instigating their conversation, they showed me a cheat sheet that they devised (with Uzi) for efficiently extracting answers from ChatGPT through giving it proper instructions (commonly known as prompts). The cheat sheet offered serves as a complete reference, presenting a variety of extensions designed for academic usage. Each extension, from WebChatGPT to TweetGPT and ChatGPT Writer, is methodically applied to harness online resources, streamline email communication, and exploit the potential of social media platforms for academic purposes. Exploring various prompting styles with ChatGPT, including open-ended instructions, multiple-choice scenarios, fill-in-the-blank comparative prompts, binary and ordering prompts, as well as prediction, explanation, and opinion prompts, each linked to particular feedback mechanisms, gives a structured approach for efficiently allowing ChatGPT for diverse academic inquiries. Among the approaches investigated were role-playing situations, temperature modifications, and the insertion of instances in a Tree of Thought, all of which contributed to the group's strategic usage of ChatGPT. These strategies are used as methodologies to elicit accurate and personalised replies from ChatGPT, delivering ideal results for a wide range of academic work. Furthermore, the cheat sheet explains particular responsibilities and activities allocated to users, such as Buzz Marketing Specialists and CRO

Specialists, as well as Marketing Consultants and Expert Copywriters. Among the tasks are caption creation, blog post creation, email sequence development, sales copy writing, and product description generation. Each job has a preferred presentation type, which includes summaries, A-lists, CSV files, tables/charts, spreadsheets, PDFs, graphs/visuals, HTML, and Gantt charts. This cheat sheet felt like a treasure from a treasure box. Uzi used AI in his tasks with tact. He saw AI as a great brainstorming tool for coding assignments, speeding his knowledge of complicated subjects. However, in order to conform to the institution's emphasis on uniqueness, he avoided using AI for writing projects. The need for self-study, particularly in areas not fully covered by the curriculum, pushed Uzi to employ AI strategically. Seeking advice from internet platforms and peers, he identified AI as a powerful tool for self-study, bridging the gaps created by institutional constraints.

Figure 6: Cheat Sheet for ChatGPT by Uzi and his Friends



Source: Field Work Notes

Uzi's daily routine was a dynamic mix between institutional responsibilities and his own pursuit for AI knowledge. This case study emphasises the importance of institutions aligning their courses with the expanding environment of technology, giving students with the essential tools and expertise to negotiate the seamless integration of AI.

4.6. University Implementation of the AI

To gain a better understanding of the implementation of artificial intelligence's landscape in the education system, observing if the stages of implementation were fulfilled in each selected institution was prioritized. Conversing with the students, teachers and admin of each institute, it was interesting to see how they used an AI assistant not only for educational purposes but also asking questions about daily life routines. The visibility of the integration and implementation of AI tools was seen through the anthropomorphizing of ChatGPT by the students. Students, either in the real-world or the online world created names for AI tools that seemed to be intriguing. Examining AI-related infrastructural development at each university and then comparing them with observations gleaned from fieldwork offers an alternate view of the state of AI implementation in higher education can draw a visible status of AI in Pakistani education system.

4.6.1. University A and its Anthropomorphizing ChatGPT

During a group conversation with University A students, ChatGPT was often referred to as "*Chatty*," a term invented by the students. This anthropomorphic label has significance because it gave a technological device a human-like feel, conveying a sense of familiarity and friendship. This habit of giving ChatGPT an acronym reflects a student inclination to personify or humanise AI tools, emphasising the social and interactive aspects of their interactions with these technologies. When asked if they were familiar with ChatGPT, they interestingly answered:

"Oh, you mean Chatty! Yes, we utilise it frequently for our tasks. That's why we've given it a nickname"

(Iqqi (University A): September)

"Chatty! That's what we named it, kind of like a chat buddy."

(Zarwa (University A): September, 2023)

"It's just easier to say, and it feels like you're actually talking to someone while getting your work done."

(Mini (University A): September, 2023)

"I find it amusing that we've nicknamed a machine. It's almost like it's a study group or something."

(Huzi (University A): September, 2023)

The frequent utilization of ChatGPT in their tasks suggests that the nickname given to ChatGPT, "Chatty," was chosen by the students as a symbolic reflection of its perceived usefulness. The use of nicknaming shows a level of personalisation and attachment implying that ChatGPT has become an important and valued element of their education, namely an academic toolkit. It shows that using the acronym "Chatty" makes communicating with technology simpler. This ease of communication suggests that students see ChatGPT as a convenient and effective way to complete activities, which contributes to its overall usefulness. ChatGPT as a "chat buddy," emphasising the social and interactive character of their interactions, means that students regard ChatGPT as more than just a tool, but also as a companion who improves the efficiency of their work. The usage of such a word implies that ChatGPT helps to create a more engaging and productive workplace. The perceived usefulness of ChatGPT by students demonstrates its perceived utility, as does the symbolic value linked through the nickname, the ease of communication, the favourable influence on efficiency, and the comparison to a study group. These factors show that students feel ChatGPT improves their academic achievement and contributes to their overall learning experience.

4.6.2. University I and Its Technological Spectrum

Since its inception in 1992, University I's Department of Computer Sciences has a long history. The department, which is accredited by the National Computing Education Accreditation Council (NCEAC), provides programmes ranging from BS to PhD in Computer Science. Artificial intelligence, robotics, computer science foundations, scientific computing, and systems research prosper. The university approaches computer science experimentally and scientifically, with an emphasis on practical application. The institution emphasises interdisciplinary research and the use of AI to encourage fundamental research in the context of applying AI. Despite University I's

rich history and accreditation, the actual use of AI approaches inside the educational system has yet to be widely implemented. While the department excels in areas of study such as artificial intelligence, robotics, and scientific computing, there is a significant gap between theoretical knowledge and its practical implementation. Students' narratives emphasise a widespread belief that teachers discourage, if not outright restrict, the use of AI technologies like ChatGPT in their academic endeavours. Students express their dissatisfaction, emphasising that the university's emphasis is on the theoretical and scientific components of AI rather than incorporating these technologies into their schoolwork.

"It's so frustrating, you know?" We're here, surrounded by cutting-edge technology, but the teachers act as if utilising AI for our homework is a kind of cheating. My teacher nearly flipped when I tried to use ChatGPT. I was told that I should perform the task myself. But isn't the whole aim of these tools to learn and adapt to them?"

(Lalie (BS-CS): September, 2023)

"I tried using ChatGPT for my last assignment. It was only to get some thoughts going. My teacher, however, saw and cautioned me. We're here to learn, not to take shortcuts."

(Rabi B (BBA): September, 2023)

"I understand that but the assignments can be overwhelming at times. ChatGPT is similar like having a study partner, you know? Why can't we use it to make life easier?"

(Aizel (BBA): September, 2023)

"I understand why teachers are concerned, but I believe they are missing the point. AI is the future, and we must learn to use it properly. Consider the potential if we could combine our findings with real-world AI applications. It's not a matter of cheating; it's a matter of adjusting."

(Asw (MBA): September, 2023)

"You know, the university talks a lot about AI in their brochures, but it's mostly about research, not implementation. They want us to be theoretical specialists, but what about practical skills? It's discouraging when the emphasis is on publishing papers rather than applying AI techniques to real-world issues."

(Laraib M (Computer Sciences): September, 2023)

"We are not expected to reinvent the wheel every time we face a difficulty in the real world. Employers want us to be efficient and to use the tools at our disposal. It is past time for universities to begin reflecting this fact in their approach to AI integration."

(Zoya (CS): September, 2023)

"I had a different experience. My teacher complimented me for utilising ChatGPT to research market trends for a business proposal. They regarded it as a useful application and pushed me to investigate more AI technologies. It's fascinating how different ideas on AI may be even inside the same university."

(Ashi (BBA): September, 2023)

In the context of University I, students express dissatisfaction with the apparent lack of utility of AI technologies such as ChatGPT in their academic work. The dissatisfaction indicates a mismatch between the available cutting-edge technology and the perceived utility of AI tools in aiding with schoolwork. The students feel that AI can improve their learning experience by giving assistance and easing tasks. Teachers' hesitation to embrace AI technologies like ChatGPT revealed a possible obstacle to perceived ease of use of AI-tools. Students see these technologies as a method to simplify their academic lives, while instructors' opposition creates a perceived obstacle in implementing them into their workflow. Students' dissatisfaction with teachers' prohibition of AI tools relates to the social impact component. The culture of the institution, as well as the influence of teachers, play an important part in developing students' attitudes and behaviours towards technology adoption. If these elements coincide with each other, than the future may not hold much progress towards the implementation of new technology.

4.6.3. University F and Its Technological Spectrum

University F is more technologically inclined university among the chosen locations. Despite the fact that its AI department was established in 2009, it has achieved great progress in recent years. University F, known for its unusually hard curriculum, requires intense dedication, sometimes compelling students to suffer all-nighters, which contributes to less than 50% of students completing within the standard eight semesters. However, this tough atmosphere,

produces highly polished professionals. Graduates are so well-prepared for the professional industry that many report dissatisfactions in their careers owing to the perceived slowness and simplicity of the task. Furthermore, the university had a strong alumni network, and there was a definite industry preference for University F graduates, which increases their employability and success in the professional world. But students on the other hand have more complaints than praises in-terms of the university opting for AI-tools in their academic journey.

“It's the projects, you know? The curriculum is intense, and the deadlines are tight. It's all about the projects, you know? The curriculum is demanding, and the deadlines are short. The intricate details of AI algorithms have turned me into a night owl. They hit differently in the silence of night. It's as if the code speaks to me during those hours.”

(Zain (BS-AI): August, 2023)

“Despite the challenges, I am grateful for the tough time given by my teachers. Because my problem-solving abilities have improved as a result of my teacher's strictness. This culture of excellence is what distinguishes University F graduates in the competitive IT industry.”

(Sher (BS-CY): August, 2023)

“I remember feeling overwhelmed throughout my first semesters. The course was a whirlwind of information. However, this difficult journey has really honed my skills. I am now confident in my abilities as a computer scientist and eager to take on new challenges in the professional field.”

(Emi (BS-CY): August, 2023)

“As far as integrating AI and other technology is concerned, I think University F prioritises the use of new technology and is amongst the top universities in utilising new tech. But this integration did not come that easily. The pressure University F puts on students can be harmful for students at times.”

(Adam (BS-CS): August, 2023)

“Balancing rigorous coursework and personal life is an art here. It's difficult to strike a balance between competing in coding competitions and contributing to open-source projects. This delicate

balancing act is moulding me into a well-rounded professional prepared to face the difficulties of the AI industry. However, it is taking a toll on my health and social life. I'm losing friends, can't contact family much often and it's hard to keep up with other healthy activities."

(Yaan (BS-CY): August, 2023)

University F's demanding curriculum and short deadlines lead to a culture of strong devotion and hard effort, as demonstrated by students. Students may see the usage of AI technologies as necessary for coping with the workload due to the emphasis on projects and the difficult nature of the coursework.

4.6.4. University B's Technological Spectrum

The technology infrastructure for AI implementation at University B is distinguished by proactive actions, top-down leadership support, and a dedication to promoting AI teaching and research. The creation of the Centre of Excellence in Artificial Intelligence is an important move that demonstrates the university's commitment to remaining at the cutting edge of technological breakthroughs. The effort, notably the direction from the Chief of Governing Bodies Staff to build the AI centre, demonstrates high-level understanding of the relevance of AI in academics. Dr. S (Head of the Centre for Excellence), narrates that:

"It all started with a vision, a vision that AI should be at the heart of our academic pursuits. The turning point came when we received an order directly from the Chief of Governing Bodies Staff. He emphasised the importance of establishing an Artificial Intelligence Centre of Excellence. It was a meaningful moment, a clear indication that our leadership understands the critical role of AI in academics. The mandate was about creating the future of teaching and research at University B, not merely technology. The Chief of Governing Bodies Staff's instruction was more than simply a bureaucratic formality; it was a leadership effort that set the tone for our voyage into the realm of AI. We felt encouraged to push the limits of what was possible and to build a technical progress culture inside the university. The Centre of Excellence was established only a year ago, and we're still learning and adapting." The early phases are usually difficult, but I believe AI has a bright future at University B."

(Dr. S: October, 2023)

This top-down support establishes a solid basis for the university's technical infrastructure, emphasising AI's strategic relevance in the educational environment. However, Dr. S did admit resource allocation and bureaucratic problems throughout the conversation. The procedural delays and common challenges experienced in such projects imply that more attention is needed to optimise the development of technology infrastructure. This involves resolving money, resource, and skilled staff challenges, all of which are critical to the success of AI programmes.

"While we've made significant advancements, we must address the resource issues. The bureaucratic roadblocks are slowing us down, but we can overcome them with the correct determination. For this, a cultural revolution is essential. Meaning an AI-revolution. We must not only have the technology, but also foster an environment that encourages creativity. It's a journey, and we're only getting started."

(Dr. S: October, 2023)

The fact that top-tier journals and publishers have recognised University B's research portfolio is a good indicator. It demonstrates that the institution is making substantial progress in the AI sector in terms of scholarly contributions. However, the recognition for the necessity of a cultural revolution is significant. It demonstrates an understanding that effective AI integration extends beyond technology infrastructure. A complete AI-strategy includes changing attitudes, overcoming obstacles, and cultivating an atmosphere that fosters innovation. This cultural transformation is critical for fostering an environment in which AI programmes may thrive and become an intrinsic part of the university's identity. The timeline mentioned, with the Centre of Excellence established barely a year before the interview, shows that the university's AI programme is still in its early stages. This timeline suggests that continual innovations and modifications to the infrastructure are anticipated, demonstrating a dynamic approach to adjusting to the changing landscape of AI technology.

4.7. Utilization of AI in Educational Practices

Part of my research is to identify the utilization of AI-Tools outside of the academic hemisphere. The key characteristics of utilization, (literacy, accessibility and inclusivity) emerged during conversations with students and teachers, therefore defining the landscape of AI adaptation and implementation. During a casual conversation with students from University B, University A,

University F, and International University I, they gently divulged their academic success secret weapon.

“I haven't really mentioned it in class, but I have this great tool at my disposal. It's more like an extension for ChatGPT that also provides online access. It's like having a virtual assistant that helps me brainstorm and polish assignment ideas. I have not yet informed anyone; it is my little secret. It's not cheating; it's simply a clever technique to supplement what I already know.”

(Ijlal (BS-ME from University A): September, 2023)

An extension is a browser programme that improves accessibility and modifies browser functionality. Students using the ChatGPT 3.5 version do not have web access due to ethical considerations. As a result, students purposefully requested an extension with internet connection in order to promote the inclusion of real and accurate material in their work, reducing the possibility of plagiarism. Talking about an extension for ChatGPT which has access to the internet, the respondent shows that him being a digital native proves his ability to navigate through the pool of technology that best suits his educational needs. Another student, a computer enthusiast, passionately shares with a group of pals their approach to academic obstacles.

“I've been utilising ChatGPT to get a better understanding of complicated programming concepts. It's not just about obtaining answers; it's like having a coding friend that walks me through complex problem-solving scenarios. I believe that incorporating AI into our academic path will change the way we learn and use information.”

(Umi (MS Project Management from University B): October, 2023)

The revolutionary influence of AI, notably ChatGPT, on student learning is clear. Part of using AI in education is focusing on each student's learning process across numerous courses. The students describe their experience using ChatGPT as a helpful resource for delving into complex programming principles. The emphasis is on the AI working as a coding partner, offering advice through sophisticated problem-solving rather than simply acquiring answers.

“I got stuck on this recursive function when I had this coding challenge the other day. I couldn't get my mind around it. So I went to ChatGPT. It broke down the steps for me, and it all came

together at once. It's like having a personal instructor who explains things to me in a way that I can comprehend."

(Emi (BS-CY from University F): August, 2023)

"ChatGPT is more than simply doing my homework, you know. It's similar to having a creative collaborator. It helps me develop material, explore concepts, and construct captivating narratives. It's like having a writing companion who knows my writing style."

(Rabi (BS-CS from University I): September, 2023)

As narrated by the student, AI-tools can be more than cheating tools or assignment tools for students. In case of Rabi, she used ChatGPT for marketing her small online business along with taking help from it for her studies. This implies that the students utilise ChatGPT outside of the classroom, including it into entrepreneurial endeavours. Rabi's utility of ChatGPT as a creative collaborator demonstrates the tool's versatility in content production, idea generating, and story building. The development is consistent with the Digital Native idea, which emphasises pupils' adaptation to the digital environment. Students born in the digital age have smoothly incorporated technology into all facets of their lives.

Accessibility and inclusivity are the key characteristic of utilization of new technology into the education system. In terms of the selected universities, the characteristics of accessibility and inclusivity were measured through the number of Tech-Labs in each university, how students use technology and the narratives of technicians (who are part of the admin) about the facilities provided by the university. Each University on the surface level did show characteristics of accessibility to new technology and The degree to which educational institutions guarantee that technology and associated facilities are accessible and available to all students, regardless of their background, skills, or circumstances. When observing these aspects during the fieldwork and compiling narratives of students throughout, a bigger picture is sketched that draws parallels between students and teachers.

"Our institution has two well-equipped Labs for AI-students that offer a wide range of tools. Students get access to cutting-edge technologies ranging from programming to artificial intelligence. We've instituted an open-door policy for our labs. These amenities are available to

all students, regardless of their background. We have specialised sessions to teach students how to use AI tools for research, boosting their academic experience.”

(Admin 1 (University B): October, 2023)

When I asked the students about the open-door policy and sessions to use AI tools for research, the students had almost the opposite narratives to share. One of the student from BS-AI put forth her schedule and the number of labs they have access to.

“So, about the labs. We have a total of two labs. One is for machine learning and the second for parallel distributed computing. Both of these are of 3 hours. And there is no open-door policy. We can only access the labs when we have a class, after that, they just lock everything up. It's almost amusing. They talk about creating a learning environment, yet it appears that they are limiting it to a set time range.”

(Saha (BS-AI from University B): October, 2023)

This conflicting scenario highlights the disparity between the university's official statements and the students' lived reality. Despite the university's claims of cutting-edge labs, the practical application of an open-door policy seems constrained and contingent. The divergence in narratives prompts us to question the institution's dedication to establishing a genuinely accessible and inclusive environment for students to interact with technology beyond the constraints of formal class schedules. When I observed the same question in other selected locales, (comparing their open-door policy) it looked to be a general tendency. This indicated a fundamental problem with the synchronisation of administration proclamations and student experiences. If we take a closer look into this scenario and its similarity among other universities, it appears to be a recurring subject of conflicting narratives between what institutions convey and the practical realities that students encounter highlights a bigger governance challenge within the academic realm. As I have mentioned in the theoretical section that the governance theory posits that a successful organisation should make decisions that are transparent, responsive, and inclusive. The disparity between the claimed open-door policy and the limited lab access only during class hours reveals a governance breach in this case. The disparity between policy pronouncements and their practical execution suggests a lack of clear communication and responsiveness to students' actual needs and

expectations. The observed pattern across the selected universities highlights the need of a governance structure that assures not only the design of inclusive policies, but also their consistent and equal implementation. Institutions may establish an atmosphere that really encourages student engagement with technology and promotes inclusion in accessing key resources by bridging the gap between administrative narratives and student experiences.

One of the defining characteristics of utilization of AI in educational practices is the literacy of AI and its tools itself. For numerous convincing reasons, AI literacy is critical in the educational environment. Because literacy guarantees that AI is more than just an auxiliary feature but also a strategic and useful component in improving the whole learning experience. During my fieldwork, I gathered varied responses regarding the literacy about AI and its tools in action. Most of the students and teachers' responses aligned with the only 'trending' tool known as ChatGPT. Whenever asked the question, *'How familiar are you with the concept of AI being used in education?'*, their reactions were confusing and they only articulated the name ChatGPT. Even with the survey, the results were similar with AI literacy rate. Fifteen participants from the survey exhibited a range of opinions on AI awareness. 6.7% of respondents expressed unfamiliarity with the topic, while 20% demonstrated expertise in comprehending AI and its applications in the educational arena. After going deeper into the subject through in-depth interviews, a notable trend developed, with some respondents predominantly identifying their expertise with a specific AI tool, specifically 'ChatGPT.'

"I wasn't sure about all the technical stuff at first, but then ChatGPT came up." I rely heavily on it for my tasks. It's like my AI navigating the jungle of research."

(Marry (BS-CS from University F): August, 2023)

"I felt like ChatGPT was my secret study weapon." However, it turns out that practically everyone is aware of it. I'm not a computer expert, but that application helps me understand what's going on during coding tasks."

(Addy (BS-CS from University F): August, 2023)

"We had this class in which one of our teachers was discussing the future and how AI would become a vital part of our life. When he questioned me about it, I was like, 'What's that got to do with me?' Because I am a BBA student. But then ChatGPT appeared, and I realised I'd been using it without even realising it was AI. It's like having a wise friend to help me with my schoolwork."

(Iqqi (BBA from University A): September, 2023)

"I was a bit lost when one of my friends mentioned AI the other day. But then ChatGPT appeared, and everything made sense. It's like our student-friendly AI companion. We're more acquainted than we believed."

(Ashi (BBA from University D): September, 2023)

The in-depth interviews' narratives highlight the changing landscape of AI literacy among students. While others were originally unfamiliar with the notion of AI, the introduction of ChatGPT provided a common thread of familiarity. Even individuals who were not entrenched in science disciplines recognised ChatGPT as an AI tool, demonstrating that AI awareness has crossed disciplinary boundaries. ChatGPT's status as a *"secret study weapon"* indicates its practical use in assisting students' comprehension. The tool is an accessible and user-friendly resource that helps to integrate AI techniques into the educational routine. The acknowledgment of ChatGPT's AI character by students who are not studying science indicates a broad and comprehensive knowledge. This goes beyond typical STEM subjects, demonstrating that AI literacy is spreading across other academic domains. ChatGPT has become synonymous with an endeavour to dive into the complexities of Artificial Intelligence, functioning as a catalyst for learning more. With the opinions of students and teachers revolving around ChatGPT, I think that by its broad use and recognition, it plays an important role in establishing the narrative around AI literacy and its practical implementation in educational contexts.

Summary

Chapter 4 identified the role of AI in Pakistani higher education, using data gathered through digital ethnography and interviews with sixty-one respondents. The sociodemographic profile of respondents (including students, teachers, and administrators) is then given, with a focus

on gender and age distributions. The results suggested a gender discrepancy in participants' involvement with AI. With male participants being more enthusiastic and confident in addressing AI-related issues than their female counterparts. According to age demographics, the majority of respondents were between the ages of 20-25 years, which supports the Digital Native Theory. It holds that Generation Z and Millennials are more comfortable and proficient at utilising AI technologies. However, this is not a proven reality in this study. While millennials received administration-mandated training for the use of AI technologies, Gen Z accepted it based on what they heard. In both situations, the generations relied on suggestions from friends and peers to learn how these technologies worked.

The type of AI tools utilised in higher education in Pakistan include mostly generative AI tools (ChatGPT and Bard), smart chat-bots (Clyde on Discord), and assessment and evaluation AI systems. ChatGPT emerged as a valuable tool, with students and teachers using it for a variety of academic tasks such as research, idea production, and lesson planning. The generative AI type is popular, particularly among students aged 20-25 years. This indicated a preference for technology that produces quick and effective outcomes. The research suggested that University F, took a proactive approach to incorporating AI technologies for student input and hosting seminars to promote their use. Faculty members indicate a need for training in "*futuristic ways*" of teaching, emphasising a willingness to adapt to technology improvements in education.

The chapter also gives insights on AI awareness in universities, emphasising the importance of communication, seminars, and a balanced approach to flexibility and awareness for the effective integration of AI in higher education institutions. Most of the respondents relied on the teachings and rumours from their friends for the utilization of AI-tools. Due to this, the emphasis was put upon fostering a pleasant and collaborative atmosphere for both students and teachers in order to facilitate the seamless integration of AI into educational settings. When students were first questioned about AI, they were intimidated, but following persuading, their comfort level improved. This led to the identification of a link between students' perceived familiarity with AI and their real awareness, considering minor differences across government, semi-government, and commercial organisations. Narratives from student interviews highlights the importance of ChatGPT as a core AI technology. When students refer to ChatGPT, they demonstrate confidence in their comprehension of AI, emphasising its use in assignments and

projects. Some students, particularly those who do not specialise in computer science or engineering, accept their knowledge limits.

In summary, the significance of AI in Pakistani higher education, revealed gender discrepancies and age-related tendencies among participants. The widespread usage of generative AI tools, particularly ChatGPT, is highlighted, with University F taking an active role in AI integration. Faculty members indicate a need for future-oriented teaching approaches that are adaptable to technology improvements. The emphasis was on the value of communication, seminars, and a balanced approach to effective AI integration in higher education. The reliance on peer knowledge, as well as the relationship between apparent familiarity and real awareness, emphasised the need of a collaborative environment.

CHAPTER FIVE

INSTITUTIONAL GOVERNANCE FOR AI INTEGRATION

Introduction

Chapter Four thoroughly analysed qualitative data in the form of in-depth interviews, surveys, case study and pilot study, offering insights into adaptability, digital literacy, implementation, and educational practices related to artificial intelligence in Pakistan's education system. Using digital ethnography to contextualise the study within the larger framework of governmental mandates and institutional viewpoints has increased the depth and breadth of the analysis. In Chapter Five, I've expanded the scope of this research to examine the structural and interpersonal factors impacting AI adoption in higher education. I hope to identify the challenges faced due to government laws, decision-making processes, and ethical issues that collectively define the trajectory of AI in educational institutions in this chapter. The investigation goes beyond individual experiences to comprehend the larger environment, providing vital insights to the growth of AI in education. In addition, I have examined the Pakistani government's artificial intelligence policy for 2022. This examination was undertaken in combination with narratives gathered from the respondents. Hence, chapter five uncovers the landscape of AI based on the lived experiences of respondents. This was accomplished by delving into the major themes of this thesis.

5.1. Structural and Personal Limitations in Adaptability

When talking about adaptation, implementation and integration of Artificial Intelligence in higher education system of Pakistan, there is a dire need to look at the infrastructural and personal limitations. Personal and infrastructural limitations in the field of AI integration in education include hurdles and limits experienced by individuals and educational institutions throughout the utilization process of AI-driven technology. A key challenge in integrating AI into education layed in the insufficient digital literacy and understanding of AI concepts among students, educators, and administrators. This lack of familiarity can lead to reluctance in adopting AI, fueled by concerns about job displacement, unfamiliarity with the technology, and a general resistance to significant changes. Overcoming this resistance is crucial for the smooth integration of AI.

5.1.1. Case Study – Ms. H from University F

Ms. H was a new member of University F's instructional staff. She was hired as an instructor at the end of 2022 and began her professional career as a lab instructor, focusing on the topic of English. This work required interacting with students from a variety of academic areas. The academic areas assigned to teachers in University F for FSM department is named as 'Streams'. Ms. H was appointed two streams which included Computer Science (CS) and Cybersecurity (CY). She had two sections for each stream assigned in which she made one lesson plan with the help of AI-tools while the other with collaborative help from other instructors.

This observational study was conducted from August to October spanning over a period of three months. It demonstrated the numerous challenges and opportunities Ms. H faced in the incorporation of AI technology in education. In her unique situation, the research sought to elucidate the delicate interplay between personal adaptability, structural limitations, and the broader educational landscape's receptivity to incorporate AI-driven technology. For Ms. H, using AI tools was a new experience to create lessons and help students. According to her, the recent incorporation of these tools had helped her with saving time but the quality assurance of the work still seemed vague to her. Her stance on using AI tools gave mixed ideas:

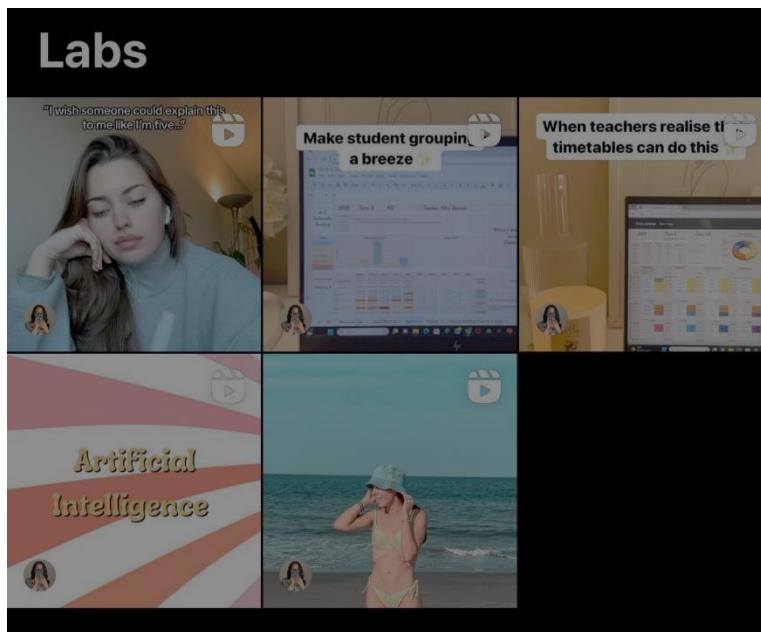
“AI tools do help me with devising lesson plans and everything, but I think excessive use of this may decrease the quality of education since a lesson plan is like the structure of the course.”

(Ms. H: August, 2023)

Ms. H's active participation in an Instagram chat-group among her peers demonstrated a proactive approach to using AI-related technologies into her teaching methods. The fact that she takes the effort to share and save reels throughout the group, resulting in a repository of AI tools, demonstrates her dedication to remaining current with technical breakthroughs. This collaborative involvement within the group implies that instructors are working together to understand and utilise the possibilities of AI in education. These activities demonstrated the value of informal networks and digital platforms in promoting professional growth. The Instagram chat group functioned as a virtual venue for instructors to share AI-related thoughts, resources, and new technologies, resulting in a community of practice. Ms. H's decision to save reels for future

reference exemplified a deliberate approach to knowledge retention, recognising the need of collecting appropriate AI tools for her unique teaching requirements.

Figure 7: Instagram Chat-Group for Instructors



Source: Fieldwork

During the course of the fieldwork, a total of 3 workshops and one seminar was conducted in which Ms. H attended all of these. But observing her colleagues, a few of them seemed to be present in the workshops and seminars. Ms. H's unhappiness with her colleagues' unwillingness to fully participate in AI-related workshops and seminars reflected the teaching community's apprehensions and worries about the integration of AI in education. The fact that some teachers attended these sessions just to meet attendance requirements, rather than actively engaging in the learning process, highlighted a general skepticism or fear of AI technology. This hesitation was shown to derive from a larger concern about AI's possible influence on conventional teaching jobs. The fear that AI would lead to job displacement is a major impediment to the enthusiastic adoption of these technologies in educational contexts. Teachers, who are concerned about the transformational implications of AI, may resist fully interacting with these technologies owing to fears about the future stability of their positions. This conclusion came from the number of AI attended workshops by teachers as compared to the number of other workshops attended. During the time of the fieldwork, other workshops such as mental-health workshops, teaching skills workshops, ELT workshops and English language workshops were also conducted in University

F. Teachers were observed to attend these workshops more frequently as compared to AI-related workshops. Their excuse for not frequently attending the workshop were:

“I am an English instructor and I think I need to focus more on improving English related skills rather than learning AI.”

(Ms. E (Ms. H’s colleague): August, 2023)

“Well I’ve completed my Bachelors in English. I don’t think I would learn much about AI if I started at this age.”

(Ms. H: August, 2023)

The sentiments of being an English instructor and having a degree in English posed as limitations for the teachers. Age was another factor that the teachers felt was a huge hurdle for them to learn about new technological tools. This opinion was a challenge in the effective application of AI in education. Resolving teachers' fears and reassuring them about AI's collaborative and augmentative capabilities should have been the priority for the administration. Recognising and addressing these issues was critical for developing successful training programmes that not only teach technical skills but also address larger concerns and misconceptions about AI. Furthermore, this collaborative effort was observed as a reaction to the difficulties encountered by teachers during formal AI workshops and seminars. The observation that certain teachers skip or attend these sessions just superficially owing to the fear of job displacement exposes skepticism in the teaching community. In contrast, the Instagram chat group offers a more adaptable and participative learning environment, allowing teachers to interact with AI technologies at their own speed and comfort level.

Teachers exhibited widespread opposition to exploring AI learning prospects. Conversations among faculty members indicated deep-seated fears about job security, creating a climate in which using AI technologies was viewed with distrust. This case study indicated a greater issue for educational institutions in cultivating an AI-friendly culture. Structural obstacles, such as hierarchies and fear of job displacement, along with human misgivings, create a complicated landscape in which the potential benefits of AI in education are under-utilized.

5.1.2. Limited Skills and Need for Training to Use AI-Tools

Another personal limitation is the gap in skills needed to effectively use AI tools, requiring targeted training efforts. Additionally, the lack of awareness about the potential benefits of AI in education can lead to skepticism and hesitancy. These personal challenges are further compounded by structural issues, including inadequate technological infrastructure, budget constraints, policy barriers, data privacy concerns, and resistance from administration. I have already stated the fact that digital literacy can be a hindrance for integrating AI in the education system in chapter four. Here, I talked about the gap in skills needed to effectively use AI tools along with policy barriers faced in the selected universities.

Insights from interviews at University F, University B, International University I, and University A highlight the diversity of the universities and their infrastructural conditions. Highlighting challenges in this regard, emphasizing the need for a comprehensive approach to successfully integrate AI into education. As I dug deeper into the infrastructural and personal limitations, a rich tapestry of opinions emerged in the selected universities of this study. Conversations resonated among teachers and administrators, each with a distinct perspective on the role of AI in determining education's future. A mosaic of attitudes, beliefs, and expectations emerged, presenting a vivid image of the complicated environment where tradition and innovation collide.

“You know; I’ve been thinking that artificial intelligence (AI) may really revolutionise the educational infrastructure. Consider having an assistant who caters to each student's need and style. It's like having a teaching assistant who adapts to each learner.”

(Ms. H (Instructor at University F): August, 2023)

“When they talk about putting artificial intelligence into education, it simply feels like a gimmick to me. We've been employing conventional teaching techniques for centuries, and they've worked well for us. Why should you fix something that isn't broken? AI in the classroom appears to be a solution in search of a problem, further complicating matters. I believe in the power of personal connection as well as the efficacy of traditional education. Personal supervision, not algorithms, is required for students.”

(Ms. F (Visiting Faculty at University I): September, 2023)

“While students are excited, faculty members are concerned that AI technologies may disrupt established teaching techniques.”

(Mr. K (Lecturer at UNIVERSITY I): September, 2023)

There is no doubt that the use of ChatGPT (an openAI platform, accessible to all) in education of Pakistan has just began around 2020. This means that the phenomenon is still new for the universities to incorporate new and advanced technologies. But over the span of three years, each university has made progress regarding facilitating its students with AI-driven facilities. It was observed that the pull and push between acceptance and rejection showed signs that the cultural setting of each university also plays a pivotal role in adapting artificial intelligence in the education system.

The landscape of digital literacy at University B is inextricably tied to the university's dedication to maintaining a strong technology infrastructure. It is critical in promoting digital literacy. According to the Head of Centre of Excellence, Dr. S:

“University B provides a well-equipped setting for students and teachers with easy access to information and tools, creating the groundwork for a digitally savvy community.”

(Dr. S: October, 2023)

But words do not provide the true landscape of literacy about AI. A student of BS-AI, Ms Saha exclaims that:

“Machine learning is only in AI. Other courses are pretty much covered in CS IT as well. There is nothing that special about studying AI if the course is not AI oriented. When it comes to projects, I think I have a wonderful time doing all that. But the theoretical bit of the course gets so boring. Isn't AI supposed to have more practical work than theory? If University B provides updated courses and materials that are linked with technology changes, it may improve literacy about artificial intelligence. I think every subject should have one elective course about AI where students are free to choose to study it. Whether you're a Law student or a medical student or even studying humanities or social sciences subjects.”

(Saha: October, 2023)

This pattern was seen throughout the selected universities except for University F. Students from University A provided their curriculum which suggested that:

“So I have total of 8 courses: Machine learning, Machine learning lab, Parallel and distributed computing, Parallel and distributed computing lab, Robotics, Information security, Principal of management and Knowledge representative and reasoning. So in a week there are 2 classes for each course which are of 1.5 hours and then one lab of both P&DC and ML of 3 hrs.”

(Mini (BS-AI): September, 2023)

This curriculum was similar to the curriculum of University B, providing that both Semi-government universities poses the same pattern and curriculum. This pattern seemed to be persistent semi-government universities administered by the same group of Governing Bodies in Pakistan. These governing bodies supervise or are administratively involved in the governance and operation of semi-government institutions, influencing academic programme content and organisation. The governance around these universities affects the decision-making processes, policies, and overall governance which causes infrastructural and personal limitations for adapting AI-driven technology. I have explained the governance and policies in the theme, *“Decision-Making Processes for AI Implementation”*. For now, I take a deeper look at the environmental limitations observed inside the universities.

“It's a delicate dance, really. On one hand, there's this push for progress, to embrace the future of education. On the other, we've got a responsibility to address concerns, to keep the ship steady. Still all depends on the environment of UNIVERSITY I. The core principle of this university is to follow Islamic teachings, so lets see how things progress for AI in the university because for now, its just the beginning. We have just started working on projects related to AI and when the students got to know about ChatGPT, I think a trend started.”

(Dr. A: September, 2023)

“Since the core value of this university is following the Shari'ah, I think the implementation of AI might be seen through the lens of Maqasid Al-Shari'ah which is a law that considers the greater

good, societal welfare, and the prevention of harm. I do think that the stigma revolving around limitations in implementation of AI due to religion and religious laws will be eliminated once we fully incorporate AI. Or maybe it might turn out to be the opposite. And maybe religion becomes a barrier because you never know.”

(Shah (Ph.D English Literature from UNIVERSITY I): September, 2023)

These accounts indicate the university's complex interplay between technological advances and cultural or religious ideals. The phrase "complex interplay" implies a subtle relationship between the two factors - technological development and cultural or religious beliefs. It recognises that integrating AI is a difficult process that requires considerations and agreements to match with the ideas and values important to the university's identity. This dynamic connection impacts AI implementation, suggesting that the assimilation of sophisticated technology is impacted by and influences the institution's cultural and religious background.

When not treated with caution, culture and religion can pose substantial challenges to the application of AI in educational institutions. Integrating AI in situations where cultural and religious values are strongly established necessitates a delicate balance to assure alignment with these ideals. This is especially important at institutions where cultural or religious factors play a significant role in establishing the educational environment's ethos. In such circumstances, AI adoption decisions must be consistent with the institution's basic principles and beliefs. If a university, for example, sets a high value on religious teachings, all technical breakthroughs, including AI, must adhere to the ideals expressed in those teachings. This might include ensuring that AI applications adhere to the ethical and moral norms established by the cultural and religious environment. The critical environment for AI adoption at universities is inextricably linked to the governance of the institution. When authorities prioritise educational objectives above strictly business-oriented approaches, the chance of creating an atmosphere receptive to innovation increases. Decisions for AI integration are more likely to be led by a commitment to improving learning outcomes and social welfare in educational institutions whose governance regards education as a mission rather than a transaction. A governance system that holds itself accountable for students' holistic development, including exposure to cutting-edge technology like as AI, adds to a good atmosphere. This, in turn, permits the judicious implementation of AI into the educational

framework, addressing cultural and religious concerns in a way that is consistent with the institution's larger objective.

Regardless of the university environment, structural restrictions represent substantial barriers to advancement in the integration of AI into educational institutions. The availability and quality of technology infrastructure emerge as critical success elements for AI ventures. When institutions lack well-equipped laboratories, current resources, and cutting-edge AI courses, the possibility for effective application is jeopardised. When AI adoption is motivated more by trends or a desire to demonstrate technical prowess than by a dedication to educational improvement, structural limits become even more obvious. Few of the selected universities were more concerned with demonstrating their technical abilities than with the critical variables required for properly implementing AI. The extension of educational programmes and structures should not be motivated merely by a desire for trends or 'growing your educational business'. Instead, moral principles and a desire to improving educational offers must be prioritised. Institutions that prioritise moral ideals in the design of new courses or structures are better positioned to match technical breakthroughs, such as AI, with education's larger aim of nurturing holistic growth, ethical values, and social welfare. This method assures that structural advancements serve the fundamental substance of education rather than just outward appearances or commercial objectives. Universities that strategically invest in the proper resources indicate a commitment to breaking down barriers and creating an atmosphere favourable to AI deployment success. This method not only empowers educational stakeholders but also advances the academic environment as a whole.

The insights presented in this section are mostly based on thorough observations I collected during classes taken as an Instructor, in-depth interviews, and case study. Surprisingly, my observations had a greater influence on determining the conclusions of my research. The dynamic combination of attitudes, beliefs, and experiences in real-time classroom settings and interactions provides a comprehensive understanding of the human elements impacting AI adoption in higher education. This emphasis that I am giving on observational data adds depth and authenticity to this anthropological study, showing the complex nature of people's responses to AI in educational settings.

I had the opportunity, during my field work, to observe students in AI-related courses while during their classes hours and outside it. For this observation, I divided Individual factors of learning into ten key observation points; Engagement-Level, In-Class Participation, Outside-class Use, Attitude Shifts, Collaboration dynamics, Technical Proficiency, Questioning Patterns, Faculty Adaptations, Expressed Curiosity and Tech-Enhanced Learning.

The criterion for assessing student engagement with AI or AI-tools focused around three major aspects: programme alignment, perceived relevance, and integration with values. The alignment of AI courses with the students' programme emphasis had a significant impact on their level of involvement. Students were more engaged in programmes that emphasised technology and AI courses from the start. However, this was only the apparent level observation. From I previously mentioned ChatGPT as a student trend from its start, engagement levels were greater among students of social sciences, humanities, and management sciences.

“Since I am a CS student, I am bound to use such tools as a helping hand. Its so much easier to code with it.”

(Haideez (BS-CS from University F): August, 2023)

“I have been using ChatGPT for almost everything. People might think that I am a Law student and might not get much out of it, but in reality it has helped me a lot. Almost on a daily basis.”

(Fin (LLB from University B): October, 2023)

“I become more engaged when ChatGPT proves to be useful in the business world. For example, while developing business ideas, creating reports, or completing projects. If I can understand how it may be used, it becomes more intriguing and worthwhile.”

(Zarwa (BBA from University A): September, 2023)

“It's encouraging to see how AI can be aligned with our values.” I have discovered an AI programme that assists in Quranic study by offering historical background. It's amazing how technology honours our customs. But I can understand how it was developed by foreigners since it sends off generic information rather than exclusivity of a culturally or religiously different setting.”

(Shah (Ph.d English Literature from University I): September, 2023)

I noticed that at the selected universities, the diverse dynamics of student engagement with AI revealed intriguing trends. Their engagement was at its peak when they applied AI or AI-tools into practical use. Especially during practical lab sessions, students discovered a real platform for transforming theoretical knowledge into practical abilities. These lab sessions not only bridged the gap between theory and application, but they also created a greater feeling of engagement and passion. This practicality cannot just be confined to students from Computer science, Artificial Intelligence or other Science subjects, but the practicality was seen through other courses as well, mainly by the use of ChatGPT. I observed a surprising inclination in student engagement with AI, particularly around critical times such as their examinations. As exams drew near, there was a noticeable increase in students' interest and participation in AI. This advised a more reactive strategy, with AI serving as the focal point of talks, study sessions, and joint initiatives. The looming examinations served as a motivator, forcing students to increase their involvement and dive further into AI courses. This dual nature of interaction, witnessed both proactively during practical labs and reactively prior to tests, demonstrates the complicated dynamics of how students interact with AI in an academic environment.

“A week before exams, our discussion group essentially turned into an AI workshop. For better comprehension, we were exchanging and taking notes with AI tools. It's strange how the stress of examinations changes our interactions with AI. It's more than simply a subject; it's a survival strategy!”

(Abby (BS-CS from University F): August, 2023)

“I've noticed that ChatGPT was always there but when exams are approaching, it's as if a switch is flipped, and ChatGPT becomes everything.”

(Asw (MBA from University I): September, 2023)

These engagement-levels indicate the importance that these students have given to AI-tools, especially ChatGPT in their educational routine. After assessing the engagement-level, a prevailing pattern emerged. Some students' interaction with AI was essentially limited to test preparation or assignment completion. Student only limiting themselves by engaging with AI-tools

during examination poses as a personal limitation because it emphasised a commercial approach rather than building a true knowledge and interest about AI. The students' capacity to investigate the broader uses of AI was constrained by their exclusive concentration on AI primarily for academic evaluation. They viewed AI as a means to an end rather than as a tool with enormous potential for creativity and problem-solving. This trend hampered the development of a thorough understanding, restricting their capacity to creatively use AI knowledge in real-world circumstances. Moreover, students prioritise memorization over deep comprehension, this exam-centric engagement may result in a shallow understanding of AI principles. As a result, when presented with real-world issues or opportunities that need a deep grasp of AI, these students may be unprepared.

When it comes to observations from in-class participation, each university differed greatly, with each individual student expressing unique attitudes and approaches to AI. There was a palpable passion for in-class AI debates at University B, particularly among students majoring in computer science and related subjects. Their active participation attributed to the natural alignment of AI subjects with their programme objective. Similarly, students at University F demonstrated significant in-class involvement, owing to the university's concentration on technology-related fields. The collaborative learning atmosphere and the incorporation of AI-related information into the curriculum both led to increased engagement. In-class involvement was more nuanced at the International University I. Students enthusiastically participated in talks about the ethical implications of AI. However, overall engagement was lower than at other educational institutions, presumably due to a more conservative approach to developing technology. In-class participation at University A varied depending on the various courses offered. Students in technology-oriented programmes took part enthusiastically, while others were more reluctant. The extent to which AI was incorporated into many disciplines was impacted by the university's numerous programme offerings. I discovered that the dynamics of in-class engagement were critical in influencing students' perception of AI-tools. It was particularly intriguing to note a variety in students' reactions based on teachers' attitudes towards AI-tools. Students reported favourable support of these technologies when teachers showed gratitude for their usage in the classroom. However, despite the favourable response, students showed apathy, maybe due to a sense of responsibility or the notion that the tools were pushed on them. Since teachers hold a significant status in our society where they 'instruct, teach, command and sometimes control' student behavior, attitudes

and engagement, it comes off as a command even when positivity is shown. Contrary to this, when some teachers opposed the use of AI-tools, a different reaction occurred. Students were more tempted to investigate and utilise these technologies independently as a sort of rebellion or curiosity outside the class and even secretly using them inside the class. This behaviour implies that students, particularly those in higher education, crave a degree of autonomy and may object to being instructed which tools to use or not use. These interactions illustrate the difficult balance between direction and autonomy in the educational setting. It implies that a collaborative and inclusive approach, in which teachers give direction without imposing constraints, may promote a more organic and involved integration of AI-tools into the learning process.

As the engagement and in-class participation progressed, a shift in attitudes of students, teachers and admin was seen during the course of my fieldwork. This change revealed a favourable tendency towards more openness and receptivity to AI-tools, mostly ChatGPT. There appeared to be an increasing recognition of the potential benefits and uses of these technologies in a variety of academic fields. While acceptance is clear, the entire educational environment and resources in Pakistan continue to confront problems in fully adopting technological innovations, suggesting the need for continual adaptation and progress. The changing attitudes towards AI technologies represent significant development, emphasising the country's continual evolution of its educational scene. While acceptance was clear, the entire educational environment and resources in each institute continue to confront problems in fully adopting technological innovations, suggesting the need for continual adaptation and progress. The changing attitudes towards AI technologies represent significant development, but most of these attitudes were faced with doubts and a demeaning attitude towards own institution.

“I don’t think our university has done anything about AI. They do not even let us use the already existing tools, so why should I expect more from them? They should first teach properly in order to incorporate something new!”

(Huzi (BBA from University A): September, 2023)

“But that’s not real learning you know! It’s as if you’re a very lazy person who got hold of a tool that makes you lazier. Kaam choro ki nishani ban gaya hai ChatGPT (ChatGPT has become a symbol for slackers).”

(Aizel (BBA from UNIVERSITY I): September, 2023)

The multiple attitudes show how everyone is aware of ChatGPT but some decline its use and limit their access, in fear of becoming slothful. It will be wrong to say that demographic factors (age, gender or educational background) were part of personal limitations but, educational background did cause a few limitations in terms of awareness. Another personal limitation that hinders the implementation and adaptation of new technology is from a teacher-centric side. Human-Centric teaching values are at the core of Pakistani education system. As I observed each university, the emphasis placed on interpersonal interactions, respect, and trust in the teaching and learning process has an impact on the acceptability and efficacy of AI technology. When I interviewed the administration and teachers about incorporating AI and AI-Tools in education, their positivity reflected a different picture.

“The prospects for AI are exciting. We're talking about a transition here, towards a more personalised, student-centered approach. And those doors have the potential to lead to greater results for our students. We are not replacing human intuition; rather, we are enhancing it with AI-driven insights.”

(Ms L (Admin from University F): August, 2023)

“We're heading towards the digital era, seeking to develop and use new educational methods. But this isn't a single expedition; we have to consider the crew, and they have doubts. We cannot ignore the fact that some faculty members are reluctant.”

(Dr. A (University I): September, 2023)

“We're striving for that equilibrium—progress without losing the essence of what defines our education system.”

(Dr. D (University A): September, 2023)

But as the interviews progressed further, their opinions about core values of teaching and teaching through the analog ways was a preference for each teach. Even Dr. S from University B quoted:

“I would still prefer the old-ways of teaching. The analog way because it gives more of a human-ness to the teaching element”

(Dr. S: October, 2023)

A preference may seem like a harmless opinion but this causes limitations, personal and infrastructural, when laid out by the governing bodies. This choice may lead to reluctance to accept AI, resulting in a personal constraint since the individual may avoid learning and implementing new technology. It blocks the growth of digital literacy by providing a personal barrier to comprehending and efficiently utilising AI solutions. As depicted by narratives above, common skepticism of AI is based on personal views or experiences. This skepticism limits an individual's capacity to accept AI recommendations or decisions, reducing the individual's potential benefits from AI technology.

5.2. Limitations Posed by Policies and Authorities

Due to significant factual gap, the current state of education in Pakistan is alarming. On one side, we have a situation where the number of technological advancements are increasing year after year; but on the other hand, its adaptation and implementation is in question due to the illiteracy about its policies in action, as discussed in the literature review. As stated before, my research entails a detailed examination of the Ministry of Information Technology and Telecommunications' National AI Policy 2022 Draft. The goal is to assess the infrastructure policies implemented by students, instructors, and administration. Despite its recent introduction, the government has ordered that this AI policy be implemented in all educational institutions in Pakistan by the end of 2021, which coincides with the timeframe of my research. And so, during my fieldwork, I started asking students, teachers and administration about the policy at hand, which was the National AI Policy 2022. Most of the reactions were surprising towards the existence of the policy.

“We have a Policy for AI?! When did that happen?!”

(Saha: October, 2023)

“Oh it’s just a draft. I mean what would you expect from Pakistani education, right?”

(Haideez: August, 2023)

“No I have no idea about the policy. Infact, I thought that since this phenomenon is new and came into light after the inception of ChatGPT, so there might not be a policy yet for it.”

(Fin: October, 2023)

From the surprised reactions of students, teachers and administration, it was clear that there is an awareness issue in institutes that promote AI and its use. As discussed in chapter four, everything starts from awareness and the proper litigation of promoting a new technology. It is evident from the narratives that universities need to work on promoting AI and give knowledge-based workshops on the use of AI. This clearly reflects the meaning of the theme. It unfolds a complex narrative in the intricate landscape of AI integration in the selected universities, where the governance of each university appears to align with the government policies presented by the Ministry of Information Technology and Telecommunication (MoITT) on the surface. A deeper look shows a more complicated reality. At first look, university administration appears to be in line with government plans, giving the image of participation in the AI industry. Several significant areas are highlighted to be a part of University B, UNIVERSITY I, University A and University F. These areas are also key features in the proposed National AI Policy 2022 for Pakistani education such as; transformation into a knowledge-based economy, training IT graduates, enabling AI through awareness and readiness, AI market enablement and building trust and a progressive AI ecosystem. Administration specifically highlighted how good they are when dealing with AI and incorporating it in their institute:

“Our vision is of a knowledge-based economy, in which AI will play a critical role. We developed an AI Centre of Excellence, equipping IT graduates with AI capabilities and therefore contributing to Pakistan's technological revolution.”

(Dr. S (University B): October, 2023)

“We are shaping the future of AI readiness at UNIVERSITY F-NU. We've raised awareness and enabled AI applications, preparing our students for a market driven by artificial intelligence.”

(Dr. K (University F): August, 2023)

“University A is at the cutting edge of AI market enablement. Our research is aimed at increasing trust in AI technologies and guaranteeing a progressive ecosystem for their development and implementation.”

(Dr. D: September, 2023)

“We emphasise a comprehensive approach to AI through our research and development. Our programmes seek not just to include AI into education, but also to foster a trusting environment, which is necessary for a progressive AI ecosystem.”

(Dr. A: September, 2023)

The narratives above show a significant connection with governance theory ideas, notably in advancing AI inside the academic environment. Transforming into a knowledge-based economy, training IT graduates, enabling AI via awareness, AI market enablement, and developing a progressive AI ecosystem are all elements of the National AI Policy that are reflected through each institute and their administrations narratives. All this demonstrates an institutional commitment to incorporating AI at various levels. From a governance standpoint, these accounts show a top-down strategy in which administrators actively endorse and implement rules that push AI integration. This is consistent with governance theory, which emphasises the importance of institutional leaders in establishing directions and policies. However, as indicated by students' experiences, the mismatch between these myths and reality adds a subtle element. The unwillingness to allow students to utilise ChatGPT, a publicly available AI tool, calls into doubt the genuineness of the stated commitment to AI integration. This disparity shows a possible disconnect between official rhetoric and grassroots execution. The gap between administrative explanations and student experiences raises concerns about the genuine state of AI integration. Progress in governance should be judged not just by policy acceptance and technology breakthroughs, but also by the ethical, inclusive, and privacy-focused implementation of these policies. As officials rush to incorporate AI, it is critical that they address the concerns highlighted by students. The rejection to authorise the use of ChatGPT, a tool commonly used in AI learning, suggests a possible opposition to student autonomy and a lack of receptivity to varied AI technologies. On the surface, the administrators' narratives coincide with the Pakistani government's National AI Policy 2022. The policy's key notions, such as transitioning to a knowledge-based economy, training IT

graduates, increasing AI awareness, market enablement, and establishing a progressive AI ecosystem, are echoed in institutional narratives. However, the narratives reveal a crucial aspect - a disregard for ethical and privacy concerns. While administrators concentrate on the technical and economic elements of AI integration, there is a significant lack of discussion on the ethical components. This lapse contradicts the national policy's values, which emphasise ethical AI adoption.

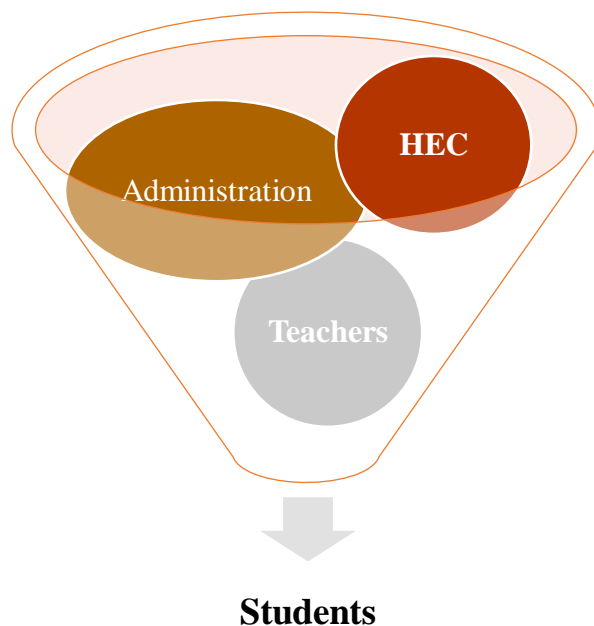
5.3. AI Implementation Decision-Making Processes

Power play are common in hierarchical institutions, where people at the top wield power over those at the bottom. Notably, among higher education institutions, semi-government universities stand out as technology innovation hotspots. These institutions frequently have a significant advantage, particularly when they fall under the jurisdiction of Pakistan's higher Governing Bodies. The research focuses on well-known semi-government institutions such as University A and University B. These governing bodies (which have ties to national security and defence) place a greater focus on technical growth, particularly AI integration. The existence of higher governing power in semi-government institutions adds a new dimension to the governance environment. The strategic emphasis on technology and innovation can help speed the deployment of AI inside educational institutions. This is evident in the research findings, which emphasise accomplishments and activities in higher governance of semi-government universities. The landscape of AI integration is shaped by the delicate interplay of power dynamics, which is impacted by the individual governance systems of institutions. While some organisations may use their ties to accelerate technological growth, others may face bureaucratic roadblocks and conservative views.

Most of the universities (University B, University A, University F and University I) practice the 'top-down' approach where the flow of instructions starts from HEC and narrowed down to the students. This seemed to be the case with each university. But the results of the instructions given by HEC were not seemingly followed in a similar pattern. Since, each university is governed by different authorities, (Government, Semi-government and private institutes), each possesses a

unique pattern of governance which sets their infrastructural landscape apart. This flow of instructions has been visually represented in *figure 8*.

Figure 8: Filtering of Policies from HEC to Students



Source: Fieldwork Observation

The visual representation of a funnel-shaped process demonstrates the filtering of information on AI policy in higher education. A funnel diagram is commonly used to show the filtering of information and its end result. At the top of the funnel is the Higher Education Commission (HEC), the regulatory authority in charge of developing and publicising standards on the ethical use of AI tools in education. As the policies move through the funnel, they are sent to the university administration, where they are implemented and customised to reflect the institution's educational image and ideals. The funnel narrows even more when these policies are then filtered via teachers, who play a critical role in interpreting and adjusting the policies for practical application in the classroom setting. However, a significant amount is narrowed when the information reaches the students at the bottom of the funnel. Unfortunately, the filtering process has resulted in less clarity about the actual regulations regarding AI policies and its implementation. Many students were uninformed or had little awareness of the initial policies developed by HEC. This lack of knowledge is especially visible as students engage in their educational endeavours, striving to use

AI tools. The narrowing of the policies represents the decreasing knowledge and comprehension of policies as they progress down the hierarchy. As a result, while being at the educational end of the process, students may lack the knowledge required for the ethical application of AI technologies, potentially leading to unintended effects or ethical failures. The visualisation underlines the problem of maintaining the integrity and clarity of policies as they traverse different levels of the educational hierarchy. Since governance plays a critical role in the implementation process, there is a dire need for improved communication, openness, and awareness-raising initiatives to ensure that policies are properly understood and followed at all levels of the educational hierarchy.

The complicated terrain of AI integration in Pakistani higher education is determined by strategic activities and image-building initiatives as well as top-down authority. Symbolic gestures were used as tools of influence and power within the governing structures of University B, University F, University I, and University A. Due to confidentiality reasons, I have given these narratives a pseudonym for confidentiality purposes.

“We have taken initiatives like opening AI-centre in our institute but our focus is more on research”

(Ms. H: August, 2023)

“Our collaboration with prominent companies from the tech-industry is something we are proud of. I cannot name these companies due to privacy reasons but we have been doing major projects and collaborating with major companies. We are also collaborating with the government on projects that are related to computer-vision and machine learning.”

(Ms. E: August, 2023)

These symbolic gestures took the shape of funding allocation, the construction of specific AI research centres, or the launch of joint initiatives with industry partners in the goal of AI integration. As seen through the narrative above, while these gestures represented a commitment to technical development, their real influence on substantial AI integration required careful consideration. Effective public relations (PR) initiatives are essential components of university governance power play. The image of an institution, particularly its stance on technological

innovation such as AI, is carefully built through public relations initiatives. To portray a favourable narrative, these techniques may include press releases, media coverage, and strategic communication. The alignment of these narratives with the ground realities of AI integration, on the other hand, requires study.

“For instance; one of the selected locale inaugurated a seminar which titled; “The Two AI”, and had pictures of Allama Iqbal and an AI robot face to face. Just because of the dire need to do something regarding AI doesn’t mean its supposed to be right. But that did wonders with PR.”

(Dr. S: October, 2023)

Symbolic gestures and public relations emerge as crucial factors that form the narrative of AI integration inside the complicated web of university governance. The narratives described above provide a lens through which to examine the validity of these symbolic acts and communication methods, determining if they represent true advances in AI adoption or are strategic manoeuvres within higher education institutions' power struggle.

All this so far indicated in looking at the power-dynamic of each institute which highlights if these institutes are applying the right policies for the integration of AI. Relationships between administration, teachers, and students, which are impacted by hierarchical structures and institutional cultures, were found to have a significant impact on the implementation of AI efforts. The narratives that follow give insights into the delicate power dynamic that occurred within the selected universities and its influence on AI integration.

“We don’t know much but the top-level administrators make decisions on embracing technologies and changing courses. While striving for rapid adoption, this top-down governance model sometimes overlooks the essential input and knowledge of educators on the ground.”

(Ms. E: August, 2023)

This scenario shows an authoritative approach in which choices are centralised at the top, restricting teachers' ability to shape the educational environment. The concentration of decision-making authority in the hands of administrators may result in a lack of different viewpoints and new ideas from faculty members. This strategy has the potential to stifle the organic growth of AI

efforts, as bottom-up innovation is required for effective integration of sophisticated technology in education. In contrast, there is evidence of faculty autonomy supporting new approaches to AI integration at a few private universities. Some instructors describe having the freedom to experiment with artificial intelligence tools in their teaching approaches, which contributes to a more organic and collaborative adoption of new technologies. Teachers are active participants in decision-making processes in many circumstances, deciding how AI is implemented into the curriculum

“I have given my students full autonomy over using AI-tools and incorporating them in projects and assignments for assistance and not to completely copy-paste from it.”

(Dr. A: September, 2023)

“I believe their abilities to think and create will vanish with the excessive use of ChatGPT”

(Admin 1: September, 2023)

When seen through the lens of governance theory, this shows that a more decentralised and participative approach, enabling faculty autonomy, can result in a deeper and more sustainable incorporation of AI. Decision-making in such instances becomes a collaborative endeavour, depending on the knowledge of educators who work directly with the students. This decentralised approach may result in a more responsive and contextually appropriate AI deployment that adheres to shared governance norms. On the other hand, some teachers express dissatisfaction with what they see as symbolic AI activities within their schools. They report on the construction of AI centres and laboratories for the sake of appearances rather than to stimulate meaningful interaction with AI technology. Teachers believe that these programmes are motivated more by a desire to demonstrate technological superiority than by a genuine desire to integrate significant AI into teaching.

“We are proud of our AI centre and its progress so far.”

(Dr. S: October, 2023)

“We are leaping towards a future in our university where AI would help in assisting students, teachers and administration in day-to-day tasks as well. We have started by implementing

evaluation AI for the teachers to make it easy for them to give evaluation reports on individual students.”

(Dr. K: August, 2023)

The narratives mentioned above demonstrate symbolic governance, in which institutions place appearances above substance. The formation of AI centres in the absence of a comparable commitment to faculty engagement and financial allocation for AI initiatives may be viewed as performative rather than transformative. This approach has the potential to stymie the development of a collaborative and effective AI integration plan. The perspectives of selected university lecturers highlight the essential role that governance dynamics play in influencing the trajectory of AI integration. The tension between top-down instructions and faculty autonomy emerges as a prominent subject, with governance theory giving useful insights into the consequences of these dynamics for the organic growth and efficacy of AI programmes within educational institutions.

5.4. Ethical Issues in AI Adaptation

Ethical issues are crucial in establishing the landscape of technology integration in the context of AI adoption in education. I first measured the ethical issues and their graveness in terms of AI adaptation from the google survey form. The possible compromising of data privacy and security is one of the key ethical issues. As educational institutions depend more on AI algorithms to handle and analyse massive volumes of student and teacher data, concerns about the security of this sensitive data develop. When I asked students if their excessive use of AI-tools might cause privacy issues, their reactions were somewhat reflected through their attitudes of not really worrying about privacy.

“What kind of privacy issues are we talking about? I’ve never understood this thing.”

(Zarwa: September, 2023)

“I’m no son of Bill Gates that I should hide my identity or my personal data from going on the internet.”

(Asw: September, 2023)

“You know everyone in this world has their carbon footprint on the internet somehow. Either their social media account or their gaming data. One way or the other, everyone’s personal data is on the internet so why should I be concerned about AI and its implications?”

(Ashi: September, 2023)

“I'm not sure who's watching but our digital footprint is getting larger.”

(Haideez: August, 2023)

“Privacy is important, but it feels like we've already given up so much on the internet. If AI improves education, that may be a reasonable trade-off. Is that correct?”

(Eric: October, 2023)

“I'm not too concerned about it. It's merely snippets of knowledge. I think it's alright as long as they're not selling my secrets to the highest bidder.”

(Abby: August, 2023)

“My online life is already an open book.” Why not, if ChatGPT can utilise it to improve my learning experience?”

(Emi: August, 2023)

This points to a recurrent issue in AI adoption: consumers may not completely understand the dangers and repercussions of their data being processed by AI algorithms. From an ethical stance, this highlights the significance of educational campaigns to educate people about the privacy problems associated with AI technology. The contemptuous attitude towards privacy issues, conveying the notion that the disclosure of personal data is unavoidable. This viewpoint raises ethical concerns concerning the right to privacy and organisations' obligations to protect user data. It emphasises the need of organisations communicating clearly and transparently about how user data is handled, even if some people may have a more relaxed approach to privacy. The normalisation of personal data exposure on the internet, as emphasised by Eric, does not free AI developers and organisations of ethical duty. It emphasises the significance of strengthening

ethical norms, especially in the midst of widespread data sharing. On the other hand, some students and teachers were concerned about the ethical issues from a future perspective.

"I've heard of AI systems collecting data for personalised learning, but I'm not sure how secure they are. What happens to all the data they collect about us? It's a little worrying, especially given the recent privacy scandals."

(Shah: September, 2023)

"I use ChatGPT for assessments, and it helps me tailor lessons. But, I am continuously thinking about the student data that I am entering. Are we doing enough to prevent it from ending up somewhere it shouldn't? It is a duty that must be addressed."

(Saha: October, 2023)

"There is no question that AI is shaping our learning. But are they as protective of our personal information? We must strike a delicate balance."

(Zarwa: September, 2023)

"As a student, I appreciate the AI advancements, but as someone who values privacy, it's a conundrum." They must build the barriers that surround our data."

(Haideez: August, 2023)

"I like personalised learning, but what about my personal information?" I don't want it circulating. They should tighten the data security screws."

(Asw: September ,2023)

Concerns have been expressed by stakeholders regarding the possible misuse of their personal data, emphasising the importance of strong security measures to prevent unauthorized access or exploitation. There is widespread skepticism and a demand for greater openness in how AI systems handle and keep data. It has been observed that clear communication regarding data security policies is critical. Some stakeholders advocate for robust data security rules in AI-powered education, emphasising the significance of legal frameworks to safeguard user privacy.

The findings indicate that stakeholders, notably students and educators, are concerned about the security of their personal data inside AI-powered educational systems. These accounts highlight the necessity of resolving these issues through open communication, strong security measures, and the adoption of clear legislative frameworks to protect user privacy in the emerging environment of AI in education. Privacy is a common subject in their stories, showing a widespread concern about the destiny of their sensitive data. Some stakeholders, such as Zarwa, demonstrate a lack of knowledge of AI privacy risks. This suggests that thorough education and awareness programmes are required to close the knowledge gap. Individuals like Asw appear to be unconcerned with the inevitable disclosure of personal data on the internet. This acceptance, however, is not without concerns, implying a desire for more control and security. The findings highlight the importance of educational programmes to improve stakeholders' knowledge of AI-related privacy concerns. Individuals may be empowered to make educated decisions and fight for their privacy rights via clear communication and training. The concerns expressed by stakeholders underline the necessity of openness and control over personal data. AI developers and educational institutions must prioritise transparency to ensure stakeholders have visibility into how their data is utilised and control over its distribution. Stakeholders expect responsible and ethical behaviour, necessitating the incorporation of strong ethical frameworks into AI-driven educational systems. The problem is to strike a balance between harnessing AI for educational innovation and protecting students' and instructors' privacy rights. This necessitates ongoing examination of policies and procedures in order to conform with developing privacy requirements.

Part of ethical consideration is looking at the bias and fairness of the AI algorithms. Biasness in AI algorithms is a serious topic in the educational sector. The presence of systematic and unfair preferences that might lead to discriminatory consequences is referred to as bias. Biasness in AI systems takes many forms, including demographic prejudice, cultural bias, and socioeconomic bias. These prejudices may be inadvertent, yet they have a significant impact on educational possibilities. If AI systems are educated on biased data, they can perpetuate and even worsen existing educational inequities. For example, if previous admission data is biased against specific populations, AI may propose or make judgements that perpetuate these inequities. I asked students and teachers if they ever faced biasness from the generative-AI 'ChatGPT' as it is a foreign product, their narratives unfolded mixed emotions:

“I don’t think I have faced any biasness from the tool. It’s a system programmed to give unbiased answers to our questions. Its not supposed to be like that.”

(Adam: August, 2023)

“Well, at times when I ask ChatGPT to give answers about conflicted wars or give accounts of people who faced war situations, it mostly victimizes the western world whereas it makes others a terrorist or the culprit. Other than that, I don’t see anything like biased behavior.”

(Marry: August, 2023)

“TBH, I don’t see any harm in it being biased. It is a western product so the algorithms used in its making are bound to have that biasness. At least the westerners have made something useful, unlike us Pakistanis who can’t even give authority to educators to be the top level administration for the education sector!”

(Eric: October, 2023)

“You know how these AI plagiarism checkers are now a thing amongst teachers? Well these were so biased! During tests, I’ve witnessed classmates wrongly penalised by the AI-plagiarism checkers. I saw them do the work by themselves but since AI is a placeholder that is ‘never-wrong’, our teacher did not believe us!”

(Haideez: August, 2023)

“Disciplinary measures appear to be more severe for students like myself. The AI system appears to exaggerate stereotypes, resulting in erroneous judgements. Every step feels like a battle against the odds.”

(Shah: September, 2023)

Although there appears to be trust in the system's neutrality, it raises concerns about understanding of potential biases embedded into AI models. The accounts above demonstrate the ethical dilemma of AI systems maintaining preconceptions and biases, perhaps contributing to disinformation or reinforcing prejudices. Through the narratives it is seen that AI-plagiarism

checkers are criticised for being biased, shining light on real-world problems harming academic integrity and student-teacher relationships. I believe the awareness issue mostly arose from cultural diffusion of digital literacy. Individuals appear to have a range of digital literacy levels based on the accounts above. The assumption that "it's a system programmed to give unbiased answers" represents a particular degree of digital literacy in which the user may have a basic knowledge of how AI works but may be unaware of the complexities of biases inside these systems. This is due to cultural diffusion, in which information regarding AI and its ethical issues has been distributed to some level but has not achieved a thorough understanding among all humans. The proof of cultural diffusion of AI literacy is presented through the accounts (and google survey form as well) of teachers and students both when asked *'where did they hear about the tool ChatGPT?'*

"I got to know about ChatGPT through a friend."

(Yaan: August, 2023)

"Internet was my one-true source. I think everyone first got to know about this through social media. I got to know about it through Instagram."

(Huzi: August, 2023)

"Not going to lie but I got to know about it from my student."

(Labie: September, 2023)

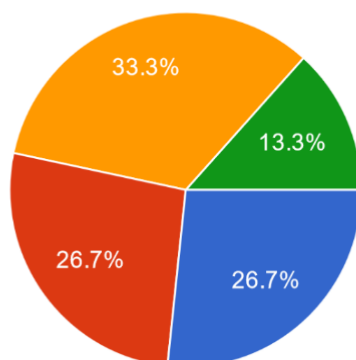
"I was doing my coding assignment with my seniors and they introduced me to ChatGPT back in 2022."

(Zoya: September, 2023)

As digital tools grow more common in society, the spread of digital literacy becomes a cultural phenomenon. Individuals developed digital literacy at varying rates, depending on factors such as education, exposure, and cultural attitudes towards technology. The various opinions on biases in AI systems is symptomatic of this continuous process of cultural dissemination. While taking in-depth interviews of students, the question was raised about their perspective on the ethical and privacy concerns. Their opinions unfolded to be similar to the narratives above. The

kids had a great understanding of privacy problems, indicating a degree of privacy literacy. They recognised the need of policies that safeguard personal data while also giving individuals control

Figure 9: Qualitative Google Survey Questionnaire



Source: Fieldwork

over their information. Even though they were not fully aware of a policy presented by the Pakistani government, they still showed enthusiasm towards it. The focus on data control aligns with the ethical notion of informed consent present in the National AI policy 2022. Individuals should be informed about data collecting procedures and have the ability to determine how their data is used, according to policies. Even though the policy was not seen to be implemented and be known of, but this section aligns with the policy. In this section, the accounts emphasised the significance of privacy protection, algorithmic fairness, and responsible content representation. These factors are critical in ensuring that AI integration adheres to ethical norms and respects persons' rights and varied opinions.

Summary

The fifth chapter of the study examined the landscape of AI integration in Pakistani higher education, which including awareness, policy implementation, decision-making processes, and ethical considerations. In terms of awareness, a significant gap was discovered among students, teachers, and administrators understanding the National AI Policy 2022, indicating a possible disconnect between administrative claims and grassroots implementation. Policy implementation is investigated through tales that illustrate educational stakeholders' startling lack of understanding about the National AI Policy 2022, despite government mandates to adopt it.

Decision-making procedures are mostly 'top-down', affected by governance structures and power dynamics, with semi-government institutions placing a strategic priority on technology and innovation. Symbolic gestures and public relations help shape the story of AI integration in university governance. Ethical considerations in AI adaptation were investigated, with an emphasis on data protection and security. While some people dismiss privacy issues, others are concerned about the protection of personal data in AI-powered educational systems. Bias in AI algorithms is also a major worry, with different feelings regarding the neutrality of AI systems. The study emphasises the importance of clear communication, educational programmes, and ethical frameworks to promote responsible and inclusive AI use in education sector.

CHAPTER SIX

DISCUSSION & CONCLUSION OF THE STUDY

6.1. Discussion

In this chapter, I have discussed my key findings in reference to the existing scholarship of the role of AI in higher education system of Pakistan. The discussion consists of my findings on the adaptation, implementation, limitation, governance and ethical issue as a holistic study. I have discussed each key findings from the analysis section in this section.

The primary findings from the socio-demographic profile study in the research on AI in the Higher Education System match with the digital native's idea, which is explored in chapter four. Female participants were more engaged in the early replies, which might be attributed to the researcher's gender and her active social network among women. In-depth interviews, on the other hand, indicated a male majority, mirroring gender dynamics in the technological industry. Despite historical tendencies, a growing number of female educators are challenging preconceived notions. The respondents' age played a significant effect in developing their views on AI in education. The majority were between the ages of 20 and 25, and the survey divided respondents into generations. Generation Z and Millennials emerged as pioneers in the successful integration of AI tools, displaying digital native traits. The term "digital natives" has acquired currency, particularly among Generation Z and Millennials. Growing up in the digital age, these generations demonstrated a natural comfort and aptitude with new technological instruments. Their innate knack for technology corresponded to the key components of the Digital Native Theory. Overall, the socio-demographic profile revealed the changing landscape of AI in education, with gender, age, and generational characteristics impacting respondents' involvement and viewpoints. The abundance of digital natives among younger generations highlighted their critical role in properly integrating AI tools in educational settings.

The pilot study revealed the creation of adaptive patterns through the interaction of students, AI tools (particularly ChatGPT), and social media platforms. Students are increasingly using platforms like Discord, which has an influence on the AI adaption cycle in educational situations. Adaptation of these tools was not just influenced by social media platforms but also peers. Positive peer experiences improved acceptance and implementation of ChatGPT. Students in Group B

reported a willingness to employ AI technologies, indicating a shift in academic responsibilities' views towards technology. Younger students (19-28) displayed ease with technology by smoothly integrating ChatGPT into their workflow. They demonstrated an instinctual understanding of how to utilise ChatGPT efficiently. Students in the MS age range (29-37) demonstrated a more sophisticated trend. They tended to use a more manual approach to data collecting when using ChatGPT, indicating a transitional step in adopting to AI. In academic work, the MS age group demonstrated a combination of classic and new methodologies. New methodologies were adapted due to their busy schedule of maintaining their work. Control, data assurance, and familiarity with established research methodologies affected their selections. The study emphasised the importance of taking a balanced approach to AI integration in education, taking into account the merits of both AI tools and traditional research methodologies. Furthermore, the data demonstrated students' changing mindsets, with digital natives smoothly adopting AI tools into their academic routines, while those in the MS age group managed a change while remaining connected to conventional research procedures. This delicate mix of conventional and modern methodologies brings both obstacles and possibilities, contributing to a more comprehensive understanding of AI's influence in educational contexts.

The study of the interaction between AI adaptability and awareness in educational institutions gave important insights into the problems and potential solutions for implementing this technology. The amount of knowledge and comprehension within the academic community is inextricably tied to the effectiveness of incorporating technology in education. Notably, University F took a proactive approach, building feedback systems and organising seminars to encourage the use of AI technologies, demonstrating a dedication to technical expertise. However, at University A and University B, there was a lack of knowledge, notably about the underutilised AI centre, highlighting communication issues within these schools. Students' dissatisfaction with the poor distribution of information at University B highlighted the crucial significance of clear communication channels in supporting the integration of AI into education. This study emphasised the need of students being well-informed about accessible resources in order to properly utilise AI techniques. Teachers at University B took a conservative approach, banning students from utilising ChatGPT for assignments, which not only hampered experimenting with new technologies but also damaged the student-teacher relationship.

The study discovered that strategic integration of AI goes beyond just absorbing AI technology; it also entails shifting dynamics among students, teachers, and administrators. The construction of an AI Centre of Excellence at University B represented a top-down approach with backing from the Chief of Governing Bodies Staff, simplifying processes and emphasising the importance of AI. The university's involvement in commercialization activities indicated a dedication to using AI to solve real-world problems. Different approaches to AI at University B and University F mirrored differences in the business and government/semi-government sectors. While University F was lauded for its technological environment and worldwide connections, University B actively embraced AI integration through projects such as AI-powered interactive platforms targeted to students' different learning requirements. Students at both universities, however, expressed worry about the possible replacement of conventional teaching techniques and the influence on the student-teacher relationship. The International University I research identified specific obstacles arising from cultural and religious factors. Despite worries about the ethical implications and potential consequences for student behaviour, there was a clear interest in investigating AI's role in Islamic banking. Beyond cultural differences, the research highlighted that adopting AI in universities entails complicated aspects such as sustainability difficulties, workforce preparedness, and the possible influence on educational paradigms. The findings highlighted the importance of striking a balance between flexibility and awareness in educational institutions in order to properly use AI. Clear communication lines, strategic integration, and a sophisticated awareness of cultural and religious settings are critical for successfully managing AI's problems and potential in higher education.

Several major conclusions resulted from the analysis of four selected institutions in the investigation of the use of artificial intelligence (AI) in the higher education scene in Pakistan: University A, University I, University F, and University B. The study began with an examination of the stages of AI application in each institution, with an emphasis on interactions with students, teachers, and administrators. The anthropomorphization of ChatGPT was noticeable at University A, with students lovingly referring to it as "Chatty." This not only highlighted the students' desire to humanise AI technologies, but also the social and interactive elements of their participation. The term "Chatty" reflected the perceived utility of ChatGPT, signifying its incorporation as a helpful academic toolset, simplifying and engaging communication with technology. In contrast, although excelling in theoretical fields such as AI, robotics, and scientific computing, University

I experienced a huge gap between theoretical understanding and actual execution. Students expressed discontent with teachers' perceived restrictions or discouragement of the usage of AI technologies such as ChatGPT in academic activities. This revealed a gap between the institution's academic emphasis and students' need for practical application, highlighting possible barriers to the perceived ease of adopting AI technologies. University F, noted for its technology emphasis, had a rigorous curriculum that produced highly educated individuals. Despite this, students have expressed concerns about the university's use of AI technologies in their academic careers, citing stress and potential harm to their well-being. The intense courses and tight deadlines fostered a work culture, but generated worries about the impact on students' health and work-life balance. University B distinguished out for its proactive approach to AI adoption, creating an Artificial Intelligence Centre of Excellence. The top-down leadership support, demonstrated by an order from the Chief of Governing Bodies Staff, demonstrated a commitment to keeping on the cutting edge of technical breakthroughs. However, Dr. S, highlighted problems such as resource allocation and regulatory impediments, emphasising the need for a cultural revolution to establish a favourable atmosphere for AI programmes.

Students' dependence on AI technologies, notably ChatGPT, as a hidden weapon for academic achievement was exposed by the use of AI in instructional practices throughout various universities. Students emphasised the tool's adaptability in assisting students with schoolwork, research projects, and complicated problem-solving scenarios, highlighting its position as a virtual assistant, coding pal, and personal instructor. The accessibility and inclusion of technology in these universities, revealed a gap between official pronouncements and students' experiences. Despite boasts of cutting-edge labs and an open-door policy, actual access to technology appeared limited, casting doubt on the institutions' commitment to fostering an inclusive atmosphere for technological engagement. AI literacy emerged as a significant aspect, with ChatGPT serving as a focal point in students' understanding and use of AI. Even individuals who were originally unfamiliar with AI recognised and accepted ChatGPT as a user-friendly AI tool, bridging disciplinary gaps and contributing to a greater knowledge of AI literacy across academic areas. The findings emphasise the significance of matching institutional priorities with students' objectives, resolving resource allocation difficulties, and cultivating a culture that encourages both theoretical understanding and practical use of AI in education.

This study uncovered major structural and personal limitations as expressed by the narratives of students, teachers and administration, that impede adaptability. Students, instructors, and administrators confront issues such as a lack of digital literacy and knowledge of AI ideas. This lack of familiarity adds to hesitation and resistance, which is motivated by fears of job loss and a general dislike to substantial changes. Personal restrictions include a lack of skills necessary to use AI systems successfully, needing specialised training efforts. Furthermore, ignorance regarding the potential benefits of AI in education breeds skepticism. These personal difficulties are exacerbated by structural factors such as inadequate technology infrastructure, budget restrictions, legislative impediments, data privacy concerns, and administration reluctance. The variety of infrastructure circumstances highlights the importance of a holistic strategy to AI integration. The cultural context of any university is critical in moulding views towards AI. Semi-government university governance and regulations, notably those run by Pakistan's Higher Governing Bodies, impact academic programme content and organisation, resulting in infrastructural and personnel limits.

Cultural and religious principles also influence AI deployment, with universities balancing technical advancements with adherence to key values. In situations where cultural and religious beliefs heavily impact the educational ethos, integrating AI is difficult. According to the report, a governance structure that prioritises educational aims and holistic development fosters an environment that is open to innovation while also addressing cultural and religious issues. The availability and quality of technological infrastructure are crucial success criteria for AI integration, as are structural limits. Institutions that prioritise moral ideals and a commitment to educational growth are better positioned to link technology advances, such as AI, with larger educational aims. The report emphasises the necessity of investing in the necessary resources and building an AI-friendly atmosphere. Observations during classrooms and interviews show that programme congruence, perceived relevance, and integration with values all impact student engagement with AI. When AI is used realistically, engagement skyrockets, bridging the gap between theory and implementation. However, there is a tendency in which students limit their involvement with AI to test preparation or assignment completion, preventing them from gaining a thorough grasp and creative application of AI expertise. In-class involvement varies per university, with some encouraging active participation through collaborative learning settings and others taking a more cautious approach. Teachers' views towards AI-tools have a substantial

impact on student reactions, demonstrating the difficult balance required in educational settings between direction and autonomy. Changing attitudes towards AI technology have also been identified as crucial results, indicating more openness and receptivity. However, skepticism and a dismissive attitude towards institutions prevail, resulting in personal constraints. Some people see AI as a commercial instrument for academic evaluation rather than its broader potential for innovation and problem-solving.

Key findings for structural and personal limitations in adaptability unraveled various aspects. At the structural level, challenges such as a lack of digital literacy, gaps in skills required for effective AI usage, and a lack of understanding about the potential benefits of AI all contribute to student, instructor, and administration resistance and hesitation. These human difficulties are amplified by institutional limitations such as insufficient technology infrastructure, budget restrictions, legislative barriers, data privacy concerns, and administration reluctance. The analysis of engagement levels and in-class involvement reveals complex patterns among students from various academic backgrounds. While computer science students are highly engaged, students from the social sciences and humanities also find AI applications useful, particularly during practical lab sessions. The fact that AI involvement increases around test times suggests a reactive strategy, with students using AI technologies as a survival strategy during difficult academic periods.

Moving on to "Power-Play and Policies: Limitations Posed by Policies and Authorities," the study tackles a significant gap in understanding of AI integration policies. The Ministry of Information Technology and Telecommunications' National AI Policy 2022 Draft intends to guide AI application in educational institutions. However, the startling lack of understanding among students, instructors, and administration suggests that proactive measures to distribute information and provide knowledge-based workshops on AI regulations are required. The review of narratives suggested a top-down approach, with administrators voicing support for the government intentions articulated in the National AI Policy. The analysis, however, reveals a possible mismatch between official discourse and grassroots implementation. The major findings highlight the complex web of issues impeding the effective integration of AI into Pakistan's higher education system. These obstacles vary from personal and structural limits to cultural and religious influences, governance concerns, and policy awareness gaps. To address these problems, a comprehensive approach that

includes targeted training initiatives, infrastructure development, cultural sensitivity, and a true commitment to ethical AI adoption is required. The report advocates for a collaborative effort encompassing educational institutions, politicians, and administrators to manage these challenges and fully realise AI's promise in influencing Pakistan's educational future.

Students' degrees of understanding and attitudes towards ethical problems, notably data privacy and security, emerge as a major point, with students demonstrating various levels of awareness and attitudes towards these issues. The findings highlight the critical need for extensive training programmes to bridge the knowledge gap and empower consumers to make educated data privacy decisions. Concerns have been expressed by stakeholders, including students and educators, over the protection of personal data inside AI-powered educational systems, emphasising the need for rigorous security mechanisms and regulatory frameworks. Furthermore, the study finds complex opinions on prejudice and fairness in AI systems, raising worries about biases influencing academic integrity. Individuals' various levels of digital literacy lead to a range of viewpoints on AI-related ethical dilemmas, emphasising the importance of cultural transmission in moulding knowledge. So, findings highlight the complexities of ethical issues in AI integration, arguing for openness, security, and comprehensive education to navigate Pakistan's developing terrain of AI in education.

6.2. Conclusion

The aforementioned results from the current endeavour, in general, give holistic views of the episteme and accounts of numerous institutions, selecting many students, teachers, and administrative personnel from diverse backgrounds for rich data. The purpose of this study was to assess the effect of artificial intelligence (AI) integration on student learning outcomes and academic success. Identifying institutional structural and personal limitations in AI adaptation, evaluating faculty attitudes, competencies, and training needs about artificial intelligence in higher education institutes, and investigating AI-driven infrastructural support/facilities for the implementation of educational policies in higher education institutions. Moreover, demographic trends, adaption and awareness patterns, strategic integration of AI and its problems, structural and personal constraints, governmental issues, and general ethical concerns were discovered in the study.

My study presents a thorough examination of the function of artificial intelligence (AI) in Pakistan's higher education system. The key results include demographic implications on AI adoption, various levels of institutional adaptation, and the intricate interaction of cultural, religious, and technological issues. The analysis of chosen institutions highlights the necessity of aligning governance structures with educational aims, as well as the need for a culture transformation to promote AI inclusion. Student engagement patterns reflect a complex landscape, and policy research emphasises the importance of proactive actions to close awareness gaps. Ethical issues, particularly those pertaining to data privacy and security, highlight the importance of intensive training programmes. Finally, the report argues for a joint effort to overcome obstacles and fully realise AI's promise in transforming Pakistan's educational landscape.

6.3. Limitations of the Study

Deliberately evaluating the study's limits is crucial because it gives constructive and inferential advice for researchers and readers to conduct and plan their future research in a meaningful way. The study's limitations create seedlings in the targeted field of inquiry, which grow into profitable endeavours. This study has certain limitations that should be noted. The first disadvantage of the study is its limited scope, since it was done at only four universities, when this type of research should be undertaken on a national scale. This may restrict the findings' generalizability to a larger setting.

The study's dependence on participant self-reported data raises the likelihood of response bias. Furthermore, because AI technology is continually changing, conclusions may be subject to time constraints. Despite the efforts to include varied viewpoints, the study may not completely represent the complexities of regional and institutional variances in Pakistan's higher education scene. Finally, the study might benefit from a more in-depth examination of the ethical issues surrounding AI in education, as the current analysis may not cover the entire range of potential ethical concerns.

6.4. Recommendations for the Future

Several significant recommendations arise from the study for future advances in the integration of artificial intelligence (AI) into Pakistan's higher education system. Initially, extensive training efforts targeted at improving digital literacy and establishing a sophisticated

grasp of AI principles among students, educators, and administrators are urgently needed. This would close existing information gaps and enable stakeholders to make educated decisions about AI's role in education.

Secondly, educational institutions must place a deliberate emphasis on communication and awareness. It is critical to establish clear communication channels for disseminating information on AI resources, policies, and projects in order to raise awareness and develop a good attitude towards AI among students and instructors. Furthermore, a comprehensive approach to AI integration should be advocated, taking into account both AI tools and traditional research approaches. This entails recognising different age groups' preferences and learning methods, as well as cultivating a culture that welcomes technology innovations while conserving traditional educational principles. Collaboration between the government, educational institutions, and administrators is critical for aligning policies like the National AI Policy with successful implementation, bridging any gaps between official discourse and real execution.

Lastly, a concerted effort should be made to design and implement strong ethical principles and security safeguards in the deployment of AI in education. This entails tackling challenges such as data privacy, bias in AI systems, and developing comprehensive education programmes to help students negotiate the ethical complexity of AI integration in an ever-changing educational context.

Bibliography

- Abdullah, F., & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by Analysing Commonly Used External Factors. *Computers in Human Behavior*, 238-256.
- Adamopoulou, E., & Moussiades, L. (2020). Chatbots: History, technology, and applications. *Machine Learning with Applications*, 100006.
- Adams, S., Cummins, M., Davis, A., Freeman, A., Hall, C., & Ananthanarayanan, V. N. (2017). *Horizon Report*. Austin, TX, USA: The New Media Consortium.
- Ahmad, I., Rehman, K. u., Ali, A., Khan, I., & Khan, F. A. (2014). Critical Analysis of the Problems of Education in Pakistan: Possible Solutions. *International Journal of Evaluation and Research in Education (IJERE)*, 79~84.
- Ahmad, T., Zhang, D., Huang, C., Zhang, H., Dai, N., Song, Y., & Chen, H. (2021). Artificial intelligence in sustainable energy industry: Status Quo, challenges and opportunities. *Journal of Cleaner Production*, 125834.
- Ahmed Awan, M. N. (2019). A New Approach to Information Extraction in User-Centric E-Recruitment Systems. *MDPI*, 2852.
- AIED. (1997, January 1). *Artificial Intelligence in Education*. Retrieved from IAIED: <https://iaied.org/>
- Almusaed, A. A. (2023). Enhancing Student Engagement: Harnessing “AIED”’s Power in Hybrid Education—A Review Analysis. *Education Sciences*, 632.
- Al-Zubaidi, E. A., Mijwil, M. M., & Alsaadi, A. S. (2019). Two-Dimensional Optical Character Recognition of Mouse Drawn in Turkish Capital Letters Using Multi-Layer Perceptron Classification. *Journal of Southwest Jiaotong University*, 1-6.
- Ameen, N. (2019, April 15). *What robots and AI may mean for university lecturers and students*. Retrieved from The Conversation - Academic Rigour, Journalist Flair: <https://theconversation.com/what-robots-and-ai-may-mean-for-university-lecturers-and-students-114383>
- Anderson, J. Q. (2019). The future of well-being in a tech saturated world. *Pew Research Centre*.
- Anyoha, R. (2017, August 28). *Harvard University Blog*. Retrieved from Harvard.edu: <https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/>
- Ariel, C. (2015, November 14). *Benefits & Risks of Artificial Intelligence*. Retrieved from Future of Life Institute: <https://futureoflife.org/ai/benefits-risks-of-artificial-intelligence/>
- Baum, L. (2008). *The wonderful wizard of oz*. Boston: George M. Hill Company.

- Belgaum, M. R., Alansari, Z., Musa, S., Alam, M. M., & Mazliham, M. S. (2021). Role of artificial intelligence in cloud computing, IoT and SDN: Reliability and scalability issues. *International Journal of Electrical and Computer Engineering*, 4458-4470.
- Bryndin, E. (2020). Increase of Safety Use Robots in Industry 4.0 by Developing Sensitivity and Professional Behaviora Skills. *American Journal of Mechanical and Industrial Engineering*, 6-14.
- Bukhari, S. S., Said, H., Gul, R., & Seraj, M. (2022). Barriers to sustainability at Pakistan public universities and the way forward. *International Journal of Sustainability in Higher Education* , 865 - 886.
- Cameron, J. (Director). (2001). *The Terminator* [Motion Picture].
- Chen, C., Hu, Y., Karuppiah, M., & Kumar, P. M. (2021). Artificial intelligence on economic evaluation of energy. *Sustainable Energy Technologies and Assessments*, 101358.
- Cioffi, R., Travaglioni, M., Piscitelli, G., Petrillo, A., & De Felice, F. (2020). Artificial Intelligence and Machine Learning Applications in Smart Production: Progress, Trends, and Directions. *Sustainability*, 492.
- Coleman, E. G. (2010). Ethnographic Approaches to Digital Media. *Annual Review of Anthropology*, 487–505.
- Collins, A., Brown, J. S., & Newman, S. E. (1987). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. *Knowing, learning, and instruction: Essays in honor of Robert Glaser*, 453-494.
- Collins, C., Dennehy, D., Conboy, K., & Mikalef, P. (2021). Artificial intelligence in information systems research: A systematic literature review and research agenda. *International Journal of Information Management*, 102383.
- Copeland, B. J. (2023, September 21). *Information Architects of Encyclopaedia*. Retrieved from Encyclopedia Britannica: <https://www.britannica.com/facts/artificial-intelligence>
- Dale, R. (2016). The return of the chatbots. *Natural Language Engineering*, 811–817.
- Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 319-340 .
- Dawn News. (2018, October 25). *New Innovations*. Retrieved from UNDP: <https://www.undp.org/pakistan/new-innovations>
- Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data – evolution, challenges and research agenda. *Science Direct*, 63-71.
- Erdal, M., Amjad, A., Bodla, Q., & Rubab, A. (2016). Going Back to Pakistan for Education? The Interplay of Return Mobilities, Education, and Transnational Living. . *Population Space and Place*, 836-848.

- Faieq, A. K., & Mijwil, M. M. (2022). Prediction of Heart Diseases Utilising Support Vector Machine and Artificial Neural Network. *Indonesian Journal of Electrical Engineering and Computer Science*, 374-380.
- Forsythe, D. E. (2001). *Studying Those Who Study Us: An Anthropologist in the World of Artificial Intelligence*. Stanford, California: Stanford University Press.
- Gao, P., Li, J., & Liu, S. (2021). An Introduction to Key Technology in Artificial Intelligence and big Data Driven e-learning and e-Education. *Mobile Networks and Applications*, 2123–2126.
- Ghavifekr, S. K. (2016). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. *Malaysian Online Journal of Educational Technology*, 38-57.
- Ghotbi, N., Ho, M. T., & Mantello, P. (2021). Attitude of college students towards ethical issues of artificial intelligence in an international university in Japan. *AI & SOCIETY*, 283–290.
- Google Maps. (2023, August 13). *Google*. Retrieved from Google Maps: <https://www.google.com/maps/place/Islamabad,+Islamabad+Capital+Territory,+Pakistan/@33.6162509,72.7564436,10z/data=!3m1!4b1!4m6!3m5!1s0x38dfbfd07891722f:0x6059515c3bdb02b6!8m2!3d33.6844202!4d73.0478848!16zL20vMGRoZDU?entry=ttu>
- Government of Pakistan. (2020). *Pakistan Vision 2025 Secretarit*. Islamabad: Ministry of Development and Planning.
- Government of Pakistan. (2022). *National AI Policy*. Retrieved from Presidential Initiative for Artificial Intelligence and Computing: <https://www.piaic.org/>
- Government of Pakistan, & MOITT. (2022). *National Artificial Intelligence Policy*. Islamabad: Ministry of Information Technology and Telecommunication.
- Greenan, K. A. (2021). The Influence of Virtual Education on Classroom Culture. *Frontiers in Communication*, 1-4.
- Greguric, I. (2014). Ethical issues of human enhancement technologies: Cyborg technology as the extension of human biology. *J. Inf. Commun. Ethics Soc.*, 133-148.
- Gugerty, L. (2006). Newell and Simon's Logic Theorist: Historical Background and Impact on Cognitive Modeling. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (pp. 880–884). SC, USA: SAGE Publications.
- HEC. (2003). *Higher Education Commission Pakistan*. Retrieved from HEC: <https://www.hec.gov.pk/english/universities/hes/Pages/HEDR-Statistics.aspx>
- Hess, D. (1992). Introduction: The new ethnography and the anthropology of science and technology. *In Knowledge and society: The anthropology of science and technology*, 1-26.
- Higher Education Commission. (2020). *R & D Initiatives*. Retrieved from HEC: <https://www.hec.gov.pk/english/services/RnD/Pages/RnD.aspx>

- Hinojo-Lucena, F. A.-D.-R.-R. (2019). Artificial Intelligence in Higher Education: A Bibliometric Study on its Impact in the Scientific Literature. *Education Sciences*.
- Holmes, W., Persson, J., Chounta, I.-A., Wasson, B., & Dimitrova, V. (2022). *ARTIFICIAL INTELLIGENCE AND EDUCATION: A critical view through the lens of human rights, democracy and the rule of law*. Strasbourg : Council of Europe.
- Hwang, G., Xie, H., Wah, B., & Gašević, D. (2020). Vision, challenges, roles and research issues of Artificial Intelligence in Education. *Comput. Educ. Artif. Intell.*,
- Ilić, M., Păun, D., Šević, N., Hadžić, A., & Jianu. (2021). Needs and Performance Analysis for Changes in Higher Education and Implementation of Artificial Intelligence, Machine Learning, and Extended Reality. *Education Sciences*.
- Iqbal, S. A., Ashiq, M., Shafiq Ur Rehman, Rashid, S., & Tayyab , N. (2022). Students' Perceptions and Experiences of Online Education in Pakistani Universities and Higher Education Institutes during COVID-19. *MDPI*, 166.
- Jason, S. a. (2015). *Discord*. Retrieved from <https://discord.com/>
- Jeffrey , A. T., & Eric, D. J. (2019). Digital Folkloristics: Text, Ethnography, and Interdisciplinarity. *Western Folklore*, 327–356.
- Jensen, B. W. (2020). Algorithms at War: The Promise, Peril, and Limits of Artificial Intelligence. *International Studies Review* .
- Jones, M. (1985). Applications of artificial intelligence within education. *Computer & Mathematics with Applications*, 517-526.
- Kanwal, F., & Rehman, M. (2017). Factors Affecting E-Learning Adoption in Developing Countries—Empirical Evidence From Pakistan's Higher Education Sector. *IEEE Access*, 1-1.
- Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. . *Business Horizons*, 15-25.
- Keith , N. H. (2017). Studying the Digital: Directions and Challenges for Digital Methods. *Annual Review of Sociology*, 167–188.
- Khan, T. A., & Jabeen, N. (2019). Higher Education Reforms and Tenure Track in Pakistan: Perspectives of Leadership of Regulatory Agencies. *Bulletin of Education and Research*, 181-205.
- Köse, H., & Güner-Yildiz, N. (2020). Augmented reality (AR) as a learning material in special needs education. *Education and Information Technologies*, 1921–1936.
- Larson, J. (2015). An Inquiry into the Nature and Causes of the Wealth of Nations. *Journal of the Early Republic*, 1-23.

- Lathuilière, S., Masse, B., Mesejo, P., & Horaud, R. (2019). Neural network based reinforcement learning for audio–visual gaze control in human–robot interaction. *Pattern Recognition Letters*, 61-71.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *Nature*, 436–444.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *Nature*, 436-444.
- Levinson, B. A. (2018). The coming of age of Anthropology of Artificial Intelligence: A review of the field. *Anthropology Now*, 98-113.
- Lynch, M. (2018, December 29). *The Effects of Artificial Intelligence on Education*. Retrieved from The Advocate: <https://www.theadvocate.org/the-effects-of-artificial-intelligence-on-education/>
- Mahmood, A., Sarwat, Q., & Gordon, C. (2022). A Systematic Review on Artificial Intelligence in Education (AIE) with a focus on Ethics and Ethical Constraints. *Pakistan Journal of Multidisciplinary Research (PJMR)* .
- McAfee, A., & Brynjolfsson, E. (2018). *The Second Machine Age: Work, progress, and prosperity in a time of Brilliant Technologies*. Vancouver, B.C., London - New York: Langara College.
- McCarthy, J., Minsky, M., Rochester, N., & Shannon, C. E. (1955). A proposal for the Dartmouth Summer Research Project on Artificial Intelligence. *Artificial Intelligence (AI)* (pp. 12-14). Dartmouth: AI Magazine.
- McCorduck, P. (2004). *Machines Who Think: A Personal Inquiry into the History and Prospects of Artificial Intelligence*. CRC Press.
- Mhlanga, D. (2021). Artificial Intelligence in the Industry 4.0, and Its Impact on Poverty, Innovation, Infrastructure. *Sustainability*, 1-16.
- Mijwil, M. M. (2021). Implementation of Machine Learning Techniques for the Classification of Lung X-Ray Images Used to Detect COVID-19 in Humans. *Iraqi Journal of Science*, 2099-2109.
- Mijwil, M. M., & Al-Zubaidi, E. A. (2021). Medical Image Classification for Coronavirus Disease (COVID-19) Using Convolutional Neural Network. *Iraqi Journal of Science*, 2740-2747.
- Mijwil, M. A. (2022). The Position of Artificial Intelligence in the Future of Education: An Overview. *Asian Journal of Applied Science*.
- Mijwil, M. M., & Abttan, R. A. (2021). Artificial Intelligence: A Survey on Evolution and Future Trends. *Asian Journal of Applied Sciences*, 87-93.
- Mijwil, M. M., Alsaadi, A. S., & Aggarwal, K. (2021). Differences and Similarities Between Coronaviruses: A Comparative Review. *Asian Journal of Pharmacy, Nursing and Medical Sciences*, 49-61.

- Mijwil, M. M., Mutar, D. S., Filali, Y., Aggarwal, K., & Al-Shahwani, H. (2022). Comparison Between Expert Systems, Machine Learning, and Big Data: An Overview. *Asian Journal of Applied Sciences*, 83-88.
- Mijwil, M. M., & Salem, I. E. (2020). Credit Card Fraud Detection in Payment Using Machine Learning Classifiers. *Asian Journal of Computer and Information Systems*, 50-53.
- Mohd Rahim, N. I.-S. (2022). AI-Based Chatbots Adoption Model for Higher-Education Institutions: A Hybrid PLS-SEM-Neural Network Modelling Approach. *Sustainability. MDPI*.
- Moses, E. C. (2021). The Future of Advertising: Influencing and Predicting Responsee through Artificial Intelligence: Machine Learning. *Handbook of Research on Applied Data Science and Artificial Intelligence in Business and Industry*, 151-166.
- Müller, & Vincent, C. (2023). *Ethics of Artificial Intelligence and Robotics*. Stanford: Metaphysics Research Lab, Stanford University.
- Nelson, S. W. (2020). Demystifying artificial intelligence in pharmacy. *American journal of health-system pharmacy : AJHP : official journal of the American Society of Health-System Pharmacists.*, 1556-1570.
- Nisar, M. (2009). Education, Religion and the Creation of Subject: Different Educational Systems of Pakistan. . *Pakistaniaat*, 46-61.
- OpenAI. (2020, June). *Chat-GPT*. Retrieved from Open AI: <https://openai.com/>
- Ostrom, E. (2011). Background on the Institutional Analysis and Development Framework . *Policy Study Journal*, 39.
- Ouchchy, L., Coin, A., & Dubljević, V. (2020). AI in the headlines: the portrayal of the ethical issues of artificial intelligence in the media. *AI & Society*, 927–936.
- PAF-IAST. (2021). *Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology*. Retrieved from Sino-Pak Centre for Artificial Intelligence: <https://paf-iaast.edu.pk/spcai/>
- Pakistan - Country Commercial Guide*. (2022, November 10). Retrieved from International Trade Administration: <https://www.trade.gov/country-commercial-guides/pakistan-education>
- Pakistan Air Force. (2020, 7 October). *Centre of Artificial Intelligence and Computing (CENTAIC)*. Retrieved from Pakistan Air Force: <https://www.paf.gov.pk>
- Pérez, J., Daradoumis, T., & Puig, J. (2020). Rediscovering the use of chatbots in education: A systematic literature review. *Computer Applications in Engineering Education*, 1549 - 1565.
- Pink, S., Horst , H., Postill , J., Hjorth, L., Lewis, T., & Tacchi, J. (2016). *Digital Ethnography: Principals and Practices*. Los Angeles, London, New Dehli, Singapore and Washington DC: SAGE .

- Pregowska, A., Masztalerz, K., Garlińska, M., & Osial, M. (2021). A Worldwide Journey through Distance Education - From the Post Office to Virtual, Augmented and Mixed Realities, and Education during the COVID-19 Pandemic. *Education Sciences*, 1-26.
- Prensky, M. (2001). Digital Natives, Digital Immigrants. *On the Horizon*, 1–6.
- Qadeer, Z., Taj, T., Kakli, B., Piracha, F., Zia, A., & Javed, I. (2023). *Pakistan Education*. Islamabad: National Education Management Information System (NEMIS), Pakistan Institute of Education (PIE), Ministry of Federal Education & Professional Training.
- Rascher, M. (2023, July 4). *Twitter*. Retrieved from X: <https://twitter.com/QCompounding/status/1676126194037821442>
- Retto, J. (2017). SOPHIA, FIRST CITIZEN ROBOT OF THE WORLD. *ResearchGate*.
- Rosebrock, A. (2023, July 7). *AI Technology in Education Statistics 2023: Report and 300+ Audience Survey*. Retrieved from RASK: <https://www.rask.ai/research/ai-in-education>
- Salehi, H., & Burgueño, R. (2018). Emerging artificial intelligence methods in structural engineering. *Engineering Structures*, 170-189.
- Schiff, D. (2020). Out of the laboratory and into the classroom: the future of artificial intelligence in education. *AI AND SOCIETY*, 331–348.
- Schindler, L. A., Burkholder, G. J., Morad, O. A., & Marsh, C. (2017). Computer-based technology and student engagement: A critical review of the literature. *International Journal of Educational Technology in Higher Education*, 1–28.
- Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International Journal of Educational Technology in Higher Education System*, 54.
- Shaffer, D., Doube, W., & Tuovinen, J. (2003). Applying Cognitive Load Theory to Computer Science Education. *EASE & PPIG 2003. Papers from the Joint Conference.*, 333-346.
- SHAIKH, Z. A., & KHOJA, S. A. (2011). ROLE OF ICT IN SHAPING THE FUTURE OF PAKISTANI HIGHER EDUCATION SYSTEM. *The Turkish Online Journal of Educational Technology*.
- Shawar, B., & Atwell, E. (2005). Using corpora in machine-learning chatbot systems. *International Journal of Corpus Linguistics*, 489-516.
- Shuja, A., Ali, A., Khan S., S. A., Burki, S. B., & Bilal, S. (2022). Perspectives on the Factors Affecting Students' Dropout Rate During COVID-19: A Case Study From Pakistan. *SAGE Open*.
- Singh, S., Sharma, P. K., Yoon, B., Shojafar, M., Cho, G. H., & Ra, I. (2020). Convergence of blockchain and artificial intelligence in IoT network for the sustainable smart city. *Sustainable Cities and Society*, 102364.

- Siraji, & Junaid, M. (2021). Stakeholders' Preception Regarding Effectiveness of Social Media in Higher Education. A Case Study of Higher Educational Institutions in Khyber Pakhtunkhwa, Pakistan. *HEC*.
- Statista.com. (2023). *Generative AI - Pakistan* . Retrieved from Statista: <https://www.statista.com/outlook/tmo/artificial-intelligence/generative-ai/pakistan>
- Sun, Z., Anbarasan, M., & Kumar, D. P. (2020). Design of online intelligent English teaching platform based on artificial intelligence techniques. *Computational Intelligence*, 1166-1180.
- Tariq, M. S., Kamran, F., & Rehan, A. (2023). AI: Opportunities and Challenges in Pakistan. *Paklaunch.com*. Karachi: Paklaunch.
- Taylor, W. A. (1990). *What Every Engineer Should Know About Artificial Intelligence*. Boston : MIT Press.
- The Constitution of Islamic Republic of Pakistan, Article 37-B (Pakistan High Court February 28, 2012).
- Tinker, R. F. (1967). PLATO—a computer-assisted instructional system. *Academic Therapy*, 109-113.
- Tribukait, M. (2020). Digital learning in European history education: Political visions, the logics of schools and teaching practices. *HISTORY EDUCATION RESEARCH JOURNAL*, 4–20.
- Trujillo, J., López, J., & Pérez, E. (2011). Caracterización de la alfabetización digital desde la perspectiva del: La competencia docente digital. *Revista Iberoamericana de Educación* , 1-16.
- UNESCO. (2022). *UNESCO Annual Report*. Retrieved from UNESCO: <https://www.uil.unesco.org/en/annual-report-2022>
- Wagner , R. (1981). *The Invention of Culture*. Chicago: University of Chicago Press.
- Wogu, I. P., Misra, S., Assibong, P. A., Olu-Owolabi, E. F., Maskeliūnas, R., & Damasevicius, R. (2019). Artificial Intelligence, Smart Classrooms and Online Education in the 21st Century: Implications for Human Development. *Journal of Cases on Information Technology*.
- Woolley, D. R. (2016). PLATO: The Emergence of Online Community. *Social Media Archeology and Poetics*, 56-63.
- Yigitcanlar, T., Mehmood, R., & Corchado, J. M. (2021). Green Artificial Intelligence: Towards an Efficient, Sustainable and Equitable Technology for Smart Cities and Futures. *Sustainability*, 8952.
- Zubair, D., Jabeen, N., Salman, D., Zahid, M., & Irfan, D. (2019). Governance Context of Higher Education Sector of Pakistan. *Pakistan Vision*.

Zulfa, A. A., Sihabuddin, S., & Widhiyanti, H. N. (2022). Utilization of Personal Data Through Cookies Using Artificial Intelligence from Human Rights Perspective. *International Journal of Multicultural and Multireligious Understanding*, 293-303.

APPENDECES

Appendix A

CONSENT FORM

Subject of Research: Role of AI in the Higher Education System

Research Topic: From Books to Bots: An Anthropological Study of the Role of Artificial Intelligence (AI) in the Higher Education System, Pakistan.

Name of Researcher: Fariya Fatima Khan

Invitation to Participate: You are invited to participate in this research study. The following information is provided to help you make an informed decision whether or not to participate. If you have any questions, please do not hesitate to ask.

Purpose: The purpose of this study is to explore the role of AI in the higher education system of Pakistan and student, teacher and administration's perceptions and beliefs.

Benefits of this research: This research is first of its type in Pakistan and will benefit further research for the formulation of a dynamic data for the Anthropological view of AI and its role in higher education system of Pakistan.

Procedures: If you decide to participate in this research project, I will go over this consent form, ask your permission to audio-record the interview, and then go through a series of interview questions about the role of AI in your organization. If you give permission for the interview to be taped, please sign here: _____

If you allow the mention of your organization by name in the research, please sign here: _____

Confidentiality: Any information obtained during this study which could identify you will be kept strictly confidential. The information may be published in educational journals or presented at educational meetings but your identity will be kept strictly confidential. Audiotapes will not be labeled. Pseudonyms will be assigned to your narrative. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

Right to Decline: You will hold the right to decline from any of the above-mentioned activities at any time of the researcher's engagement in the collection of data at your premises. If you have any questions, please ask me. If you have any additional questions later, I will be happy to answer them at any time.

Appendix B

INTERVIEW GUIDE FOR STUDENTS

Demographics:

1. Tell me a bit about yourself. Age? Gender? Educational Background?
2. What is your current academic major or field of study? Which university year?

Basics:

3. How familiar are you with the concept of Artificial Intelligence (AI) being used in education?
4. How did you first become aware of the use of Artificial Intelligence (AI) in education?
5. Are you familiar with Chat-GPT?
6. Has your experience with Foreign AI tools been helpful with your academic pursuit (i.e. Chat-GPT, Midjourney)?
7. Do you devise your own prompts for Chapt-GPT and midjourney?

In-depth Questions:

8. Has your experience with traditional teaching methods been better as compared to new innovative methods?
9. Are there specific channels or platforms that have contributed to your awareness of AI's role in education?
10. Have you used any AI-powered educational tools or platforms in your studies or coursework? Can you explain any incident related to that?
11. Do you believe the integration of AI in education offers potential benefits?
12. To what extent do you perceive challenges in the integration of AI in education?
13. Do you think that AI can analyze individual learning patterns and adapt educational materials and methods to suit each student's unique needs better than Teachers and teachers in your university?
14. Do you think AI can allow for personalized learning experiences that can improve understanding and retention?
15. How interested are you in exploring AI applications further within the context of your education?
16. So what is your strategy in exploring these applications?
17. Would you be open to participating in educational experiences that involve AI technologies?
18. Has there been an incident where your teachers or peers were unfamiliar with an AI-tool that you were using in doing your assignments or university work?
19. Since we are only using foreign tools as a means to explore AI and its extend, are you aware of any AI tools made in Pakistan?
20. Which generation, in your opinion would be the better users of AI? Generation X, Generation Z, Millenials or in our language boomers?
21. How concerned are you about ethical and privacy issues arising from the use of AI in education?

22. What do you think should be a part of the ethical and privacy policy for integrating AI in the education system?
23. Are there any specific AI-driven features or capabilities you believe would be beneficial in education?
24. Can AI replace teachers and universities in the upcoming years in Pakistan?
25. Who in your opinion is a better educator – AI- driven tools/robots or your experienced and skilled university teachers?
26. Does using AI spoil your interactive communication with your teachers and peers?
27. In your opinion, can AI improve the quality of education in Pakistan?
28. Do you think that Pakistan’s educational law should be changed to incorporate new technology?
29. Are you aware of any policies or Laws related to the ethical use of AI in Pakistan?
30. Are you aware of the National Artificial Intelligence policy presented by Pakistan’s Government in 2022?
31. Since the inception of AI, do you think AI has become a part of your life?
32. Do you think Chat-gpt can replace Google search engines?
33. What changes should be brought about in the educational law of Pakistan to accept such new technological innovations?
34. What would be your overall feedback when it comes to AI and the education system of Pakistan?

Appendix C

INTERVIEW GUIDE FOR TEACHERS

Demographics:

1. Tell me a bit about yourself.
2. What is your highest level of education?
3. How many years of experience with teaching?
4. What is the major subject you are teaching?
5. What was your major of education?

Basics:

1. How familiar are you with the concept of Artificial Intelligence (AI) being used in education?
2. How did you first become aware of the use of Artificial Intelligence (AI) in education?
3. Are you familiar with Chat-GPT?
4. Has your experience with Foreign AI tools been helpful with your academic pursuit (i.e. Chat-GPT, Midjourney)?
5. Has your experience with teaching been better when you used AI or without AI usage?
6. What kind of teaching methods do you apply in your classroom? Does it involve the usage of AI-driven tools?
7. Do you encourage the use of AI-driven tools in your classroom given the prospect of the future world being totally engrained with AI?

In-Depth:

1. How is your teaching influenced by the automation and AI?
2. What challenges have you encountered when implementing AI in your teaching, and how have you addressed them?
3. Can you share any success stories or positive outcomes resulting from AI integration in your classrooms?
4. In your experience, how do students respond to AI-driven feedback and personalized learning recommendations?
5. How do you think AI adoption will impact the traditional role of teachers, and how can educators adapt to these changes?
6. Do you feel that you need skills or training for technology adaptation?
7. Any trainings you or your institute gave or arranged for you?
8. How can you or your students be ethical users of AI?
9. Do you think that environment plays an important part in the integration and knowledge related to AI? And what is the environment of your classroom towards AI-tools when you teach?
10. Has the use of AI tools reversed your relationship with your students?
11. Do you feel that since the inception of AI-driven technology, students take teachers lightly?
12. What would be your overall feedback when it comes to AI and the education system of Pakistan?

Appendix D***INTERVIEW GUIDE FOR ADMINISTRATION*****Demographics:**

1. What is your current role or position within the university administration?
2. How many years of experience do you have in higher education administration?
3. Which university are you affiliated with?
4. What is your highest level of educational attainment?
5. Could you provide an approximate number of enrolled students at your university?
6. Please specify the department/division you work with.

Basics:

1. How familiar are you with the concept of Artificial Intelligence (AI) being used in education?
2. How did you first become aware of the use of Artificial Intelligence (AI) in education?
3. Are there specific channels or platforms that have contributed to your awareness of AI's role in education?
4. Has your university implemented any rule with regards to the usage of AI tools?
5. Do you promote the usage of AI-driven technology in your university?
6. Are you familiar with the National Artificial Intelligence Policy presented by Pakistani Government in 2022?

In-depth:

1. Can you describe the strategic goals and objectives of your institution regarding the integration of AI in education?
2. What led your institution to consider adopting AI-driven technologies in teaching and learning?
3. How has AI been implemented within your institution's educational framework, and what specific tools or platforms have been introduced?
4. Is the implementation limited to sciences or expanded in other departments?
5. What key challenges did your institution face during the process of integrating AI into the educational environment, and how were they addressed?
6. Could you share examples of successful AI-driven initiatives that have positively impacted teaching, learning, or administrative processes?
7. Were there any complaints with regards to students and teachers using excessive AI-tools?
8. How does your institution ensure that AI integration aligns with ethical considerations, data privacy, and security standards?
9. In what ways do you support faculty and staff in acquiring the skills and knowledge necessary to effectively use AI in education?
10. What initiatives or policies have been established to encourage the adoption of AI, and how do you measure the success of these initiatives?
11. Can you discuss any collaborations or partnerships with external organizations or agencies that have facilitated AI adoption in your institution?

12. How has AI influenced decision-making processes at the administrative level within your institution?
13. What measures are in place to ensure equitable access to AI-driven educational resources and opportunities for all students?
14. Can you provide insights into the budget allocation and funding strategies related to AI integration in education?
15. How do you foresee AI transforming administrative functions, such as student enrollment, assessment, and academic support services?
16. What challenges and concerns related to AI in education are voiced by parents, students, or other stakeholders, and how do you address them?
17. What is your vision for the future of AI in education within your institution, and how do you plan to stay aligned with technological advancements?
18. How does AI adoption contribute to your institution's broader mission and goals related to educational quality and accessibility?
19. What steps have been taken to ensure that the AI tools used in education are culturally sensitive and suitable for the Pakistani context?
20. What advice or recommendations would you provide to other educational administrators looking to embark on a similar journey of AI integration in their institutions?