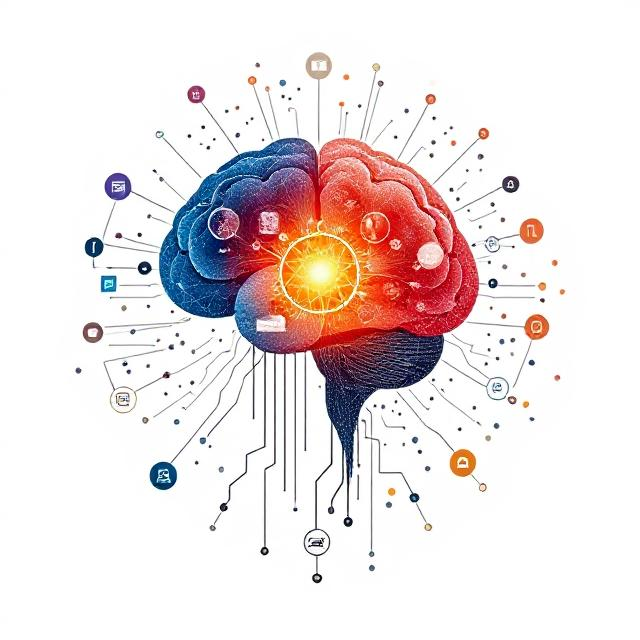
**Project Proposal Synopsis**

**Introducing Masters of Science (M.Sc.) Program**

**in**

**Psychosocial Software Engineering**

****

****

**2025**

**Addis Ababa, Ethiopia**

****

**OUR MOTTO**

**Making Ethiopia the African Hub for**

**Psychosocial Software Engineering – Advancing together into the 21st century**

****

**Addis Ababa University**

**2025**

**Addis Ababa**

**Ethiopia**

**Table of Content**

[Table and Figures 6](#_Toc196499315)

[Acronyms 7](#_Toc196499316)

[Executive Summary 8](#_Toc196499317)

[1. Introduction 9](#_Toc196499318)

[1.1. Title of the project: Establishing a five-year M.Sc. Degree Program in Psychosocial Software Engineering in Ethiopia. 9](#_Toc196499319)

[1.2. Project Implementer: Addis Ababa University (AAU). 9](#_Toc196499320)

[1.3. Host Department: School of Social Work (SoSW), College of Social Sciences, Arts, and Humanities (CSS-ArtH) 9](#_Toc196499321)

[1.4. Partner Departments: 9](#_Toc196499322)

[1.5. Project Lifespan: Five Years (September 2025 – August 2030). 9](#_Toc196499323)

[1.6. Total Budget: USD 1,610,105.90 9](#_Toc196499324)

[1.7. Total Cost per Student: USD 16,101.06 9](#_Toc196499325)

[1.8. Stakeholders: 9](#_Toc196499326)

[1.9. Funding organization: \_\_\_\_\_\_\_\_\_\_\_\_ 9](#_Toc196499327)

[2. Background and the Problem Statement 10](#_Toc196499328)

[2.1. Ethiopia 10](#_Toc196499329)

[2.2. Overview of psychology and Social Work Education in Ethiopia 11](#_Toc196499330)

[2.3. Problem Statement 16](#_Toc196499331)

[3. Proposed Solution 18](#_Toc196499332)

[3.1. Introduce the M.Sc. Degree Program in “Psychosocial Software Engineering” 18](#_Toc196499333)

[3.2. The Urgent Need for a New Specialization 20](#_Toc196499334)

[3.3. The Need for an Interdisciplinary Approach 21](#_Toc196499335)

[3.4. Ensuring Ethiopia’s Place in the Future of Psychology and Social Work 22](#_Toc196499336)

[4. Project Goals and Objectives 23](#_Toc196499337)

[4.1. Overall Goal 23](#_Toc196499338)

[4.2. Specific Objectives 23](#_Toc196499339)

[5. Justification 24](#_Toc196499340)

[5.1. Justification for the Psychosocial Software Engineering M.Sc. Degree 24](#_Toc196499341)

[6. Employment 27](#_Toc196499342)

[6.1. Short-term Employment Opportunities for Psychosocial Software Engineering 27](#_Toc196499343)

[6.2. Expanding Career Prospects in a Digitized World 28](#_Toc196499344)

[6.3. Long-term Market with Unmet Demand 30](#_Toc196499345)

[7. Cost-effectiveness 31](#_Toc196499346)

[7.1. The Financial Burden of Studying Abroad 31](#_Toc196499347)

[7.2. Estimated Costs of Studying Abroad 31](#_Toc196499348)

[7.3. The Economic Advantage of Local Training 31](#_Toc196499349)

[7.4. Accessibility and Socioeconomic Benefits 31](#_Toc196499350)

[8. Impact of the Project 33](#_Toc196499351)

[8.1. Advancing Psychological and Social Work Education 33](#_Toc196499352)

[8.2. Strengthening Ethiopia’s Healthcare and Mental Health System 33](#_Toc196499353)

[8.3. Driving Digital Innovation and Economic Growth 33](#_Toc196499354)

[8.4. Policy Influence and National Development 34](#_Toc196499355)

[8.5. Enhancing Global Collaboration 34](#_Toc196499356)

[9. Project Structure and Management 35](#_Toc196499357)

[9.1. Organizational Structure 35](#_Toc196499358)

[9.2. Roles and Responsibilities 35](#_Toc196499359)

[10. Stakeholders and Partners 39](#_Toc196499360)

[Governmental Institutions 39](#_Toc196499361)

[International Organizations, Psychology Associations, and Universities 39](#_Toc196499362)

[10.1. Local Universities that have Psychology undergraduate and/or graduate programs 39](#_Toc196499363)

[10.2. Local Universities that have Social Work undergraduate and/or graduate programs 39](#_Toc196499364)

[11. Program Structure and Timeline 40](#_Toc196499365)

[11.1. Program Structure 40](#_Toc196499366)

[12. Curriculum 42](#_Toc196499367)

[12.1. Curriculum Design Principles 42](#_Toc196499368)

[12.2. Course Development and Structure 42](#_Toc196499369)

[12.3. Core Courses 43](#_Toc196499370)

[13. Faculty Recruitment and Training 47](#_Toc196499371)

[13.1. Hiring Expatriate Professors 47](#_Toc196499372)

[13.2. Training and Involving Local Faculty 47](#_Toc196499373)

[14. Course Delivery 48](#_Toc196499374)

[14.1. The Modality 48](#_Toc196499375)

[14.2. Benefits of the Mixed Approach 49](#_Toc196499376)

[14.3. Potential Challenges and Mitigation Strategies 49](#_Toc196499377)

[14.4. Training of Local Assistant Professors 50](#_Toc196499378)

[15. Student Selection and Admission 51](#_Toc196499379)

[15.1. Competitive admission criteria 51](#_Toc196499380)

[15.2. Age 51](#_Toc196499381)

[15.3. Academic Qualifications 51](#_Toc196499382)

[15.4. Standardized Testing 51](#_Toc196499383)

[15.5. Relevant Experience 51](#_Toc196499384)

[15.6. Letters of Recommendation 51](#_Toc196499385)

[16. Expected Outcome 52](#_Toc196499386)

[16.1. Short-Term Outcomes 52](#_Toc196499387)

[16.2. Long-Term Impact 52](#_Toc196499388)

[17. Monitoring and Evaluation (M&E) Plan 54](#_Toc196499389)

[17.1. Key Performance Indicators (KPIs) 54](#_Toc196499390)

[17.2. Number of Students Enrolled and Graduated 54](#_Toc196499391)

[17.3. Faculty Recruitment and Retention Rates 54](#_Toc196499392)

[17.4. Development and Accreditation of Curriculum 54](#_Toc196499393)

[17.5. Student Employment Rates Post-Graduation 54](#_Toc196499394)

[18. Evaluation Method 55](#_Toc196499395)

[18.1. Annual Progress Reports 55](#_Toc196499396)

[18.2. Student and Faculty Feedback Surveys 55](#_Toc196499397)

[18.3. External Academic Reviews from Partner Institutions 55](#_Toc196499398)

[19. Sustainability Plan 56](#_Toc196499399)

[19.1. Training Local Faculty to Take Over the Program 56](#_Toc196499400)

[19.2. Establishing Academic Partnerships with Global Institutions 56](#_Toc196499401)

[20. Conclusion 57](#_Toc196499402)

[20.1. The Urgency of Establishing These Programs 57](#_Toc196499403)

[20.2. A Call to Action for Funders and Partners to Support the Initiative 57](#_Toc196499404)

# Table and Figures

[Table 1. Estimated Costs of Studying Abroad 31](#_Toc196498980)

[Table 2. Organizational Structure 35](#_Toc196498981)

[Table 3. Local Universities that have Psychology undergraduate and/or graduate programs 39](#_Toc196498982)

[Table 4. Local Universities that have Social Work undergraduate and/or graduate programs 39](#_Toc196498983)

# Acronyms

AAU Addis Ababa University

AI Artificial intelligence

APA American Psychological Association

APS Association for Psychological Science

AR Augmented reality

AU African Union

BCIs Brain-Computer Interfaces

CBT Cognitive behavioural therapy

CELS College of Education and Language Studies

CSS Cascading Style Sheets

CSS-ArtH School of Social Work College of Social Sciences Arts and Humanities

EEG Electroencephalography

EFPA European Federation of Psychologists’ Association

EPA Ethiopian Psychologists Association

ESDP Education Sector Development Programs

FDRE Federal Democratic Republic of Ethiopia

GAT Graduate Aptitude Test

GIS Geographic Information Systems

Git Global Information Control

GPA Grade Point Average

GRE Graduate Record Examination

HCI Human-computer interaction

HTML HyperText Markup Language

iOS iPhone operating system

AAiT Addis Ababa Institute of Technology

IUPssyS International Union of Psychological Science

KPIs Key Performance Indicators

M&E Monitoring and Evaluation

mHealth Mobile health

MInT Ministry of Innovation and Technology

ML Machine Learning

MoE Ministry of Education

NGOs non-governmental organizations

NLP Natural Language Processing

NoSQL Not only Structured Query Language

OOP Object-Oriented Programming

PSE Psychosocial Software Engineering

PTSD Post Traumatic Stress Disorder

SITE School of Information Technology and Engineering

SoP School of Psychology

SoSW School of Social Work

SQL Structured Query Language

TOFEL Test of English as a Foreign Language

UNDP United Nations Development Program

UNESCO United Nations Education Scientific and Cultural Organization

UX User experience

VR Virtual reality

WHO World Health Organization

# Executive Summary

The **M.Sc. in Psychosocial Software Engineering** is a groundbreaking initiative designed to address Ethiopia’s growing need for digital solutions in mental health and social services. Integrating psychology, social work, and software engineering, the program aspires to **equip professionals with the skills to develop technology-driven interventions for psychological and social research, education, and service delivery**.

Ethiopia currently lacks specialized training in this interdisciplinary field, forcing students to seek education abroad at significant financial cost. Offering a **sustainable and locally accessible alternative, this program enhances national capacity while reducing brain drain**. Establishing this program provides multiple benefits, including the development of a robust curriculum that blends theoretical knowledge with hands-on experience in **digital mental health and social service applications**. The initiative ensures that an initial cohort of **100 professionals** receives training to apply **innovative software solutions to psychological and social work challenges**. Fostering collaboration between Ethiopian and international universities further enhances academic exchange and research opportunities in the field.

A **phased implementation approach** guides the program’s development, beginning with curriculum design, faculty recruitment, and infrastructure setup. Covering core **psychological and social work theories, software engineering princi**ples, and practical applications in digital interventions. The inclusion of research and fieldwork components guarantees that graduates gain both technical expertise and contextual understanding of Ethiopia’s psychosocial landscape. Strengthening the program’s relevance and impact, strategic **partnerships with global institutions** play a crucial role.

The anticipated outcomes of this initiative are substantial. In the short term, Ethiopia establishes the **first-ever M.Sc. in Psychosocial Software Engineering**, creating a critical avenue for specialized education. Training skilled professionals contributes to the expansion of digital mental health and social work services. Over the long term, the program **strengthens Ethiopia’s academic and professional ecosystem, reduces dependence on foreign training, and promotes self-sufficiency** in psychosocial innovation. As graduates enter the workforce, advancements in service delivery, research, and policy will emerge, fostering a sustainable model for **integrating technology with mental health and social work**.

This initiative represents a strategic investment in Ethiopia’s future, **addressing critical gaps in mental health and social service delivery through technology**. Developing local expertise in psychosocial software engineering not only enhances professional training but also **contributes to national development by ensuring that digital innovations align with Ethiopia’s unique social and psychological needs**.

# Introduction

## Title of the project: Establishing a five-year M.Sc. Degree Program in Psychosocial Software Engineering in Ethiopia.

## Project Implementer: Addis Ababa University (AAU).

## Host Department: School of Social Work (SoSW), College of Social Sciences, Arts, and Humanities (CSS-ArtH)

## Partner Departments:

### School of Psychology (SoP), College of Education and Language Studies (CELS), AAU

### School of Information Technology and Engineering (SITE), Addis Ababa Institute of Technology (AAiT), AAU

## Project Lifespan: Five Years (September 2025 – August 2030).

## Total Budget: USD 1,610,105.90

## Total Cost per Student: USD 16,101.06

## Stakeholders:

### Ministry of Education (FDRE)

### Ministry of Innovation and Technology (FDRE)

## Funding organization: \_\_\_\_\_\_\_\_\_\_\_\_

****

# Background and the Problem Statement

## Ethiopia

Ethiopia, as one of **Africa’s fastest-growing economies** and a nation with a rich historical and cultural heritage, faces significant challenges in mental health, psychological, social work, and technological development. With **a population exceeding 120 million** (World Bank, 2023), **the** **country** **has a pressing need for innovative and interdisciplinary solutions** to address psychosocial issues. Mental health conditions, social inequalities, and limited access to professional psychological and social services remain major concerns, exacerbated by economic hardship, political instability, and cultural stigmas, etc., (Fekadu et al., 2020).

**Ethiopia has a pressing need for innovative and interdisciplinary solutions to address psychosocial issues**

The country’s healthcare system, including mental **health services, is underdeveloped and insufficient** to meet the growing demand. According to the Ethiopian Ministry of Health (2022), there are **fewer than 100 psychiatrists and an inadequate number of psychologists and social workers to serve the entire population**. This shortage of professionals has led to a reliance on non-specialized healthcare providers for mental health interventions, resulting in suboptimal care and limited access to specialized services (Habtamu & Tesfaye, 2021).

**The digital solutions and tools have the potential to significantly enhance psychological and social work service delivery**

**Health services, is underdeveloped and insufficient in Ethiopia**

The integration of **digital solutions, such as teletherapy, mental health mobile applications, and data-driven decision-making tools, has the potential to significantly enhance service delivery**. However, Ethiopia lacks professionals trained in both psychological and social work principles as well as software engineering, creating a gap that this proposed program aims to address.

The **rapid** **digital transformation in Ethiopia provides a unique opportunity** to modernize mental health and social services. The **government has launched ambitious initiatives, such as the Digital Ethiopia 2025 strategy**, which emphasizes digital literacy, technological innovation, and the development of an ICT-driven economy (Ethiopian Ministry of Innovation and Technology, 2020). **Despite this, the intersection of digital technology and psychosocial services remains largely unexplored**. Existing psychology and social work programs focus primarily on traditional therapeutic and community intervention models, while software engineering programs lack the contextual understanding needed to develop digital tools tailored to psychosocial applications.

The proposed **M.Sc. program in Psychosocial Software Engineering will bridge this gap by training professionals equipped with interdisciplinary expertise in psychology, social work, and software engineering**. Graduates of this program will be able to develop and implement digital solutions for mental health interventions, case management, crisis response, and data analytics in social service sectors. This initiative aligns with Ethiopia’s broader goals of increasing access to mental health care, leveraging technology for social development, and expanding the country’s human capital in both the social sciences and technology fields (UNDP Ethiopia, 2022).

Furthermore, **Ethiopia’s growing youth population presents an opportunity to cultivate a new generation of professionals who can contribute to both local and global advancements in psychosocial technology**. According to the Ethiopian Central Statistical Agency (2023), over 60% of the country’s population is under the age of 30, highlighting the **importance of creating educational pathways that align with modern technological and social challenges**. Establishing this new specialization will not only enhance the quality of mental health and social work services but also position Ethiopia as a leader in digital innovations for psychosocial interventions in Africa.

## Overview of psychology and Social Work Education in Ethiopia

### The Beginning of Psychology in Ethiopia in Addis Ababa University

**Psychology as an academic discipline was formally introduced to Ethiopia in 1961 with the establishment of the Department of Psychology at Addis Ababa University (AAU),** in the then known as Haile Selassie I University. The introduction of psychology as a field of study was part of a broader effort to modernize Ethiopia’s higher education system and address the country’s growing need for trained professionals in mental health, education, and human development (Kebede, 2019).

The initial curriculum in psychology at AAU was heavily influenced by Western psychological theories and research methods, as the early faculty members were expatriate scholars who brought expertise from European and North American institutions (Teshome, 2008). The program primarily focused on general psychology, educational psychology, and experimental psychology, with an emphasis on training students for ca**reers in teaching and research rather than clinical or applied psychology**.

**As psychology gained recognition within the Ethiopian academic landscape, the need for culturally relevant psychological studies and mental health services became apparent**. Early Ethiopian psychologists advocated for the integration of indigenous knowledge and local contexts into psychological research and practice (Mekonnen & Desta, 2015). This laid the foundation for later developments in applied psychology, including counseling, clinical, industrial-organizational psychology.

Despite its promising start, **the growth of psychology as a profession in Ethiopia was initially slow due to limited institutional support, a lack of trained professionals, and minimal public awareness of mental health issues** (Wondimagegn et al., 2019).

**The growth of psychology as a profession in Ethiopia was slow due to limited institutional support, a lack of trained professionals**

Over the decades, however, psychology at AAU expanded significantly, offering postgraduate programs and contributing to policy development in education, health, and social services.

Today, the Department of Psychology at AAU remains a leading institution in the country, training psychologists who play vital roles in academia, mental health services, and research.

### The beginning of Social Work in Ethiopia in Addis Ababa University

****

**Social work education in Ethiopia formally began in 1959 with the establishment of the School of Social Work at** the then Haile Selassie I University, which is now **Addis Ababa University (AAU) (Wassie, 2019).** This initiative was driven by the increasing need for trained professionals to address the country’s complex social challenges, including poverty, child welfare, gender-based violence, and displacement due to conflict and environmental factors (Pankhurst, 2006).

However, in 1974, when the socialist regime came to power, the school of social work was closed with a justification that the government alone will be responsible to address all human needs including social welfare services (Wassie, 2019).

The reintroduction of social work as an academic discipline in Ethiopia was influenced by international development agencies and local policymakers who recognized the importance of professional social services in nation-building. While social work had briefly been introduced in Ethiopia during the 1950s and 1960s, political changes and ideological shifts led to its discontinuation for several decades (Assefa, 2014).

The revival of the program in 2004 marked a turning point in the institutionalization of social work as a profession in Ethiopia. Wassie (2019) one of the senior faculty at the School of Social work argued that the re-birth of social work education has a connection with a visit made by an American professor to Ethiopia in 2001. Accordingly, the social work curriculum at AAU was initially designed with support from international partners, incorporating global social work principles while adapting to Ethiopia’s unique socio-cultural context.

**Social work education in Ethiopia faced challenges, including limited faculty expertise, resource constraints, and the need for stronger integration with local knowledge systems**

Early graduates were instrumental in establishing social welfare programs, working in governmental and non-governmental organizations, and advocating for policy reforms to support vulnerable populations (Adamek & Gebresilassie, 2015).

Wassie has documented the evolution of the rebirth of the social work program in Ethiopian his 2014 publication. When social work re-emerged, there were some challenges in recruiting qualified staff. To address this gap, the program started at master’s level, with a few local and expatriate staff who worked part time or as visitors. From the master’s program, seven students were selected and admitted to the first PhD program in Social Work and Social Development in 2006. While doing their PhDs, they also were teaching, and administering the program as assistant and associate deans. To assist the new recruits to gain experience of teaching, co-teaching was done. When they qualified, they replaced expatriate staff. The bachelor’s degree was then introduced in 2008. This was an innovative strategy, one that could work in many communities of Africa that do not have social workers, or have inadequate social workers (Wassie 2014).

**Social work education in Ethiopia faced challenges, including limited faculty expertise, resource constraints, and the need for stronger integration with local knowledge systems**

**Despite significant progress, social work education in Ethiopia faced challenges, including limited faculty expertise, resource constraints, and the need for stronger integration with local knowledge systems** (Zewdu & Kasew, 2018).

However, as demand for social services grew, social work programs expanded to other universities across Ethiopia, strengthening the profession’s role in addressing social justice and human rights issues. **Today, social work graduates contribute to various sectors, including child protection, mental health, refugee** services, and community development, reflecting the field’s increasing relevance in the Ethiopian context.

### The rise in the Number of Universities in Ethiopia in the 1990s and 2000s

Higher education in **Ethiopia experienced significant expansion in the 1990s and 2000s, transforming the country’s academic landscape**. This rapid growth was part of a broader government strategy to improve access to education and address the nation’s socio-economic challenges through human capital development (Wondimu, 2003). The Ethiopian government’s Education Sector Development Programs (ESDP), initiated in the mid-1990s, played a crucial role in increasing the number of public universities, diversifying academic disciplines, and improving research capacity (Teshome, 2007).

Before the 1990s, Ethiopia had only a handful of higher education institutions, with Addis Ababa University (AAU) being the dominant center for academic and research activities (Teferra & Altbach, 2004).

In response to the growing demand for university education, the **Ethiopian government established several new universities across different regions**. The early 2000s saw the opening of institutions such as Mekelle University, Bahir Dar University, Jimma University, and Hawassa University, among others. **These universities expanded their academic programs to include psychology and social work, reflecting the increasing recognition of these disciplines in addressing mental health and social welfare issues** (Ashcroft, 2010).

**The number of public universities in Ethiopia increased from 2 in 1995 to 42 in 2025**

The expansion of higher education led to a substantial increase in university enrollment. **Between 2000 and 2010, student enrollment in Ethiopian universities rose from approximately 34,000 to over 350,000**, demonstrating the government’s commitment to educational accessibility (World Bank, 2013). **This** **growth also facilitated the establishment of new postgraduate programs, including Master's and doctoral degrees in psychology and social work**, which were previously unavailable in Ethiopia (Woldehanna, 2012).

Despite this progress, **challenges such as resource limitations, faculty shortages, and concerns about educational quality emerged**. The rapid expansion often outpaced infrastructure development and faculty training, **raising concerns about maintaining academic standards** (Tadesse, 2014). Nonetheless, **the increase in the number of universities laid the foundation for the advancement of psychology and social work education in Ethiopia**, enabling more students to pursue specialized training in these fields and contributing to the country’s professional workforce.

### The Existing Specialization Areas of Psychology in Ethiopia as of 2024

The establishment of psychology as a major course within the Department of Psychology in 1961 marked a significant milestone in the country's higher education landscape (Pankhurst, 1962; Alem, 2012).

This development was influenced by the global expansion of psychology as a scientific and applied discipline, leading Ethiopia to align its program with Western psychological frameworks. Despite its early introduction, psychology education in Ethiopia remains relatively young, spanning just over 70 years, and has primarily served as a recipient of psychological developments from outside the country.

Graduate-level psychology education in **Ethiopia has been primarily confined to six specialization areas: educational psychology, counseling psychology, clinical psychology, industrial and organizational psychology, and developmental psychology** (Tesfaye& Abate, 2021).

**Only FIVE specialization areas in Psychology exist in Ethiopia, country of 126 million**

**1. Educational**

**2. Counseling**

**3. Clinical**

**4. Industrial & organizational**

**5. Developmental**

These specializations have provided a strong foundation for professionals working in academia, healthcare. However, the absence of new interdisciplinary domains has limited the capacity of Ethiopian psychology programs to integrate global advancements, particularly in the digital and technology-driven era.

Recent decades have seen a rapid expansion of psychology-related fields that merge psychology with computer science, software engineering, and data science. Areas such as **human-computer interaction (HCI), user experience (UX) design, cognitive psychology and HCI, information architecture, mobile UX design, data visualization, game design, design thinking, behavioral design, social computing, affective computing, software development for UX, research methods in software engineering, and ethics in technology and design** have become critical in modern psychological research and application (Norman, 2013; Shneiderman, 2018).

The lack of these domains in Ethiopian psychology programs has resulted in missed opportunities to engage with digital health innovations, AI-driven psychological assessments, and technology-enhanced therapy.

With computer science and software engineering becoming fundamental to innovation across various disciplines, Ethiopian psychologists remain without formal training in digital and computational tools that are shaping modern psychological practice. Psychological research and interventions increasingly depend on **big data analytics, machine learning algorithms, neurotechnology, virtual and augmented reality, and biometric-based assessments** (Calvo et al., 2014; Kosinski et al., 2021). Without exposure to these emerging fields, Ethiopian psychologists risk being left behind in global advancements and may struggle to develop indigenous digital solutions for psychological assessment, therapy, and research. Expanding psychology education to include **Psychosocial Software Engineering** is crucial for bridging this gap.

**The integration of psychology with software engineering would empower Ethiopian psychologists to design and implement digital psychological services, develop culturally appropriate mental health applications**, and contribute to AI-driven psychological research. The evolution of psychology as a discipline has always been marked by the adoption of new methodologies—just as **psychometrics integrated statistical methods in the 20th century, psychology now requires the integration of computational tools to remain relevant in the digital era** (Gorini et al., 2011; Schueller et al., 2017). Without a concerted effort to modernize psychology education in Ethiopia, there is a risk of maintaining an outdated system that does not align with the technological advancements shaping the future of the field.

### The Existing Specialization Areas of Social Work in Ethiopia as of 2024 (M.A. and Ph.D. Programs)

As pointed out above, Social work education in Ethiopia was formally re-introduced at Addis Ababa University in 2004, marking a significant step toward addressing the country’s social welfare needs (Askeland & Payne, 2006). Since its inception, social work as an academic discipline has expanded, with graduate programs emerging in response to the growing demand for trained professionals to address social issues such as poverty, child welfare, migration, and mental health (Adams et al., 2019). **The development of M.A. and Ph.D. programs in social work has played a crucial role in strengthening Ethiopia’s social service sector, equipping graduates with the skills necessary for research, policy development, and direct practice**. Since 2006 over 1,700 students have successfully graduated from the three social work programs, of which 43 PhD, 938, MSW and 758 BSW (Compiled from AAU office of the registrar 2025 record).

At the master's level, social work education in Ethiopia has primarily focused on four specialization areas: **generalist social work,** **children, youth, and family social work, community and social development, and health and mental health social work**. (School of Social Work, 2025). The courses delivered so far however includes practice courses, human behavior theories, social policy analysis, field education, and research methods courses.

**Only four specialization areas in Social Work exist in Ethiopia, country of 126 millions**

**1. Generalist Social work**

**2. Children, youth and family social work**

**3. Community and social development**

**4. Health social work**

These fields have been instrumental in producing social workers capable of addressing the diverse and complex challenges faced by individuals and communities. Clinical social work has emerged as a critical area, given the increasing need for mental health support services, while child and family social work has been essential in tackling issues related to child protection, foster care, and adoption services (Tasse, 2017).

At the doctoral level, social work education in Ethiopia has been relatively limited, with only a few universities offering Ph.D. programs. The primary focus of doctoral studies has been on **social work research, social policy analysis, advanced clinical social work, and community practice** (Asmelash, 2022). These programs aim to develop scholars and practitioners who can contribute to academic research, influence policy decisions, and provide leadership in social service organizations. The integration of evidence-based practice in Ph.D. training has strengthened the ability of social workers to apply research findings to real-world social problems (Mariam, 2014).

Despite the progress in social work education, Ethiopian universities have yet to fully incorporate emerging interdisciplinary fields that are transforming social work globally. Areas such as **digital social work, social work and artificial intelligence, forensic social work, environmental social work, and social work in humanitarian crises** have gained prominence in many countries but remain underdeveloped in Ethiopian academia (Dominelli, 2020). With technological advancements reshaping service delivery, the absence of digital social work training limits the ability of Ethiopian social workers to engage with e-counseling, tele-social work, and data-driven social interventions (Naslund et al., 2017).

The increasing prevalence of migration, displacement, and environmental challenges also calls for expanded specialization areas in social work. Fields such as **refugee and migration social work, climate change and social work, and disaster response social work** are becoming essential to address the needs of vulnerable populations affected by global crises (Drolet, 2018). Without an intentional expansion of social work specializations, Ethiopia risks maintaining an education system that does not fully equip social workers to respond to emerging social challenges. Enhancing social work education through interdisciplinary collaboration, particularly with fields such as psychology, data science, and public health, is crucial for modernizing the profession. Social work’s historical adaptability has been one of its strengths, allowing it to evolve with societal needs. As Ethiopia continues to develop its graduate programs, incorporating new areas of specialization will be essential for ensuring that social workers remain relevant in addressing both traditional and emerging social issues (Healy, 2021).

## Problem Statement

Psychology and social work education in Ethiopia have remained largely traditional, focusing on theoretical foundations and established specialization areas. Graduate programs in psychology emphasize **clinical psychology, counseling psychology, educational psychology, industrial and organizational psychology, developmental psychology, and measurement and evaluation psychology** (Alem, 2012). Similarly, social work education primarily focuses on **clinical social work, community development, child and family welfare, health and mental health social work, and social policy and administration** (Gebraeb, 2020).

While these fields are essential, they do not integrate **technological advancements** that have become central to contemporary psychological and social work practice globally. Despite significant developments in **digital mental health, artificial intelligence (AI)-driven social and psychological interventions, teletherapy, human-computer interaction (HCI), and predictive analytics in behavioral science**, Ethiopian graduate programs do not provide training in these areas (WHO, 2022). The absence of **interdisciplinary education combining psychology, social work, software engineering, and data science** has resulted in a significant gap, limiting professionals' ability to leverage technology for mental health services, social interventions, and psychosocial research (American Psychological Association [APA], 2021).

**Ethiopian graduate programs do not provide in critical areas, such as, digital mental health, artificial intelligence (AI)-driven social and psychological interventions, teletherapy, human-computer interaction (HCI), and predictive analytics in behavioral sciences**

The increasing reliance on **data-driven decision-making, digital therapy platforms, remote mental health support, and AI-enhanced social services** has transformed psychological and social work practices worldwide (Kazdin & Rabbitt, 2019). Digital solutions such as **wearable biosensors, virtual reality (VR)-based therapy, mobile mental health applications, and predictive analytics for crisis intervention** are becoming fundamental tools in psychosocial support (Torous & Wykes, 2020).

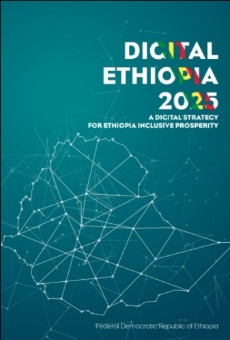
**The Ethiopian government has acknowledged the need for digital transformation through policies such as Digital Ethiopia 2025, which aims to integrate technology into key sectors, including healthcare and social services**

However, Ethiopian professionals in psychology and social work remain **deprived of opportunities** to gain expertise in **software-assisted mental health and social service solutions, user experience (UX) design for intervention tools, and computational modeling of behavioral and social issues** (Fekadu et al., 2022). This technological gap has contributed to **limited access to mental health and social services, inefficiencies in psychosocial research, and an inability to scale interventions to meet growing demands, particularly in underserved areas**.

**The** **Ethiopian government has acknowledged the need for digital transformation through policies such as Digital Ethiopia 2025**, which aims to **integrate technology into key sectors, including healthcare and social services** (Ministry of Innovation and Technology [MInT], 2020). However, psychology and social work remain **absent from these discussions**, leaving both fields lagging in the adoption of **technology-driven interventions, AI-based behavioral analysis, and data-driven decision-making**. Unlike industries such as **finance, agriculture, and telecommunications**, which have embraced software-driven solutions, psychology and social work continue to operate without structured **integration** **of** **digital therapeutic interventions, technology-assisted social work practice, and AI-enhanced mental health services** (MInT, 2020).

The lack of **interdisciplinary training that merges psychology, social work, and software engineering** has resulted in a critical skills gap. Ethiopian professionals are currently unable to utilize **machine learning for behavioral and social analysis, data visualization for mental health and social service trends, and mobile applications for intervention delivery** (APA, 2021). Consequently, psychosocial support services remain **manual, resource-intensive, and inaccessible to rural populations**, where digital solutions could significantly improve service delivery (WHO, 2022). Additionally, research in **psychopathology, cognitive neuroscience, social justice, trauma-informed care, and behavioral therapy** is constrained by the absence of expertise in **biometric data collection, computational modeling, and AI-driven risk assessment**, limiting Ethiopian scholars' ability to contribute to global research (Torous & Wykes, 2020). Addressing this gap requires the establishment of a **M.Sc. in Psychosocial Software Engineering**, an interdisciplinary specialization that integrates **psychology, social work, software development, and data science**. This program would equip Ethiopian professionals with the necessary skills to develop and implement **technology-enhanced mental health and social service solutions**, ensuring that psychological and social work interventions remain relevant in a digital world. Without such an initiative, **Ethiopia risks falling further behind in global advancements, leaving its professionals ill-equipped to address the increasing demand for digital and data-driven psychosocial interventions**.

**Due to absence of digital transformation psychosocial support services remain manual, resource-intensive, and inaccessible to rural populations**



**Ethiopia risks falling further behind in global advancements, leaving its professionals ill-equipped to address the increasing demand for digital and data-driven psychosocial interventions**

# Proposed Solution

## Introduce the M.Sc. Degree Program in “Psychosocial Software Engineering”

Technological advancements have transformed nearly every sector, and the fields of **psychology and social work are no exception**. In the 21st century, innovations in **teletherapy, artificial intelligence (AI)-driven diagnostics, virtual and augmented reality (VR/AR) therapy, wearable biosensors, and digital platforms for mental health and social service interventions** have reshaped how psychological and social issues are assessed, addressed, and researched (Kazdin & Rabbitt, 2019).

Despite these global trends, graduate education in **psychology and social work in Ethiopia remains largely traditional, offering limited training in software development, human-computer interaction (HCI), digital health technologies, and AI-driven intervention strategies** (Fekadu et al., 2022). This widening gap between **technological advancements and psychosocial practice** necessitates **a new, interdisciplinary specialization that integrates psychology, social work, and software engineering**—a field now recognized as **Psychosocial Software Engineering**.

**In Ethiopia, psychology and social work remain largely traditional.**

**Interdisciplinary specialization –**

**Psychosocial Software Engineering is required that integrates psychology, social work, and software engineering**

The **M.Sc. in Psychosocial Software Engineering is designed to equip professionals in psychology and social work with the necessary computational and digital skills** to develop and implement technology-driven psychosocial interventions.

This program bridges the gap between **behavioral sciences and software engineering**, providing students with the expertise to **design, develop, and evaluate digital solutions for mental health support, crisis intervention, social service delivery, and behavioral research** (American Psychological Association [APA], 2021). Through specialized coursework in **computer programming, artificial intelligence, machine learning, user experience (UX) design, data science, and cognitive modeling**, students will be prepared to create cutting-edge solutions such as **AI-driven mental health chatbots, immersive VR-based exposure therapy, predictive analytics for crisis intervention, and mobile applications for trauma-informed social work** (Torous & Wykes, 2020).

The program recognizes the growing need for **digital interventions in mental health and social services**, particularly in **low-resource settings** like Ethiopia, where accessibility to traditional psychological and social work services remains limited (WHO, 2022). With training in **software-assisted counseling tools, social impact-driven AI, and computational modeling of social and psychological phenomena**, graduates of this program will be uniquely positioned to **lead digital transformation efforts** in mental health care, psychosocial research, and social service systems.

The **M.Sc. in Psychosocial Software Engineering aligns with Ethiopia’s Digital Ethiopia 2025 strategy**, which emphasizes **technological innovation in key sectors, including healthcare and social services** (Ministry of Innovation and Technology [MInT], 2020). Unlike traditional psychology and social work programs that rely on manual, resource-intensive methods of assessment and intervention, this program **incorporates digital solutions to enhance service delivery, expand access to mental health care, and improve the efficiency of social service programs** (Fekadu et al., 2022). The program is also expected to **fill the expertise gap** by producing professionals skilled in **data-driven decision-making, computational social work, digital therapy design, and AI-powered psychosocial assessments**, ensuring that Ethiopia does not lag behind in the **global digital mental health and social work revolution**.

**The M.Sc. in Psychosocial Software Engineering aligns with**

**Ethiopia’s Digital Ethiopia 2025 strategy**

This **interdisciplinary M.Sc. program** is not only a response to the **technological advancements in psychology and social work** but also a proactive approach to shaping the future of these fields in Ethiopia. Without such an initiative, Ethiopian professionals will remain disconnected from **digital mental health trends, computational social interventions, and AI-enhanced behavioral research**, making it challenging to meet the growing demands for **evidence-based, technology-supported psychosocial services**.

**The integration of Psychology and Social Work with**

**Software engineering**

**would empower Ethiopian psychologists and social workers.**

**IN PSYCHOLOGY**

**Human-computer interaction (HCI)**

**User experience (UX) design**

**Cognitive psychology and HCI information architecture**

**Mobile UX design,**

**Data visualization,**

**Game design,**

**Design thinking**

**Behavioral design,**

**Social computing,**

**Affective computing,**

**Software development for UX,**

**Research methods in software engineering**

**Ethics in technology and design**

**IN SOCIAL WORK**

**Digital Social Work**

**Social Work and Artificial Intelligence**

**Digital Forensic Social Work**

**Digital Environmental Social Work**

**Digital Social Work in Humanitarian Crises**

**Digitalizing Indigenous knowledge and practice**

## The Urgent Need for a New Specialization

The absence of technological integration in **psychology and social work education** in Ethiopia presents a significant challenge, limiting the ability of professionals to respond to the growing demands for **digital mental health interventions and technology-assisted social services**. Mental health and social support services in Ethiopia remain **manual, resource-intensive, and largely inaccessible to rural populations**, despite the global rise of digital solutions that have improved the scalability and accessibility of psychological and social work interventions (WHO, 2022).

**The next generation of psychologists and social workers of Ethiopia risks being left behind in the digital World**

**The next generation of psychologists and social workers risks being left behind** unless they acquire the technical expertise necessary to leverage artificial intelligence (AI), big data analytics, and digital platforms for research, diagnosis, intervention, and service delivery (Ministry of Innovation and Technology [MInT], 2020).

Professionals in **psychology and social work** who lack training in **software development, human-computer interaction (HCI), and digital health technologies are forced to rely on third-party technology developers who often lack expertise in mental health and social service frameworks**. This results in poorly designed applications that fail to meet **clinical, ethical, and culturally relevant standards** (Kazdin & Rabbitt, 2019). The integration of **psychosocial expertise with software engineering skills** is essential for ensuring that digital mental health and social service technologies are **evidence-based, ethically sound, and culturally appropriate. Establishing a new specialization in Psychosocial Software Engineering** would address this gap by training **psychologists and social workers** to actively participate in **the design, development, and implementation of digital solutions, rather than remaining passive consumers of imported technologies** (Fekadu et al., 2022).

**The** **global landscape of psychosocial service delivery is shifting toward AI-driven diagnostics, virtual reality (VR)-based therapy, wearable biosensors for mental health monitoring, predictive analytics for social risk assessment, and mobile applications for digital counseling and crisis intervention** (Torous & Wykes, 2020). Without structured training in these areas, Ethiopian professionals will remain unprepared to **contribute to or implement such innovations**, leaving the country at a disadvantage in addressing its growing mental health and social challenges (APA, 2021). The demand for **technologically skilled psychosocial professionals** is increasing, with **governments, non-governmental organizations (NGOs), and international agencies** prioritizing the integration of digital tools into healthcare and social services (WHO, 2022). The lack of a specialized program to train **psychologists and social workers** in software engineering **prevents Ethiopia from developing homegrown digital solutions**, making the country dependent on externally developed mental health and social service technologies that may not align with **local needs and cultural contexts** (Fekadu et al., 2022).

The establishment of a **M.Sc. in Psychosocial Software Engineering** is not just a response to global trends; it is an urgent necessity for Ethiopia to **develop indigenous, technology-driven psychosocial interventions**. Without such an initiative, professionals in **psychology and social work** will struggle to keep pace with **the digital transformation of mental health care and social service delivery**, ultimately limiting the impact of these critical fields in addressing **Ethiopia’s psychosocial and mental health challenges**.

## The Need for an Interdisciplinary Approach

The development of **Psychosocial Software Engineering requires an interdisciplinary approach** that bridges the gap between **psychology, social work, and software engineering**. Traditional disciplinary boundaries have limited the ability of **psychologists and social workers to effectively engage with technological advancements**, despite the increasing reliance on **digital tools, artificial intelligence (AI), and data science** in psychosocial service delivery (American Psychological Association [APA], 2021).

Just as **20th-century psychology and social work adopted statistical methods through psychometrics and program evaluation**, 21st-century psychosocial professionals must embrace **software engineering as a fundamental tool for research, intervention, and service delivery**. This shift is crucial because the future of **mental health and social work practice** will be increasingly **data-driven, technology-enhanced, and computationally intensive** (Torous & Wykes, 2020). An integrated **M.Sc. in Psychosocial Software Engineering** curriculum should include:

* **Programming for Psychosocial Professionals:** Training in **Python, Java, and R** for developing mental health applications, social work case management tools, and research software.
* **AI and Machine Learning in Psychosocial Interventions:** Applying AI to **detect patterns in psychological disorders, assess social vulnerabilities, predict intervention outcomes, and personalize therapy or support programs (Kazdin & Rabbitt, 2019).**
* **Human-Computer Interaction (HCI) and User Experience (UX) Design: Creating intuitive, accessible, and culturally appropriate digital platforms for mental health and social service interventions.**
* **Big Data and Behavioral Analytics: Utilizing large datasets to study behavioral trends, assess social risks, improve diagnostics, and optimize psychosocial interventions (Fekadu et al., 2022).**
* **VR/AR in Therapy and Social Work: Implementing immersive technologies for exposure therapy, trauma rehabilitation, and virtual simulations for social work training.**
* **Cyberpsychology, Digital Ethics, and Data Security: Addressing privacy concerns, ethical dilemmas, and cybersecurity challenges in online psychological services and digital social work tools (WHO, 2022).**

This interdisciplinary training would **bridge the gap between technological innovation, psychological expertise, and social service delivery**, equipping Ethiopian professionals with the skills to develop **scientifically valid, culturally relevant, and ethically sound digital solutions**. Without such integration, the fields of **psychology and social work risk remaining detached from global advancements**, limiting Ethiopia’s ability to leverage **technology-driven psychosocial interventions** (Torous & Wykes, 2020).

The **M.Sc. in Psychosocial Software Engineering represents a paradigm shift, preparing professionals to develop homegrown, contextually appropriate digital mental health and social service technologies**, ultimately improving access, efficiency, and effectiveness in addressing Ethiopia’s psychosocial challenges.

**The M.Sc. in Psychosocial Software Engineering offers a paradigm shift in Ethiopia’s psychosocial service delivery**

## Ensuring Ethiopia’s Place in the Future of Psychology and Social Work

**The** **globalization of digital mental health and social services has redefined** how psychological and social work professionals conduct research, provide therapy, and support communities. Ethiopia cannot afford to delay the integration of technology into these fields, as future advancements will be increasingly **dominated by AI-driven interventions, mobile psychosocial support platforms, and neuroscience-informed digital tools** (WHO, 2022). Without a dedicated specialization in **Psychosocial Software Engineering**, Ethiopian psychologists and social workers will lack the technical expertise required to **innovate, compete, and contribute to the international professional landscape**. The introduction of the **M.Sc. in Psychosocial Software Engineering** will enable Ethiopian professionals to **develop digital solutions tailored to the country’s unique cultural, linguistic, and social contexts**. Many existing global technologies are not designed with Ethiopia’s **multilingual and diverse social structures in mind**, making locally developed interventions essential (Fekadu et al., 2022). This new specialization will equip graduates with the ability to:

* **Develop AI-powered mental health applications** that recognize Ethiopian languages and **cultural nuances.**
* **Collect/compile indigenous knowledge and practice (mediation, conflict resolution, traditional healing and the like) and develop homegrown case management solutions.**
* **Design digital platforms for social work case management**, improving service delivery efficiency in urban and rural areas.
* **Leverage big data analytics for policy development**, allowing evidence-based decision-making in mental health and social services.
* **Expand access to remote psychological counseling and social support** through mobile and web-based applications, reducing barriers to care.
* **Integrate wearable biosensors and neurotechnology** to enhance assessment and intervention for trauma, stress, and mental health disorders.
* **Implement blockchain and cybersecurity measures** to protect sensitive psychosocial data and ensure ethical digital practice (Kazdin & Rabbitt, 2019).

**Ethiopia’s Digital Ethiopia 2025 strategy emphasizes digital transformation across key sectors such as finance, agriculture, and telecommunications, but mental health and social work remain largely untouched by technological innovation** (Ministry of Innovation and Technology [MInT], 2020). Addressing this gap is crucial to **position Ethiopia as a leader in digital mental health and social service innovation in Africa**.

**The establishment of Psychosocial Software Engineering as a formal specialization will ensure that Ethiopian professionals are not just consumers of technology but active contributors to the global evolution of psychology and social work**. Through this initiative, Ethiopia has the potential to become **a regional hub for culturally sensitive, technologically advanced, and ethically responsible psychosocial solutions**, ensuring that mental health and social services are **scalable, accessible, and future-ready**.



# Project Goals and Objectives

The **M.Sc. in Psychosocial Software Engineering** is designed to integrate **psychology, social work, and software engineering** to address the increasing demand for **digital mental health solutions and technology-assisted social interventions**. The program aims to equip professionals with interdisciplinary skills to **develop, implement, and evaluate** software-based interventions for psychological and social challenges.

## Overall Goal

The primary goal of this project is to **establish a five-year graduate-level program in Psychosocial Software Engineering Program in Addis Ababa University and train 100 students as the first generation of Psychosocial Software Engineers** that fosters innovation at the intersection of **mental health, social work, and technology**. This program will develop professionals who can design **AI-driven mental health solutions, digital counseling platforms, and technology-based social work interventions** while ensuring **ethical, culturally sensitive, and evidence-based applications** (Torous & Wykes, 2020). Key contributions of the program include:

**The primary goal of the project is to train 100 students as the first generation of Psychosocial Software Engineers**

### Enhancing Ethiopia’s capacity for digital mental health innovation by training professionals who can leverage AI, machine learning, and mobile technologies to develop scalable interventions;

### Strengthening the mental health and social services sectors through the integration of data-driven decision-making and predictive analytics in psychology and social work;

### Addressing the shortage of mental health and social work professionals by using technology to expand service accessibility, particularly in underserved and rural areas;

### Promoting interdisciplinary collaboration between psychologists, social workers, and software engineers, ensuring that technology is developed with a deep understanding of human behavior and social needs.

## Specific Objectives

To achieve this overall goal, the project is designed with the following specific objectives will train at least **100 students in five years** in the development of knowledge and skills to:

### plan, design, develop and implement digital psychosocial services;

### develop digital platforms, such as mobile counseling apps and telehealth services, etc., to improve mental health access in rural and underserved areas;

### design digital services to that guarantee equitable access to mental health care through low-cost, AI-assisted digital interventions that reach vulnerable populations.

### ensure the development of a multidisciplinary team with expertise in psychology, social work, and software engineering, ensuring the sustainability of the specialization.

# Justification

## Justification for the Psychosocial Software Engineering M.Sc. Degree

### From Psychometrics and Sociometrics to Psychosocial Software Engineering: A Paradigm Shift

The evolution of psychology and social work has been shaped by the integration of **quantitative methods and statistical models**. In the late 19th and early 20th centuries, pioneers such as **Sir Francis Galton, Karl Pearson, Charles Spearman, and Alfred Binet** introduced **psychometrics**, revolutionizing the way psychological constructs were measured and analyzed (Borsboom, 2006). Galton’s research on individual differences and statistical correlation (Galton, 1888) influenced Pearson’s development of **correlation coefficients**, which became fundamental in psychological measurement (Pearson, 1901). Spearman’s **factor analysis** (Spearman, 1904) provided a scientific basis for intelligence testing, leading to the development of Binet’s intelligence scale (Binet& Simon, 1905). Similarly, in social work, **sociometrics** emerged as a data-driven approach to understanding social networks, relationships, and community dynamics (Moreno, 1934).

Just as psychology in the 20th century adopted **psychometrics and sociometrics**, the **21st century demands the integration of software engineering and digital technologies**. Advances in **Big Data, Artificial Intelligence (AI), Machine Learning (ML), Brain Imaging, Virtual Reality (VR), and Augmented Reality (AR)** are transforming psychological research, diagnosis, intervention, and social work practice (Torous & Wykes, 2020). Psychology and social work professionals must now **embrace computational tools and digital methodologies** just as statistical methods became essential a century ago.

**As it was in Psychometrics and**

**Sociometrics so shall it be with Psychosocial Software Engineering**

### The Digitization of Psychology and Social Work: A Global Imperative

The justification for establishing the **M.Sc. in Psychosocial Software Engineering** is evident in the ongoing **global digitization of mental health and social service practices**. Psychological research, assessment, and intervention increasingly depend on **digital platforms and computational techniques** (Kazdin & Rabbitt, 2019). AI-powered diagnostics, virtual therapy environments, biometric feedback, and data-driven psychological and social work modeling have become the **new standard** in global practice (American Psychological Association [APA], 2021). Ethiopia must prepare its psychology and social work professionals to **actively engage with, develop, and innovate within this digital landscape** rather than remain passive consumers of foreign technological solutions (Fekadu et al., 2022).

**The training of the first 100 graduates in Psychosocial Software Engineering will mark a historic milestone in advancing psychological and social work education and research in Ethiopia**

The training of **the first 100 graduates in Psychosocial Software Engineering will mark a historic milestone** in advancing psychological and social work education and research in Ethiopia. These professionals will be equipped to **build AI-based psychological assessments, develop digital mental health and social intervention platforms, design VR-based exposure therapies, and analyze behavioral data using computational methods**. Their expertise will lay the foundation for a new generation of psychologists and social workers who **blend human behavior expertise with technological skills** to address Ethiopia’s unique challenges.

### Transformative Impact on Subfields of Psychology and Social Work

The **M.Sc. in Psychosocial Software Engineering has the potential to revolutionize multiple subfields** of psychology and social work, enhancing both **research and practice**:

**5.1.3.1. Psychometrics and Sociometrics**

* AI-driven adaptive testing for psychological and social assessments.
* Data science applications to refine reliability and validity in measurement.

**5.1.3.2. Measurement and Evaluation**

* Machine learning models for predictive analytics in mental health and social service interventions.
* Digital platforms for large-scale psychological and social research.

**5.1.3.3. Research and Experimental Psychology**

* Big Data analytics to study behavior at population levels.
* VR-based experimental environments to simulate psychological and social conditions.

**5.1.3.4.** **Neuropsychology and Cognitive Psychology**

* AI-enhanced brain imaging for cognitive function analysis.
* VR-based simulations to study memory, attention, and problem-solving.

**5.1.3.5.** Mental Health and Social Work Interventions

* AI-powered therapy bots for scalable mental health and social support services.
* Mobile applications for self-guided cognitive-behavioral therapy (CBT) and case management.

**5.1.3.6.** Clinical and Counseling Psychology

* Telepsychology platforms for remote therapy.
* AI-based early detection tools for psychopathological disorders.

**5.1.3.7.** Health Psychology and Social Work Practice

* Wearable devices tracking psychological and physiological health indicators.
* Data-driven behavioral interventions for lifestyle modification and community health.

**5.1.3.8.** Educational Psychology and Child Welfare

* AI-powered personalized learning systems for students.
* Digital tools for diagnosing and supporting learning disabilities.

**5.1.3.9.** Vocational and Career Psychology

* AI-driven career assessment tools based on behavioral analytics.
* Digital career counseling platforms integrating psychometric evaluations.

**5.1.3.10.** Consumer and Economic Psychology

* Neuromarketing techniques integrating biometric feedback.
* Behavioral data analysis for predicting consumer decision-making.

The integration of technology into these fields will **redefine professional practice**, ensuring that Ethiopian psychologists and social workers **lead innovation rather than follow global trends**.

The future of psychology and social work is **inseparable from digital and computational advancements**. Establishing the **M.Sc. in Psychosocial Software Engineering is not just an option but a necessity to ensure Ethiopia keeps pace with the global transformation** of these disciplines. Investing in this interdisciplinary field will equip the next generation of Ethiopian psychologists and social workers with the **technical expertise and digital literacy** required to lead innovations in mental health, therapy, social service delivery, and community intervention.

**M.Sc. in Psychosocial Software Engineering is not just an option …**

**But a Necessity!**

# Employment

## Short-term Employment Opportunities for Psychosocial Software Engineering

Graduates of the **M.Sc. in Psychosocial Software Engineering** will have access to a wide range of short-term employment opportunities in **mental health technology, digital social work interventions, user experience (UX) design, AI-driven behavioral analytics, and computational psychology**. Their expertise in both **psychological and social work and software engineering** will allow them to take on **consulting, project-based, and contractual roles** in various sectors.

Short-term employment opportunities may include:



### Researchers in Digital Psychology and Social Work – engaging in research related to AI-based psychological assessments, digital therapy tools, and social work intervention models in universities, think tanks, and innovation labs (Kazdin & Rabbitt, 2019).

****

### Software Developer for Mental Health Applications – working with startups and companies developing mobile apps for cognitive behavioral therapy (CBT), self-help interventions, and crisis response chatbots (Torous & Wykes, 2020).

****

### AI and Machine Learning Analyst for Behavioral Data – engaging in the development of predictive models for behavioral health, social service case management, and public policy (Fekadu et al., 2022).

****

### User Experience (UX) Researcher – collaborating with designers and developers to ensure that mental health and social service applications are user-friendly and psychologically effective (American Psychological Association [APA], 2021).

### Policy Consultant for Digital Mental Health and Social Work – providing data-driven insights to governmental agencies, NGOs, and international organizations on the integration of digital tools into mental health and social service policies (WHO, 2021).

****

### Freelance Digital Therapist or Online Counselor – using virtual platforms and AI-enhanced therapy bots to offer psychosocial support to individuals in underserved areas.

### Project Manager for Digital Social Work and Mental Health Interventions – coordinating programs that use AI-driven assessment tools and virtual interventions to address community-based mental health and social welfare challenges.

These short-term roles provide **immediate professional engagement** and help graduates **build expertise** in the field while gaining recognition among stakeholders.

## Expanding Career Prospects in a Digitized World

Graduates of the **M.Sc. in Psychosocial Software Engineering** will be at the forefront of a **rapidly evolving job market**, where digital psychology and computational social work are becoming essential to multiple sectors. The World Economic Forum (2023) has highlighted that **AI, digital health, and behavioral data analytics** will be among the most in-demand skill areas in the coming years. Professionals who can bridge **psychological insights with software engineering solutions** will have **significant career advantages**.

**The World Economic Forum has highlighted in 2023 that AI, digital health, and behavioral data analytics will be among the most in-demand skill areas in the coming years**

### The integration of psychology, social work, and software engineering

The integration of psychology, social work, and software engineering is reshaping professional pathways. The demand for **mental health technology specialists, AI-driven behavioral analysts, digital intervention designers, and computational neuroscientists** is increasing globally (Kazdin & Rabbitt, 2019).

**Graduates will have the flexibility to work in:**

* Traditional mental health and social service settings enhanced by digital tools.
* Tech-driven sectors such as AI ethics, human-computer interaction (HCI), and digital behavior modification.
* Global policy and research organizations focusing on digital mental health strategies.
* Startups and established tech companies developing software for mental health, cognitive enhancement, and social impact solutions.

The ability to develop **AI-driven psychological interventions, design behavioral health analytics tools, and create VR-based therapy environments** will **differentiate** **graduates** in an increasingly **competitive job market** (Torous & Wykes, 2020).

### High Demand across Multiple Sectors

The **M.Sc. in Psychosocial Software Engineering** equips professionals with the ability to **work across multiple industries**, ensuring long-term career sustainability.

#### Academic and Research Institutions

Graduates will be in high demand for **faculty, research, and program development roles** in psychology, social work, and computational sciences. Universities and research institutions are investing in **AI-driven psychological research, cognitive modeling, and digital mental health interventions** (Kazdin & Rabbitt, 2019).

**Career opportunities include:**

* University Lecturer or Researcher in psychosocial computing, neuroinformatics, or AI-driven mental health solutions.
* Research Scientist focusing on computational modeling of behavior and digital mental health interventions.
* Grant-funded Investigator developing innovative AI-based counseling tools and social support

#### Healthcare and Mental Health Services

The healthcare sector is undergoing a **digital transformation**, creating opportunities for professionals skilled in **AI-assisted diagnostics, telepsychology, and digital therapy solutions** (Torous & Wykes, 2020).

**Graduates can work as:**

* Digital Mental Health Specialists designing and implementing telehealth solutions, AI-powered therapy bots, and mobile mental health interventions.
* Neuroinformatics Analysts utilizing machine learning for brain imaging and cognitive function analysis.
* Clinical Software Developers creating VR exposure therapy and AI-assisted psychological assessment tools.
* Behavioral Data Scientists analyzing large-scale mental health and social behavior data to improve treatment approaches.
  + - 1. **Government Agencies and Policy-Making Bodies**

Governments worldwide are investing in **digital public health initiatives**, and Ethiopia is no exception (Fekadu et al., 2022).

**Psychosocial software engineers will play critical roles in:**

* Developing AI-powered public mental health policies and digital intervention programs.
* Building predictive analytics models to assess and mitigate social and mental health crises.
* Implementing digital counseling services for high-risk populations and community support programs.
* Enhancing forensic psychology and cybersecurity using behavioral AI tools.

#### Non-Governmental Organizations (NGOs) and International Organizations

Major organizations such as the **World Health Organization (WHO), United Nations (UN), and World Bank** are prioritizing **digital solutions for mental health and social services** (WHO, 2021).

**Graduates can work as:**

* AI-driven Intervention Designers for mental health and psychosocial support programs.

* Behavioral Data Analysts for large-scale public health research projects.
* Consultants for digital mental health platforms, ensuring accessibility and ethical AI implementation.
* Project Managers for digital social work initiatives, focusing on technology-enhanced community

#### Private Sector and Technology Companies

Global technology firms are investing in **AI-powered mental health applications, cognitive computing, and digital therapy tools** (APA, 2021).

**Graduates can secure roles in:**

* User Experience (UX) Research & Design – Developing human-centered interfaces for mental health and social service applications.
* AI and Behavioral Science Integration – Designing adaptive AI mental health interventions and automated social work case management systems.
* Virtual Reality (VR) Therapy and Augmented Reality (AR) Applications – Creating immersive therapeutic environments for psychological treatment and rehabilitation.
* Consumer Behavior Analytics – Using psychometric and sociometric modeling to enhance digital marketing, advertising, and business decision-making.

Graduates will have the opportunity to work for technological leaders such as **Google, Microsoft, Apple, Meta, and emerging mental health startups**, driving **technological innovations in psychology and social work**.

## Long-term Market with Unmet Demand

The **M.Sc. in Psychosocial Software Engineering** prepares graduates for a job market that will remain in high demand for decades. The rapid **integration of digital technologies into psychology and social work** is outpacing the supply of professionals who can bridge these disciplines (World Economic Forum, 2023). The need for experts trained in both **mental health and social service interventions, alongside AI-driven behavioral analytics, digital therapy solutions, and human-computer interaction**, is growing globally.

Ethiopia, like many other nations, faces an **urgent need for digital mental health and social service solutions**, making this specialization a **pioneering force in the country’s workforce development**. As mental health and social challenges become increasingly complex, the role of **psychosocial software engineers** will expand in **healthcare, academia, government policy, NGOs, and the private sector**.

The intersection of **psychology, social work, and technology** is unlocking **unprecedented career pathways**. Graduates will be well-positioned to **lead innovations in digital mental health interventions, AI-enhanced social work case management, computational behavioral analysis, and virtual counseling platforms**. As industries continue to undergo **digital transformation**, professionals with expertise in both **psychosocial sciences and software engineering** will be essential in shaping the future of **mental health care, social service delivery, and human-centered AI applications**.

# Cost-effectiveness

## The Financial Burden of Studying Abroad

The cost of sending Ethiopian students abroad for advanced education in **Psychosocial Software Engineering** is prohibitively high, making local training a significantly more viable and sustainable option. Educating a single student in a foreign institution requires covering expenses such as **tuition fees, living costs, airfare, and miscellaneous expenses**. When considering the cost of training an entire cohort of 100 students, the total financial burden becomes immense.

## Estimated Costs of Studying Abroad

Training students locally for a **M.Sc. in Psychosocial Software Engineering** presents a highly cost-effective alternative to sending them abroad for their education. The financial implications of pursuing a Master's degree in North America or an English- speaking European country are substantial, with estimated costs ranging from approximately $36,000 to $ 82,000 per student. This includes tuition fees, living expenses, and transportation costs, which can place a significant financial burden on students and their families, as well as on educational institutions and government resources (see Table 1).

**At the low-end of the cost spectrum, training 100 students abroad would amount to approximately $1.8 million, while at the high-end, the total cost could exceed $4.1 million**

1. Estimated Costs of Studying Abroad

|  |  |  |
| --- | --- | --- |
| **Cost Component** | **Low End Estimate** | **High End Estimate** |
| Tuition Fees | $ 25,000 | $ 60,000 |
| Living Expenses | $ 10,000 | $ 20,000 |
| Airfare | $ 1,000 | $ 2,000 |
| Total Estimated Cost per Student | $ 36,000 | $ 82,000 |
| Total Estimated Cost for 100 students | $1.8 million | $4.1 million |

## The Economic Advantage of Local Training

Establishing a local **M.Sc. in Psychosocial Software Engineering program would require a significantly lower financial investment** while ensuring high-quality training tailored to the Ethiopian context. The funds required to send a single student abroad could be used to **train multiple students locally**, develop infrastructure, and invest in faculty training and research.

Training students locally **not only reduces costs but also strengthens Ethiopia’s academic and professional workforce**. A locally developed program can be designed to **meet the specific psychological, social work, and technological needs of the country**, ensuring that graduates have skills that are both relevant and applicable within Ethiopia’s social and economic context (Meyer, 2015).

## Accessibility and Socioeconomic Benefits

Beyond financial considerations, a **locally-based M.Sc. program in Psychosocial Software Engineering** increases accessibility for students who may otherwise face barriers to studying abroad, such as:

### Financial constraints that prevent students from affording high tuition and living expenses.

### Family obligations that require students to remain in Ethiopia.

### Cultural and academic adjustment challenges that may arise when studying in a foreign country.

Moreover, investing in local education helps retain **talent within Ethiopia**, preventing brain drain and ensuring that trained professionals remain to contribute to the country’s **mental health, social services, technological development, and academic growth**. Graduates who stay in Ethiopia are **more likely to reinvest their knowledge and skills into local communities**, creating **a cycle of national capacity building** (Keller, 2013).



# Impact of the Project

The establishment of the **M.Sc. in Psychosocial Software Engineering** program is expected to have a profound impact across multiple dimensions, including education, healthcare, social, and technological development. Given the increasing demand for **digital solutions in mental health and psychosocial services,** this program will play a critical role in addressing **Ethiopia’s and the global community’s challenges in integrating technology with human-centered care**.

## Advancing Psychological and Social Work Education

The interdisciplinary nature of the program will revolutionize **psychology and social work education in Ethiopia by integrating software engineering, artificial intelligence (AI), and digital interventions** into traditional mental health and social services training.

This will:

### Enhance curriculum development by introducing cutting-edge courses on digital mental health applications, AI-driven counseling tools, and technology-assisted social interventions (Kazdin & Rabbitt, 2019).

### Empower students with specialized digital skills, making them globally competitive professionals in academia, healthcare, and the technology sector.

### Increase research output by fostering innovative studies in computational psychology, predictive analytics in social work, and the ethical use of AI in mental health interventions (Torous & Wykes, 2020).

## Strengthening Ethiopia’s Healthcare and Mental Health System

Mental health and psychosocial support services remain **underfunded and understaffed** in Ethiopia (Fekadu et al., 2022). The program will **bridge this gap** by:

### Expanding the workforce of digitally skilled mental health and social work professionals who can develop, implement, and scale technology-driven interventions for mental health.

### Improving access to care through telepsychiatry, mobile counseling apps, and AI-assisted diagnostics, reducing the burden on traditional mental health services (World Health Organization, 2021).

### Enhancing crisis response capabilities by equipping social workers and psychologists with data-driven tools to address trauma, disaster relief, and psychosocial support in vulnerable communities.

## Driving Digital Innovation and Economic Growth

The integration of **psychology, social work, and technology** will contribute to Ethiopia’s **digital transformation agenda** by:

### Encouraging entrepreneurship and job creation, enabling graduates to develop mental health startups, digital therapy platforms, and AI-based counseling solutions (World Economic Forum, 2023).

### Attracting investment in health tech, positioning Ethiopia as a leader in mental health and psychosocial software solutions within Africa.

### Bridging the technology gap in social services and community development, promoting the adoption of data-driven approaches to address social issues (Keller, 2013).

## Policy Influence and National Development

The program will support **evidence-based policymaking** by generating **research and data** that can inform **national mental health, education, and digital transformation strategies**. Key contributions include:

### Developing digital public health initiatives that integrate AI-driven mental health surveillance and intervention planning (Meyer, 2015).

### Training professionals for government and NGO roles, strengthening Ethiopia’s capacity to design and implement digital policies for social welfare and mental health care.

### Advancing human rights-based digital interventions, ensuring that AI-driven mental health solutions are ethically designed and inclusive (American Psychological Association [APA], 2021).

## Enhancing Global Collaboration

The program will establish Ethiopia as a **hub for psychosocial software engineering**, facilitating **international collaborations** with:

### Global academic institutions for joint research projects, faculty exchange programs, and collaborative curriculum development.

### International organizations like WHO and UNESCO, contributing to the development of digital mental health frameworks at a global scale.

### Technology companies and research centers, driving cross-disciplinary innovations in mental health and social work technology.

To sum up, the impact of the **M.Sc. in Psychosocial Software Engineering** will be far-reaching, transforming **education, healthcare, digital innovation, and policy development** in Ethiopia and beyond.

This program will ensure that **Ethiopia is prepared to address 21st-century mental health challenges through technology-driven solutions** by equipping professionals with **both psychological/social work expertise and advanced digital skills**.

**This program will ensure that Ethiopia is prepared to address 21st-century mental health challenges through technology-driven solutions**

# Project Structure and Management

## Organizational Structure

1. Organizational Structure

The Host Organization

Addis Ababa University

The Funding Organization

Local Project Coordinator

Dr. Abebe Assefa Abate

International Project Coordinator

Mr. Gobena Daniel

Administration & Finance

Mr. Seyoum Nemie

Assistant Project Coordinator

Ms. Selam Admasu

Psychosocial Expert

Mr. Abel Andarge

Software Engineering Expert

Dr. Fantahun Bogale

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

External and Local Faculty

External Reviewers &Examiners

External and Local Faculty

External Reviewers &Examiners

## Roles and Responsibilities

### Local Project Coordinator

**Accountability**: Accountable to the Funding Organizations and the Host Organization

**Roles and Responsibilities**:

#### Develop and implement project guidelines and protocols to ensure alignment with organizational goals.

#### Lead fundraising initiatives to secure necessary funding for project activities.

#### Coordinate and maintain effective communication with partners and stakeholders to foster collaboration.

#### Oversee the development and implementation of curriculum, ensuring they meet educational standards and project objectives.

#### Manage and supervise all project activities, ensuring they are executed efficiently and effectively.

#### Oversee administrative and financial management, ensuring compliance with organizational policies and funding requirements.

#### Select and recruit qualified external and local faculty members to enhance project delivery.

#### Facilitate the recruitment process for students, ensuring alignment with project goals and objectives.

#### Prepare and submit quarterly, biannual, and annual administrative and financial reports to funding organizations, partners, and stakeholders as necessary.

### International Project Coordinator

**Accountability**: Accountable to the Local Project Coordinator

**Roles and Responsibilities**:

#### Support the Local Project Coordinator in developing project guidelines and protocols.

#### Lead fundraising initiatives with the Local Project Coordinator on fundraising initiatives to secure additional resources.

#### Coordinate with external partners and stakeholders to enhance project outcomes and ensure alignment with project goals.

#### Provide technical support and expertise for overall project activities, ensuring best practices are followed.

#### Assist in the development and refinement of curriculum in collaboration with the Local Project Coordinator.

#### Lead the selection and recruitment of external and local faculty members to ensure high-quality instruction.

#### Aid in the recruitment process for students, ensuring effective outreach and engagement strategies.

### Assistant Local Project Coordinator

**Accountability:** Accountable to the Local Project Coordinator

**Roles and Responsibilities:**

#### Assist the Local Project Coordinator in developing project guidelines and protocols.

#### Support coordination efforts with partners and stakeholders to facilitate collaboration.

#### Collaborate in the development of curriculum and educational materials, ensuring they meet project objectives.

#### Monitor and follow up on day-to-day project activities to ensure smooth operations and timely completion of tasks.

#### Work closely with the Administration and Finance Officer on administrative and financial matters to ensure compliance and efficiency.

#### Aid in the recruitment process for students, ensuring alignment with project goals.

#### Prepare and submit monthly, quarterly, and annual administrative and financial reports to the Local Project Coordinator

### Administration and Finance Officer

**Accountability:** Accountable to the Assistant Local Project Coordinator

**Roles and Responsibilities:**

#### Oversee all administrative and financial activities in accordance with project guidelines and organizational policies.

#### Manage resource allocation and ensure effective resource management to support project activities.

#### Liaise with the host organization on administrative and financial matters to ensure compliance and efficiency.

#### Prepare and submit quarterly, biannual, and annual administrative and financial reports to the Local Project Coordinator, ensuring transparency and accountability.

### Secretary / Caretaker

**Accountability:** Accountable to the Assistant Local Project Coordinator

**Roles and Responsibilities:**

#### Oversee all matters related to office and classroom management, ensuring a conducive learning environment.

#### Manage logistical arrangements for meetings, workshops, and other project-related events.

#### Maintain accurate records and documentation related to project activities and communications.

### International Faculty Members

**Accountability:** Accountable to the Local Project Coordinator

**Roles and Responsibilities:**

#### Develop detailed course content, course delivery plan, course materials and submit same to the Local Project Coordinator one month prior to the initiation of the course.

#### Deliver high-quality instruction and support to students in their respective areas of expertise.

#### Collaborate with the Local Project Coordinator and other faculty members to develop and refine curriculum.

#### Deliver Course virtually in collaboration with the local assistant professor.

#### Participate in project evaluation and provide feedback on program effectiveness.

### Local Faculty Members working as Main Professors

**Accountability:** Accountable to the Local Project Coordinator

**Roles and Responsibilities:**

#### Develop detailed course content, course delivery plan, course materials and submit same to the Local Project Coordinator one month prior to the initiation of the course.

#### Deliver high-quality instruction and support to students in their respective areas of expertise.

#### Collaborate with the Local Project Coordinator and other faculty members to develop and refine curriculum.

#### Deliver Course virtually in collaboration with the local assistant professor.

#### Participate in project evaluation and provide feedback on program effectiveness.

### Local Faculty Members working as Assistant Professors in Team Teaching

**Accountability:** Accountable to the Local Project Coordinator

**Roles and Responsibilities:**

#### Ensuring smooth technical operation of virtual lectures.

#### Moderating in-class interactions and assisting students with logistical needs.

#### Providing academic support outside lecture hours, including guiding discussions and addressing student concerns.

#### Offering input only when explicitly invited by the main professor or after the lecture has concluded.

### Internal and External Reviewers / Examiners

**Accountability:** Accountable to the Host Organization

**Roles and Responsibilities:**

#### Evaluate student thesis work, ensuring adherence to academic standards and project objectives.

#### Provide constructive comments and suggestions to the betterment of the project.

### Internal and External Reviewers

**Accountability:** Accountable to the Host Organization

**Roles and Responsibilities:**

#### Conduct annual evaluations of project activities and submit comprehensive reports to funding and host organizations, as well as partners and stakeholders as necessary.

#### Provide constructive comments and suggestions to the betterment of the project.



# Stakeholders and Partners

The project is expected to be implemented with the support and collaboration of partners and/or stakeholders. This includes governmental institutions, international organizations, psychology associations, universities, and local universities. While the following list provides the potential partners/stakeholders already identified other parties, particularly, foreign universities are expected to join in due course.

## Governmental Institutions

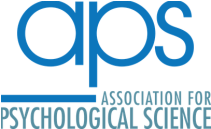
African Union

Ministry of Education (FDRE)

Ministry of Innovation and Technology (FDRE)

Addis Ababa University

## International Organizations, Psychology Associations, and Universities

The American Psychological Association (1892)

International Association of Schools of Social Work (1928)

International Union of Psychological Science (1951)

The International Federation of Social Workers (1956)

European Federation of Psychologists’ Association (1981)

The Association for Psychological Science (1988)

The Ethiopian Psychologists Association (1992)

## Local Universities that have Psychology undergraduate and/or graduate programs

1. Local Universities that have Psychology undergraduate and/or graduate programs

|  |  |  |
| --- | --- | --- |
| 1. Addis Ababa University | 13. Dilla University | 25. Mekedela Amba University |
| 2. Adigrat University | 14.Dire Dawa University | 26. Mizan Tepi University |
| 3. Aksum University | 15.Hawassa University | 27. Samara University |
| 4. Ambo University | 16. University of Gondar | 28. Wachamo University |
| 5. Arba Minch University | 17. Haramaya University | 29. Wolaita Sodo University |
| 6. Arsi University | 18. [Jigjiga University](https://www.4icu.org/reviews/15534.htm) | 30. Woldia University |
| 7. [Assosa University](https://www.4icu.org/reviews/15534.htm) | 19. Jimma University | 31.  Wollega University |
| 8. Bahir Dar University | 20. Jinka University | 32. Wollo University |
| 9. [Bule Hora University](https://www.4icu.org/reviews/15534.htm) | 21. Kotebe University of Education | 33.  Wolkite University |
| 10. Debre Berhan University | 22. Mettu University | 34.  Worabe University |
| 11. Debre Markos University | 23. Madda Walabu University |  |
| 12. [Debre Tabor University](https://www.4icu.org/reviews/15532.htm) | 24. Mekelle University |  |

## Local Universities that have Social Work undergraduate and/or graduate programs

1. Local Universities that have Social Work undergraduate and/or graduate programs

|  |  |  |
| --- | --- | --- |
| **Social Work** | | |
| Addis Ababa University | Bahir Dar University | Mizan Tepi University |
| Ambo University | Jigjiga University | University of Gondar |
| Arsi University | Jimma University | Wollega University |

# Program Structure and Timeline

The **M.Sc. in Psychosocial Software Engineering** is designed as a three-year, multidisciplinary graduate program integrating psychology, social work, and software engineering. The structure follows a **coursework-project-practicum model**, ensuring that students acquire both **theoretical knowledge and practical experience** in developing **digital solutions for mental health and social interventions.**

## Program Structure

The curriculum is structured into three key components:

### Foundational Courses – Covering essential theories and principles in psychology, social work, and software engineering, ensuring interdisciplinary competency.

* + 1. **Applied and Technical Courses** – Focused on digital tools, digital case management systems, and ethical considerations in technology-based psychosocial interventions.
    2. **Project**– Supervised research, and a capstone project addressing real-world mental health and social work challenges using software-based solutions.
    3. **Practicum** – Providing hands-on experience through 200 hours fieldwork.

The program will consist of a total of 90 credit hours of course work, nine credit hours of project, and 200 hours of practicum

* 1. **Implementation Timeline**

The program is divided into **nine semesters each four months long (including summer time):**

**Year 1: Foundational Courses**

1. Year 1 Semester 1: September – December 31: A total of nine credit hours of three foundational courses will be delivered consecutively.

* Monday to Friday from 8:30 to 12:00: Nine credit hours of Foundational Courses
* Monday to Friday from 2:00 to 3:00: Three credit hours of Applied and Technical Courses
* Monday to Friday from 3:30 to 4:00: Three credit hours of Laboratory work

1. Year 1 Semester 2: January 1 to April 30: Nine credit hours of Foundational Courses

* Monday to Friday from 8:30 to 12:00: Nine credit hours of Foundational Courses
* Monday to Friday from 2:00 to 3:00: Three credit hours of Applied and Technical Courses
* Monday to Friday from 3:30 to 4:00: Three credit hours of Laboratory work

1. Year 1 Semester 3: May 1 – August 31: Nine credit hours of Foundational Courses

* Monday to Friday from 8:30 to 12:00: Nine credit hours of Foundational Courses
* Monday to Friday from 2:00 to 3:00: Three credit hours of Applied and Technical Courses
* Monday to Friday from 3:30 to 4:00: Three credit hours of Laboratory work

**A total of 45 Credit Hours**

**Year 2: Applied and Technical Courses**

1. Year 2 Semester 1: September – December 31: A total of nine credit hours of three foundational courses will be delivered consecutively.

* Monday to Friday from 8:30 to 12:00: Nine credit hours of Applied and Technical Courses
* Monday to Friday from 2:00 to 3:00: Three credit hours of Foundational Courses
* Monday to Friday from 3:30 to 4:00: Laboratory

1. Year 2 Semester 2: January 1 to April 30: Nine credit hours of Foundational Courses

* Monday to Friday from 8:30 to 12:00: Nine credit hours of Applied and Technical Courses
* Monday to Friday from 2:00 to 3:00: Three credit hours of Foundational Courses
* Monday to Friday from 3:30 to 4:00: Laboratory

1. Year 2 Semester 3: May 1 – August 31: Nine credit hours of Foundational Courses

* Monday to Friday from 8:30 to 12:00: Nine credit hours of Applied and Technical Courses
* Monday to Friday from 2:00 to 3:00: Three credit hours of Foundational Courses
* Monday to Friday from 3:30 to 4:00: Laboratory

**A total of 45 Credit Hours**

**Year 3: Applied and Technical Courses**

1. Year 3 Semester 1: September 1 – December 31: Project and Practicum
2. Year 3 Semester 2: January 1 to April 30: Project and Practicum
3. Year 3 Semester 3: May 1 – August 31: Project and Practicum

****

# Curriculum

The curriculum for the **M.Sc. in Psychosocial Software Engineering** is designed to integrate **psychology, social work, and software engineering**, ensuring that graduates are equipped with the knowledge and skills necessary to develop **technological solutions for mental health and social work interventions**.

A **competency-based, interdisciplinary approach** is adopted, aligning with international best practices and Ethiopia’s national priorities in **digital health and social innovation** (WHO, 2021).

## Curriculum Design Principles

The development process follows key educational principles to ensure **academic rigor, professional relevance, and practical applicability**:

### Interdisciplinary Learning – Combining core concepts from psychology, social work, and software engineering to enable students to develop evidence-based digital solutions for mental health and social interventions (Torous & Wykes, 2020)

### Competency-Based Education – Ensuring that graduates acquire practical skills in artificial intelligence, digital therapeutics, and community-based social interventions (Kazdin & Rabbitt, 2019)

### Research and Innovation Focus – Encouraging scientific inquiry and technology-driven problem-solving for psychosocial challenges in Ethiopia

### Ethical and Culturally Responsive Training – Embedding ethical frameworks, data privacy regulations, and culturally sensitive approaches in designing and implementing digital interventions (Keller, 2013)

## Course Development and Structure

The curriculum is structured to cover **four key domains**, ensuring that students develop **both technical and psychosocial expertise in**:

### theoretical foundations – in psychological theories, social work principles, and human behavior form the basis for understanding psychosocial challenges.

### technical competencies – in software engineering, artificial intelligence, and digital platforms for mental health and social services

### applied research and fieldwork – hands-on experience in digital intervention projects, community-based research, and data-driven policy analysis

### professional and ethical standards – ethics, legal regulations, and cultural considerations in digital mental health and social work.

## Core Courses

****

**Digital Psychosocial Modules for**

**Psychologists & Social Workers**

|  |  |
| --- | --- |
|  | |
| The curriculum integrates digital psychology, AI, and emerging technologies into mental health and social work practice. Students begin with digital interventions like teletherapy and online case management. They then explore AI, data science, and predictive analytics for psychological assessment and policymaking. Advanced technologies such as VR therapy, wearable biosensors, and neurotechnology enhance intervention strategies. Ethical, legal, and UX considerations ensure responsible digital tool development. Finally, crisis response, GIS mapping, and accessibility tools address social challenges. This interdisciplinary approach equips students to design, implement, and evaluate innovative, technology-driven psychosocial solutions in research, therapy, and policy. | |
|  | |
| **Module 1: Foundations of Digital Psychology and Social Work**  **This module introduces digital interventions in psychology and social work, covering teletherapy, online support networks, and digital case management. It equips students with the foundational knowledge to integrate technology into mental health and social services.** | |
|  | |
|  | **Digital Mental Health Interventions:** Covers internet-based therapy, mobile applications, and self-help tools for psychological support.  **Telepsychology and Online Therapy Platforms:** Examines ethical and practical aspects of remote therapy, including video consultations and digital assessment tools.  **Digital Social Work and Remote Case Management:** Explores cloud-based systems for case tracking, online counseling, and digital service delivery.  **Online Support Communities and Social Media in Mental Health:** Studies peer-support forums, social media mental health initiatives, and their therapeutic impact. |
|  | |
| **Module 2: AI, Data Science, and Computational Tools in Mental Health and Social Work:**  **Focuses on artificial intelligence, big data, and predictive modeling to improve mental health services and social interventions.** | |
|  | |
|  | **AI and Machine Learning in Psychological Assessment:** Introduces AI-based psychological diagnostics and decision-support systems.  **Big Data Analytics in Behavioral Science:** Covers data-driven approaches for understanding mental health trends and interventions.  **Cognitive Computing and Chatbots in Psychological Services:** Examines AI-driven virtual assistants for mental health support.  **Analytics in Public Mental Health and Social Policy:** Explores predictive modeling for crisis response and policymaking. |
|  | |
| **Module 3: Emerging Technologies in Therapy and Intervention:**  **Explores innovative technologies such as virtual reality, neurotechnology, and wearables to enhance therapy and intervention outcomes.** | |
|  | |
|  | **Virtual Reality (VR) and Augmented Reality (AR) for Therapy**: Examines VR/AR-based exposure therapy, PTSD treatment, and rehabilitation programs.  **Wearable Devices and Biosensors in Mental Health Monitoring:** Discusses smartwatches, EEG headbands, and biometric tracking for mental health.  **Neurotechnology and Brain-Computer Interfaces (BCIs) in Therapy:** Covers EEG-based neurofeedback and direct brain-machine communication for therapeutic applications.  **Digital Therapeutics and AI-Powered Behavioral Coaching:** Explores AI-driven self-help platforms and digital cognitive-behavioral therapy (CBT). |
|  | |
| **Module 4: Ethical, Legal, and Design Considerations:**  **Focuses on ethical, legal, and user-centered design principles for developing digital tools in psychology and social work.** | |
|  | |
|  | **Human-Computer Interaction (HCI) for Psychological Well-being**: Covers UX/UI design for digital mental health tools to enhance user engagement.  **Gamification in Mental Health and Social Work:** Explores the application of game mechanics in therapeutic interventions and behavior change.  **Ethical and Legal Considerations in Digital Psychology:** Discusses data privacy, informed consent, and algorithmic biases in mental health technologies.  **Blockchain for Secure Client Data Management:** Introduces blockchain-based solutions for protecting sensitive psychological and social work data. |
|  | |
| **Module 5: Crisis Response, Accessibility, and Future Trends:**  **Applies technology to crisis intervention, accessibility, and the future of digital mental health and social work.** | |
|  | |
|  | **Crisis Intervention and Suicide Prevention Using Technology:** Examines AI-powered crisis helplines and digital tools for suicide prevention.  **Geographic Information Systems (GIS) for Social Work and Crisis Response:** Teaches spatial data mapping for optimizing service delivery in crisis situations.  **Digital Accessibility and Assistive Technologies in Counseling:** Explores tools like screen readers and adaptive devices for inclusive mental health support.  **Personalized and Adaptive Learning in Psychological Training:** Covers AI-driven training modules for personalized psychology and social work education. |
|  | |

**Software Engineering Modules for**

**Psychologists and Social Workers**

|  |  |
| --- | --- |
|  | |
| These modules introduce software engineering to students without prior programming experience. The courses build foundational skills from basic programming to advanced application development, ensuring competency in designing, developing, and deploying software solutions for psychology and social work. | |
|  | |
| **Module 1: Foundations of Programming for Behavioral Sciences:**  **This module introduces basic programming concepts and logical thinking skills required for software development.** | |
|  | |
|  | **Introduction to Programming for Behavioral Sciences:** Covers fundamental programming concepts (variables, loops, conditionals) using beginner-friendly languages like Python or JavaScript.  **Problem-Solving and Algorithmic Thinking:** Teaches logical problem-solving and step-by-step algorithm development using real-world social and psychological examples.  **Data Structures and Basic Algorithms:** Introduces lists, dictionaries, stacks, and basic algorithms relevant to data analysis and automation in mental health services.  **Object-Oriented Programming (OOP) for Psychology and Social Work:** Covers OOP principles (classes, inheritance, polymorphism) and their application in software for mental health professionals. |
|  | |
| **Module 2: Web and Mobile Development for Mental Health Applications:**  **This module provides skills to develop user-friendly applications for therapy, counseling, and social work case management.** | |
|  | |
|  | **Web Development Fundamentals (HTML, CSS, and JavaScript):** Teaches how to create web-based psychological and social work applications.  **Frontend Development with React or Vue.js:** Introduces modern JavaScript frameworks for building dynamic mental health platforms.  **Backend Development with Python and Flask/Django:** Covers server-side programming to manage user data and authentication in therapy applications.  **Mobile App Development for Teletherapy and Social Work:** Teaches Android/iOS development with Flutter or React Native for creating mental health apps. |
|  | |

|  |  |
| --- | --- |
| **Module 3: Databases and Cloud Computing for Client Data Management:**  **Focuses on database management and cloud storage solutions for secure client data handling in psychological and social work settings.** | |
|  | |
|  | **Introduction to Databases (SQL & NoSQL):** Covers relational and non-relational databases to store patient records securely.  **Data Security and Privacy for Mental Health Applications:** Explores encryption, authentication, and legal compliance in mental health software.  **Cloud Computing and Serverless Technologies:** Introduces cloud-based mental health services using AWS, Google Cloud, or Azure.  **APIs and Integration for Digital Health Services:** Teaches how to connect mental health apps with external services like AI chatbots and data analytics. |
|  | |
| **Module 4: AI, Machine Learning, and Data Analytics in Psychology and Social Work:**  **Covers artificial intelligence techniques and data analytics for automated mental health diagnostics and intervention.** | |
|  | |
|  | **Introduction to AI and Machine Learning for Behavioral Sciences:** Provides a non-technical introduction to AI concepts and applications in psychology.  **Natural Language Processing (NLP) for Mental Health Chatbots:** Covers AI-driven chatbots for therapy and client support.  **Sentiment Analysis and Behavioral Data Mining:** Teaches AI-driven analysis of social media and digital communication for mental health insights.  **Data Visualization and Dashboard Development**: Introduces tools like Power BI and Tableau for visualizing mental health trends and social service metrics. |
|  | |
| **Module 5: Software Engineering Best Practices and Project Development:**  **Focuses on real-world application development, software project management, and ethical considerations.** | |
|  | |
|  | **Software Development Lifecycle and Agile Methodologies:** Covers software project planning, Agile development, and version control (Git).  **User Experience (UX) and Human-Centered Design for Mental Health Applications:** Explores UX/UI design tailored to therapy and counseling applications.  **Ethical Software Engineering for Mental Health and Social Work:** Discusses ethical AI, bias mitigation, and responsible software development.  **Capstone Project: Developing a Psychology or Social Work Application:** A hands-on project where students design and develop a digital tool for mental health or social work intervention. |
|  | |

****

# Faculty Recruitment and Training

Developing a high-quality **M.Sc. in Psychosocial Software Engineering** program requires a strategic approach to faculty recruitment and training. Given the interdisciplinary nature of the program, expertise in psychology, social work, and software engineering must be integrated into the curriculum. **Recruiting experienced faculty members, both expatriate and local**, ensures academic excellence and long-term sustainability.

## Hiring Expatriate Professors

Establishing a new **academic specialization, especially, in the foundational courses in digital psychosocial courses, demands expertise that may not yet be available within Ethiopia**. Recruiting expatriate professors with backgrounds in **digital mental health, software development for psychological applications, and technology-assisted social work** is essential for launching the program with internationally recognized standards (Altbach, 2016). These faculty members bring **global best practices, cutting-edge research insights, and experience in interdisciplinary teaching**. Collaboration with universities from Europe, North America, and Asia facilitates faculty exchange programs, where international scholars provide short-term instruction while assisting in curriculum development (Knight, 2013).

In addition to teaching, expatriate experts can contribute to **coordinate** **the program internationally**, **capacity building, recruitment of international faculty, and advising and mentoring graduate students**.

## Training and Involving Local Faculty

Ensuring program sustainability requires the **development of a local faculty base** capable of leading the program in the long run. Training Ethiopian instructors through **faculty development initiatives, research collaborations, and exchange programs** strengthens the local academic workforce (Maringe & Foskett, 2012). Identifying existing **psychologists, social workers, and software engineers** interested in digital mental health and social services ensures that faculty members remain engaged with the evolving landscape of interdisciplinary education.

Investing in **professional development programs** enables local faculty members to acquire advanced knowledge in areas such as **telepsychology, artificial intelligence in mental health, and digital interventions for social work**. Collaboration with **international universities and research institutions** ensures that faculty members receive training in state-of-the-art methodologies (Marginson, 2017). Encouraging local faculty to **pursue doctoral and postdoctoral research in psychosocial software engineering** further strengthens the academic foundation of the program.

Partnerships with local and international partners and stakeholders also play a key role in faculty development. Training programs involving **technology companies, healthcare institutions, and social service agencies** provide faculty members with hands-on experience in the application of digital tools for psychological and social interventions (Schultz, 2020). Establishing **joint research initiatives** between local and international faculty promotes continuous learning and innovation.

A strategic balance between **expatriate expertise and local capacity building ensures that the M.Sc. in Psychosocial Software Engineering** program remains academically rigorous, contextually relevant, and sustainable in the long term.

****

# Course Delivery

## The Modality

The Dual M.A. Degree Program in Philosophical & Theoretical and Applied Psychology will adopt a flexible and cost-effective course delivery model, ensuring access to high-quality education while optimizing resources. Accordingly, courses will be delivered through two primary approaches:

1. by local professors whenever the required level of expertise is available within Ethiopia, and
2. through a structured team-teaching model, when specialized expertise is not available locally.

In the team-teaching approach, a professor with subject matter expertise will engage virtually using smart board technology, while an in-person assistant professor will facilitate the class physically. The assistant professor may not have specialization in the subject matter but will play a critical role in ensuring smooth classroom operations, managing discussions, and supporting students. This blended teaching method ensures that students receive expert instruction while also benefiting from in-person guidance.

### Roles and Responsibilities

To maintain clarity and efficiency, the roles of the main (virtual) professor and the local assistant professor will be well-defined:

#### The main professor will be responsible for delivering the core content, providing expert insights, leading discussions, and managing real-time virtual engagement.

#### The local assistant professor will act as a facilitator rather than a co-lecturer. Their role includes:

* + Ensuring smooth technical operation of virtual lectures.
  + Moderating in-class interactions and assisting students with logistical needs.
  + Providing academic support outside lecture hours, including guiding discussions and addressing student concerns.
  + Offering input only when explicitly invited by the main professor or after the lecture has concluded.

To ensure that local assistant professors effectively manage their role, they will receive at least 30 hours of training on team teaching, student engagement, and facilitating virtual instruction. This preparatory training will be an integral part of the project's early implementation phase.

## Benefits of the Mixed Approach

This team-teaching model offers several strategic advantages:

### Expert-Led Instruction with Local Facilitation – The main professor, with deep subject matter expertise, ensures high-quality content delivery, while the assistant professor provides in-person guidance, making learning more interactive and engaging.

### Cost-Effectiveness – Virtual lectures eliminate the need for travel, accommodation, and logistical expenses for international professors, making the program more financially sustainable.

### Cultural Sensitivity and Contextual Relevance – The presence of a local professor helps contextualize discussions, ensuring that global knowledge is adapted to Ethiopia’s social, psychological, and technological landscape.

### Enhanced Student Engagement – The combination of virtual and in-person instruction creates a dynamic learning environment, fostering discussions and improving comprehension.

### Knowledge Transfer and Capacity Building – Team teaching allows local faculty members to learn from international experts, strengthening the country’s academic resources in the long run.

### International Collaboration Without Relocation – The model enables engagement with global scholars and experts without requiring them to relocate, making it easier to attract top-tier faculty.

## Potential Challenges and Mitigation Strategies

While this approach has numerous benefits, it also presents challenges that must be addressed:

### Training for Local Assistant Professors – Facilitating a course without direct expertise in the subject matter can be difficult. Proper training in team teaching, student engagement, and course facilitation will be crucial for success.

### Technical and Logistical Challenges – Reliable internet, smart board functionality, and classroom management tools must be in place to ensure seamless virtual engagement.

### Student Adaptation – Students may need an orientation on the team-teaching model to set clear expectations regarding interaction, engagement, and communication with both professors.

It is believed that the Dual M.A. Degree Program in Philosophical & Theoretical and Applied Psychology will pioneer an innovative, cost-effective, and high-quality education model that enhances both local and global collaboration by addressing these challenges with proper planning and investment in training.

## Training of Local Assistant Professors

The ideal duration of training for assistant professors in this project depends on several factors, including their prior experience with team teaching, familiarity with virtual instruction, and ability to manage classroom dynamics.

However, in this particular case, as a benchmark, a structured training of **30 Hours will be given to the first cohort of assistant professors and these initial members will train incoming professors as the program continues.**

The training of the assistant professors will be given by an expatriate professor on team teaching, thus, giving the trainees an opportunity to exercise the facets of team teaching while learning.

Accordingly, the “team teaching training” will include the following contents:

### Understanding Team Teaching (4 Hours)

#### Principles and benefits of team teaching

#### Roles and responsibilities of assistant professors

#### Common challenges and best practices

### Virtual Instruction and Smart Board Technology (6 Hours)

#### Operating smart boards and managing virtual platforms

#### Troubleshooting technical issues during live sessions

#### Facilitating seamless communication between students and the virtual professor

### Classroom Management and Student Engagement (8 Hours)

#### Moderating discussions and encouraging participation

#### Managing Q&A sessions and addressing student concerns

#### Handling disruptions and maintaining an interactive environment

### Academic Support and Student Assistance (6 Hours)

#### Providing structured guidance outside lecture hours

#### Leading study groups and discussions

#### Assessing student comprehension and relaying concerns to the main professor

### Practical Simulations and Feedback (6 Hours)

#### Mock team-teaching sessions with real-time feedback

#### Handling different classroom scenarios

#### Role-playing exercises to refine facilitation skills



# Student Selection and Admission

## Competitive admission criteria

The selection process for the **Master’s in Psychosocial Software Engineering** is designed to identify candidates with strong interdisciplinary potential, technological adaptability, and a commitment to ethical and impactful professional practice. Admission will be based on academic qualifications; standardized testing; commitment to public service; relevant experience; and letters of recommendation.

## Age

Applicants whose age is below 35 will be given priority.

## Academic Qualifications

A **bachelor’s degree in psychology, social work** from an accredited institution is required. Limited number of students from related fields may be included as pilot undertaking. Applicants must demonstrate a strong academic record with a **minimum cumulative GPA of 3.0 on a 4.0 scale (or equivalent)**. Preference will be given to candidates with interdisciplinary coursework linking psychology/social work and technology, such as human-computer interaction or data analytics in social sciences.

## Standardized Testing

Submission of scores from standardized tests, such as **Test of English as a Foreign Language (TOFEL)** will be required. While not mandatory, submission of standardized test scores, such as the **Graduate Record Examination (GRE)** and **Graduate Aptitude Test (GAT)**, will be encouraged. These scores can provide additional insight into a candidate's academic readiness and critical thinking abilities, which are essential for success in graduate studies (Kloos et al., 2012).

## Relevant Experience

Professional experience in relevant fields will be considered a significant advantage. Applicants with work experience in **psychology, social work, technology, or interdisciplinary roles** will be prioritized. Relevant areas include:

### Psychology/Social Work: Counseling, therapy, case management, or social advocacy.

### Technology: Software development, artificial intelligence, data analytics, or health informatics.

### Interdisciplinary Roles: Designing digital health interventions or applying data science to social services.

### Résumés, project portfolios: Documentation of prior engagement in psychosocial technology will be reviewed as part of the evaluation process.

## Letters of Recommendation

Two or more letters of recommendation must be submitted from academic mentors, employers, or supervisors familiar with the candidate’s academic and professional background. These letters should highlight the applicant’s intellectual ability, problem-solving skills, technical proficiency, and dedication to improving psychological and social services through technology (Groves et al., 2019).

# Expected Outcome

The **M.Sc. in Psychosocial Software Engineering** is expected to generate significant **academic, professional, and societal benefits** in both the short and long term. The program’s establishment will contribute to Ethiopia’s capacity to **train, retain, and utilize experts in digital mental health and social work interventions**, thereby strengthening national development efforts.

## Short-Term Outcomes

### Establishment of Ethiopia’s First-Ever Psychosocial Software Engineering M.Sc. Program

The launch of this program will mark a **groundbreaking advancement** in Ethiopia’s higher education landscape, creating a **new interdisciplinary specialization** at the intersection of **psychology, social work, and software engineering**. This initiative will serve as a **model for other African countries**, demonstrating how digital solutions can be integrated into psychosocial services to address **mental health and social work challenges** (Kazdin & Rabbitt, 2019).

**The initiative will serve as a model for other African countries**

### Training of 100 Highly Qualified Psychologists and Social Workers in Psychosocial Software Engineering

The program will initially train **100 students**, equipping them with **technical and psychosocial skills to develop digital mental health interventions, social work technologies, and data-driven solutions**. These graduates will play a **critical role** in transforming Ethiopia’s mental health and social service sectors by leveraging **artificial intelligence, mobile health (mHealth), and digital counseling platforms** (Torous & Wykes, 2020).

**The graduates will play a critical role in transforming Ethiopia’s mental health and social service sectors**

### Collaboration between Ethiopian and International Universities

The program will foster **global academic partnerships**, enabling **faculty exchange, joint research initiatives, and curriculum development support**. Collaborations with **leading universities and research institutions** will enhance **knowledge transfer, funding opportunities, and access to cutting-edge technologies** in psychosocial software engineering (Meyer, 2015).

**The program will foster global academic partnerships**

## Long-Term Impact

### Increased Availability of Specialized Psychological and Social Work Services in Ethiopia

**The program will enhance the efficiency, accessibility, and reach of mental health services**

**The integration of digital tools into psychology and social work will enhance the efficiency, accessibility, and reach of mental health services**. This will be particularly beneficial for **rural and underserved communities**, where access to **trained professionals and mental health facilities** remains limited.

### Strengthening Ethiopia’s Academic and Professional Psychology and Social Work Ecosystem

**The program will encourage interdisciplinary collaboration professional network, research, policy development**

The program will contribute to the **development of a strong academic and professional network, supporting research, policy development, and workforce expansion** in digital mental health and social work. The establishment of **a new specialization** will also **attract funding, encourage interdisciplinary collaboration, and foster innovation** in Ethiopia’s higher education sector (World Economic Forum, 2023).

### Reduction in the Need to Send Students Abroad for Specialized Training

**The program being cost-effective will enhance efficiency, accessibility, and reach of mental health services with high efficiency**

The availability of a **high-quality, locally developed master’s program** will significantly **reduce the financial and logistical burden** of sending Ethiopian students abroad for specialized training. This will allow for **greater investment in domestic educational infrastructure** while preventing **brain drain** and ensuring that highly trained professionals **remain in Ethiopia to contribute to national development** (Keller, 2013).

The establishment of the **M.Sc. in Psychosocial Software Engineering** will yield **far-reaching benefits** for Ethiopia’s mental health and social service sectors.

In the short term, it will **train a new generation of interdisciplinary professionals**. In the long term, it will **expand access to digital mental health services, enhance Ethiopia’s academic ecosystem, and reduce dependency on foreign education**. The program’s **cost-effectiveness, sustainability, and alignment with national priorities make it a transformative initiative** for Ethiopia’s future.

**The program will train …**

**The first generation of**

**Psychosocial Engineers in**



# Monitoring and Evaluation (M&E) Plan

## Key Performance Indicators (KPIs)

To measure the success and impact of the **M.Sc. in Psychosocial Software Engineering**, **key performance indicators (KPIs)** will be systematically monitored. These indicators will assess the program’s effectiveness, sustainability, and alignment with its objectives.

## Number of Students Enrolled and Graduated

Tracking student enrollment and **graduation rates** is essential to evaluating the program's reach and sustainability. A steady increase in enrollment will indicate growing interest and demand, while graduation rates will reflect student retention and academic success. Programs with high completion rates tend to be associated with effective student support services and curriculum quality (Tinto, 2017). Furthermore, **periodic cohort analysis** will help identify trends in student performance, **dropout rates**, and areas requiring intervention (Astin, 1993).

## Faculty Recruitment and Retention Rates

A **well-qualified and stable faculty is critical for academic excellence**. Faculty recruitment will focus on attracting interdisciplinary professionals with expertise in psychology, social work, and software engineering. **Retention** **rates** will be monitored to ensure long-term program sustainability and faculty satisfaction. Research suggests that faculty retention is influenced by institutional support, career development opportunities, and workload balance (O'Meara et al., 2014). High retention rates typically correlate with strong mentorship programs, academic freedom, and competitive compensation (Hendrickson et al., 2013).

## Development and Accreditation of Curriculum

The successful design, approval, and accreditation of a **Psychosocial Software Engineering** **curriculum will serve as a fundamental KPI**. Accreditation ensures that the program meets national and international educational standards and enhances graduates’ employability (Eaton, 2012). Curriculum development will be assessed based on:

### Alignment with international and national academic standards.

### Integration of interdisciplinary courses.

### Feedback from students, faculty, and stakeholders.

### Approval by national education authorities and professional associations.

### A well-structured curriculum that receives accreditation will validate the program’s academic and professional relevance, positioning it as a model for similar initiatives in other regions.

## Student Employment Rates Post-Graduation

The employability of graduates will be a direct indicator of the program’s effectiveness and relevance to the job market. Employment rates will be monitored within six months to a year post-graduation, considering factors such as:

### Percentage of graduates securing jobs in relevant fields.

### Graduates employed in academia, healthcare, NGOs, government agencies, and the private sector.

### Entrepreneurial ventures initiated by alumni in psychosocial technology.

# Evaluation Method

A robust **evaluation strategy is necessary to measure the effectiveness of the Master’s program** in Psychosocial Software Engineering. The evaluation will focus on tra**cking student outcomes, faculty performance, curriculum effectiveness, and overall program impa**ct. The following methods will ensure the program meets its objectives and adapts to emerging needs.

## Annual Progress Reports

**Annual progress reports** will provide a **structured assessment of the program’s development, highlighting achievements, challenges, and areas for improvement**. These reports will document **key performance indicators (KPIs)** such as **enrollment** **and graduation** **rates**, **faculty retention**, **curriculum advancements**, and **employment statistics of graduates** (Kuh et al., 2015). They will also include updates on **research projects**, **partnerships** with international institutions, and **innovations in digital psychosocial interventions**. The reports will be compiled by the program administration and reviewed by the academic board to ensure alignment with institutional and national educational goals (Tight, 2019).

## Student and Faculty Feedback Surveys

Research has shown that student and faculty engagement in feedback mechanisms enhances program quality and institutional accountability (Marsh et al., 2020). In this program feedbacks will be collected from both sources.

**Student and faculty feedback surveys will be conducted annually** to assess **satisfaction** with the program’s content, teaching methods, and practical applications. Student surveys will evaluate the **relevance of coursework**, **internship experiences**, and **research opportunities** (Chen et al., 2021).

Faculty surveys will focus on **professional development**, **resource availability**, and **workload** **distribution**. The feedback collected will inform **curriculum revisions**, **faculty support** **mechanisms**, and program improvement strategies.

## External Academic Reviews from Partner Institutions

Periodic external academic reviews may be conducted in collaboration with international partner institutions. These reviews will assess the program’s academic rigor, curriculum alignment with global standards, and research contributions (Altbach et al., 2017).

External reviewers from leading universities in psychology, social work, and software engineering will evaluate the interdisciplinary integration of the program and provide recommendations for continuous enhancement. Their input will be essential in maintaining accreditation, fostering academic partnerships, and ensuring the program’s long-term sustainability.

****

# Sustainability Plan

## Training Local Faculty to Take Over the Program

Sustaining the **M.Sc. in Psychosocial Software Engineering** requires a structured faculty development plan to ensure that local educators and researchers can independently manage and expand the program in the long term. Initially, expatriate professors and experts in psychology, social work, and software engineering will be recruited to provide instruction and mentorship (Altbach et al., 2019). However, a parallel process will focus on **training Ethiopian faculty members** to take over teaching, research supervision, and curriculum development.

**A faculty training pipeline** will be established with the following key strategies:

### Graduate Assistant Development: High-achieving students in the inaugural cohorts will be selected for a structured mentorship program, preparing them for future faculty roles.

### Faculty Exchange Programs: Attempts will be carried out to establish partnership so that Ethiopian lecturers can get opportunities to study, research, and gain hands-on experience in leading institutions abroad, focusing on interdisciplinary fields such as digital mental health, health informatics, and AI-driven psychosocial interventions.

### Research Collaboration Grants: Faculty members teaming with students will be encouraged to engage in international research projects, particularly in areas like teletherapy systems, AI-driven mental health diagnostics, and digital social work interventions.

### Train-the-Trainer Mini-conferences: A series of mini-conferences, led by experts in digital psychology and software engineering, will be conducted to introduce existing faculty and students in emerging technologies and their applications in mental health and social work physically (by expatriate professors) and/or virtually.

### Curriculum Development Committees: Local faculty will be involved in the continuous evolution of the program, ensuring alignment with global trends while addressing Ethiopia’s specific needs in psychosocial service delivery.

## Establishing Academic Partnerships with Global Institutions

Academic partnerships with global institutions are essential for knowledge exchange, faculty development, and research collaborations. Ethiopia’s higher education sector has already benefited from international collaborations in fields such as medicine, engineering, and social sciences (Teferra, 2014). Extending these partnerships to **psychosocial software engineering** will enhance the program’s credibility, attract international funding, and provide access to cutting-edge research.

Key strategies include:

* + 1. **Virtual Knowledge Hubs**: Establishing **digital platforms** for knowledge-sharing through webinars, online courses, and virtual research collaborations will ensure continuous academic engagement with international partners (Salmi, 2017).
    2. **Collaboration for Internship and Research**: Partnerships with **AI-driven mental health companies, software firms developing therapeutic applications, and international NGOs focusing on digital social work** will provide students with hands-on training (Kumar & Sharma, 2020).

# Conclusion

## The Urgency of Establishing These Programs

The **rapid digitization of mental health services, social work, and psychological research** necessitates the development of an **interdisciplinary field that bridges psychology, social work, and software engineering**. The increasing reliance on telepsychology, artificial intelligence (AI), biometric monitoring, and digital platforms has transformed the landscape of mental health and social service delivery (Gifford & Humphreys, 2022).

**Going Digital is the only avenue for**

**Psychologists and Social Workers in the 21st century**

Ethiopia, like many other nations, faces a growing demand for digitalized mental health services, yet lacks the trained professionals capable of **integrating** **psychosocial expertise with technological innovation**.

Without an academic program dedicated to **Psychosocial Software Engineering (PSE)**, Ethiopia **risks lagging behind in a field that is shaping the future of mental health care, social work, and human-computer interaction**.

## A Call to Action for Funders and Partners to Support the Initiative

The establishment of the **M.Sc. in Psychosocial Software Engineering** requires **collaborative funding and institutional partnerships**. Government agencies, private sector stakeholders, international organizations, and academic institutions are urged to support this groundbreaking initiative.

The program aligns with global trends in **digital health, AI-driven psychology, and social work technology**, ensuring that Ethiopia becomes a hub for Africa for research and innovation in **Psychosocial Software Engineering**.

Potential partners and funders can contribute through:

* **Financial sponsorships** for program development, faculty training, and student scholarships.
* **Technical and academic collaboration** with global universities and research institutions specializing in digital mental health and software engineering.
* **Infrastructure development** to support **digital labs, AI-driven psychological research centers, and virtual counseling platforms**.

This initiative is not just an academic pursuit but a transformative movement toward an integrated future where psychology, social work, and technology converge to improve lives. Ethiopia has the opportunity to **lead Africa** in this emerging field, and the time to act is now.

**Let’s make Ethiopia the African Hub for**

**Psychosocial Software Engineering – Advancing together into the 21st century**

**The time to ACT is now!**

**References**

Adamek, M. E., &Gebresilassie, L. (2015). *Social work education and practice in Ethiopia: A growing profession with unique challenges*. International Social Work, 58(6), 743-755.

Adams, R., Dominelli, L., & Payne, M. (2019). *Social work: Themes, issues, and critical debates* (5th ed.). Palgrave Macmillan.

Alem, A. (2012). Mental health in Ethiopia: Yesterday, today, and tomorrow. *Ethiopian Journal of Health Development, 26*(1), 1-3.

Alem, H. (2012). The history and development of psychology in Ethiopia. *Ethiopian Journal of Behavioral Studies, 4*(1), 12-26.

Altbach, P. G., Reisberg, L., &Rumbley, L. E. (2017). Trends in global higher education: Tracking an academic revolution. UNESCO Publishing.

American Psychological Association (APA). (2021). *Technology in psychological science and practice: Ethical considerations and future directions*. APA Publications.

American Psychological Association (APA). (2021). *Technology, mental health, and the future of psychological practice*. Washington, DC: APA.

American Psychological Association. (2021). *Artificial intelligence and mental health: Ethical considerations and future directions*. APA Publications.

Ashcroft, K. (2010). *Higher education expansion and quality assurance in Ethiopia: Challenges and prospects*. Journal of Higher Education in Africa, 8(1), 23-45.

Askeland, G. A., & Payne, M. (2006). The internationalization of social work education: Challenges for a post-colonial world. *International Social Work, 49*(6), 731–744.

Asmelash, K. (2022). The role of social work research in shaping policy and practice in Ethiopia. *Ethiopian Journal of Social Sciences, 9*(1), 23-41.

Assefa, T. (2014). *The historical development of social work education in Ethiopia: Lessons and future directions*. Ethiopian Journal of Social Sciences, 10(1), 34-52.

Astin, A. W. (1993). *What matters in college? Four critical years revisited*. Jossey-Bass.

Binet, A., & Simon, T. (1905). *New methods for the diagnosis of the intellectual level of subnormals*. L'Année Psychologique, 11, 191-244.

Borsboom, D. (2006). The attack of the psychometricians. *Psychometrika, 71*(3), 425-440.

Calvo, R. A., Dinakar, K., Picard, R. W., & Maes, P. (2014). Computing and mental health: Opportunities and challenges. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*, 1-6.

Chen, X., McInerney, P., & Di Pietro, G. (2021). Student satisfaction in higher education: A meta-analysis of determinants and effects. Studies in Higher Education, 46(4), 679–699. <https://doi.org/10.1080/03075079.2019.1649371>

Dominelli, L. (2020). *Green social work: From environmental crises to environmental justice*. Polity Press.

Drolet, J. (2018). Implementing the global agenda for social work and social development in Ethiopia: Perspectives from practice. *International Social Work, 61*(4), 537-550.

Eaton, J. S. (2012). *Accreditation and the federal future of higher education*. Council for Higher Education Accreditation.

Ethiopian Central Statistical Agency. (2023). *Annual Population Report*.

Ethiopian Ministry of Health. (2022). *National Mental Health Strategy 2021–2025*.

Ethiopian Ministry of Innovation and Technology. (2020). *Digital Ethiopia 2025: A Strategy for Inclusive Prosperity*.

Fekadu, A., Hanlon, C., Medhin, G., &Alem, A. (2022). Digital mental health interventions in low-resource settings: Opportunities and challenges. *Global Mental Health, 9*(1), 34-48.

Fekadu, A., Hanlon, C., Medhin, G., Alem, A., & Prince, M. (2022). *The mental health treatment gap in Ethiopia: A systematic review*. *International Journal of Mental Health Systems, 16*(1), 15-30.

Fekadu, A., Hanlon, C., Medhin, G., Alem, A., Selamu, M., Giorgis, T. W., & Prince, M. (2020). *The burden of mental disorders and access to care in Ethiopia*. The Lancet Psychiatry, 7(2), 145-155.

Galton, F. (1888). Co-relations and their measurement. *Proceedings of the Royal Society of London, 45*, 135-145.

Gebraeb, T. (2020). The development of social work education in Ethiopia: Achievements and challenges. *Journal of Ethiopian Social Work, 3*(2), 56-72.

Gorini, A., Gaggioli, A., Vigna, C., & Riva, G. (2011). A second life for eHealth: Prospects for the use of 3-D virtual worlds in clinical psychology. *Journal of Medical Internet Research, 13*(3), e21.

Habtamu, K., &Tesfaye, M. (2021). *Challenges and opportunities in mental health service delivery in Ethiopia*. African Journal of Psychiatry, 24(3), 198-210.

Healy, K. (2021). *Social work theories in context: Creating frameworks for practice* (3rd ed.). Palgrave Macmillan.

Hendrickson, R. M., Lane, J. E., Harris, J. T., & Dorman, R. H. (2013). *Academic leadership and governance of higher education: A guide for trustees, leaders, and aspiring leaders of two- and four-year institutions*. Stylus Publishing.

Kazdin, A. E., &Rabbitt, S. M. (2019). Novel models for delivering mental health services and reducing the burdens of mental illness. *Clinical Psychological Science, 7*(1), 170-191.

Kebede, D. (2019). *The evolution of psychology education in Ethiopia: Challenges and prospects*. Ethiopian Journal of Social Sciences, 14(2), 45-60.

Keller, C. (2013). *Higher education and national development: The role of locally trained professionals.* International Journal of Education Policy, 12(2), 89-102.

Keller, L. (2013). *Retaining talent in low-resource settings: Strategies for sustainable development*. *Global Policy Journal, 4*(3), 45-60.

Kosinski, M., Wang, Y., Lakkaraju, H., & Leskovec, J. (2021). Predicting psychological traits from digital footprints. *Nature Human Behaviour, 5*(4), 612-624.

Kuh, G. D., Jankowski, N. A., Ikenberry, S. O., & Kinzie, J. (2015). Knowing what students know and can do: The current state of learning outcomes assessment in US colleges and universities. National Institute for Learning Outcomes Assessment.

Mariam, Y. (2014). Evidence-based social work practice in Ethiopia: Barriers and opportunities. *Ethiopian Journal of Behavioral Studies, 2*(1), 17-33.

Marsh, H. W., Cheng, J. H. S., & Debus, R. L. (2020). The importance of student and faculty feedback in improving academic programs. Higher Education Research & Development, 39(6), 1175–1190. <https://doi.org/10.1080/07294360.2020.1728516>

Mekonnen, Y., &Desta, H. (2015). *Indigenous psychology in Ethiopia: Integrating tradition and modernity*. African Journal of Psychological Studies, 8(1), 23-38.

Meyer, J. (2015). *The impact of local education on workforce development in emerging economies.* Journal of Educational Economics, 8(4), 245-261.

Meyer, J. B. (2015). *Brain drain and knowledge transfer: The role of higher education in global talent mobility*. *Higher Education Policy, 28*(2), 15-32.

Ministry of Innovation and Technology (MInT). (2020). *Digital Ethiopia 2025: A strategy for inclusive prosperity*. Addis Ababa, Ethiopia: MInT.

Ministry of Innovation and Technology (MInT). (2020). *Digital Ethiopia 2025: A digital transformation strategy*. Addis Ababa, Ethiopia.

Moreno, J. L. (1934). *Who shall survive? A new approach to the problem of human interrelations*. Beacon House.

Naslund, J. A., Aschbrenner, K. A., Marsch, L. A., & Bartels, S. J. (2017). The future of mental health care: Peer support and social media. *World Psychiatry, 16*(1), 21-28.

Norman, D. A. (2013). *The design of everyday things: Revised and expanded edition*. Basic Books.

O'Meara, K., Terosky, A. L., & Neumann, A. (2014). *Faculty careers and work lives: A professional growth perspective*. Routledge.

Pankhurst, A. (2006). *Social development in Ethiopia: The role of social work and social protection policies*. Journal of Ethiopian Studies, 39(2), 67-89.

Pankhurst, R. (1962). Education in Ethiopia: Past, present and future prospects. *Ethiopian Observer, 6*(2), 145-190.

Pearson, K. (1901). On lines and planes of closest fit to systems of points in space. *Philosophical Magazine, 2*(6), 559-572.

Schueller, S. M., Tomasino, K. N., & Mohr, D. C. (2017). Integrating human support into behavioral intervention technologies: The efficiency model of support. *Clinical Psychology: Science and Practice, 24*(1), 27-45.

Shneiderman, B. (2018). *The new ABCs of research: Achieving breakthrough collaborations*. Oxford University Press.

Spearman, C. (1904). General intelligence objectively determined and measured. *American Journal of Psychology, 15*(2), 201-293.

Tadesse, W. (2014). *The impact of higher education expansion on quality and equity in Ethiopia: A critical review*. Ethiopian Journal of Education and Sciences, 10(2), 1-15.

Tasse, A. (2017). Child and family social work in Ethiopia: Policy, practice, and challenges. *African Journal of Social Work, 7*(1), 45-59.

Teferra, D., & Altbach, P. G. (2004). *African higher education: Challenges for the 21st century*. Higher Education, 47(1), 21-50.

Tesfaye, B., & Abate, A. (2021). The state of psychology education in Ethiopia: Challenges and future directions. *Ethiopian Journal of Behavioral Studies, 4*(1), 45-60.

Teshome, M. (2008). *Higher education reforms and the development of psychology in Ethiopia*. Addis Ababa University Press.

Teshome, Y. (2007). *The status and challenges of Ethiopian higher education system and its contribution to development*. Ethiopian Journal of Development Research, 29(2), 57-83.

Tight, M. (2019). Higher education research: The developing field. Bloomsbury Publishing.

Tinto, V. (2017). *Through the eyes of students*. Journal of College Student Retention: Research, Theory & Practice, 19(3), 254-269.

Tomlinson, M. (2017). *Forms of graduate capital and their relationship to graduate employability*. Education + Training, 59(4), 338-352.

Torous, J., &Wykes, T. (2020). *Opportunities and challenges in digital mental health: Learning from real-world implementation*. *World Psychiatry, 19*(1), 3-4.

UNDP Ethiopia. (2022). *Human Development Report: The Future of Work in Ethiopia*.

Wassie, K. (2019). Social Work Education in Ethiopia: Past, Present and Future, *International Journal of Soc*ial Work, 6(1)

Wassie, K (2014). *Social work education in Ethiopia: Celebrating the re-birth of the profession. In H. Spitzer, J. Twikirize, & G. Wairire (Eds.). Professional Social Work in East Africa: Towards Social Development, Poverty Reduction and Gender Equality (pp. 161-172). Kampala: Foundation Publishers.*

Woldehanna, T. (2012). *Higher education expansion and labor market outcomes in Ethiopia: Trends and implications*. Ethiopian Economic Policy Research Institute, Working Paper No. 4.

Wondimagegn, D., Abebe, M., & Alemayehu, B. (2019). *Mental health awareness and the role of psychology education in Ethiopia*. Ethiopian Medical Journal, 57(4), 122-136.

Wondimu, H. (2003). *Education in Ethiopia: Past, present, and future prospects*. Addis Ababa University Press.

World Bank. (2013). *Higher education in Ethiopia: Progress and challenges in policy implementation*. Washington, DC: World Bank.

World Bank. (2023). *Ethiopia Economic Update: Strengthening Human Capital Development*.

World Economic Forum. (2023). *The future of jobs report*. WEF.

World Economic Forum. (2023). *The future of jobs report: Emerging skills and workforce trends*. WEF Publications.

World Health Organization (WHO). (2021). *Global strategy on digital health 2020-2025*. Geneva: WHO.

World Health Organization. (2021). *Digital mental health: Opportunities and challenges*. WHO Technical Report.

Zewdu, A., &Kasew, D. (2018). *Bridging gaps in Ethiopian social work education: Challenges and opportunities*. African Journal of Social Work, 5(3), 98-113.

****