Tampere University

NIGUSSE WELDEMARIAM REDA

Understanding the Benefits of Universities' Societal Engagement in Ethiopia

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DEDICATION

In memory of my younger brother, Hintsa Weldemariam Reda, and all the people, from infants to the elderly, who lost their lives during the war in Tigray, Ethiopia.

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ABSTRACT

The implementation of universities' societal engagement calls for tripartite collaboration between academia, industry, and government, and although the ultimate purpose of universities' societal engagement is viewed as benefiting the community, the collaborating institutional spheres may also generate reciprocal benefits from jointly implemented societal engagement projects (SEPs). However, little is known about the reciprocal benefits of universities' societal engagement to the university, industry, and government spheres. Therefore, the purpose of the present study is to explore the reciprocal benefits that the university, industry, and government can generate from jointly implemented societal engagement activities. The research follows an exploratory sequential mixed methods design, combining qualitative and quantitative stages. The qualitative stage was used to understand the types and dimensions of universities' societal engagement, the pertinent benefits of universities' societal engagement to the university, industry, and government institutional spheres, the factors that contribute to the reciprocal benefits of universities' societal engagement, and the mechanisms that help universities enhance the sustainability of their societal engagement activities. The subsequent quantitative stage used to test five hypotheses that were developed based on the findings of the qualitative stage, using larger groups of participants.

Qualitative data were collected through key informant interviews and document analysis. Fourteen informants selected through purposeful sampling were considered. The quantitative data, meanwhile, were collected from 123 faculty members (mean age 50.04 years, SD = 9.85; work experience = 16.64, SD = 5.7; 82 male, 41 female) who implemented SEPs during or within one year before the data collection period. The survey participants were selected randomly from five public universities in Ethiopia, and the questionnaire was prepared based on the views of the key informant interview during the qualitative stage of the research. The questionnaire was administered online. The qualitative data were analyzed using a combination of inductive and deductive techniques, while the quantitative data were analyzed using descriptive and inferential statistics, mainly Pearson correlation

coefficients, regressions, and chi-square tests. The qualitative and quantitative stages were both guided using a conceptual framework developed from the stakeholder theory, triple helix, and boundary spanning approaches.

Based on the organizational structure, knowledge and technology transfer, community services, and consultancy services are the key types of universities' societal engagement. These types are further classified based on sources of funds as internally and externally funded SEPs. The university itself and the collaborating actors (the firm and government) generate a combination of economic and non-economic benefits from the university's SEPs. Nonetheless, there appear to be inter- and intra-institutional differences with regard to reciprocal benefits. Societal engagement researchers (SERs) believed that their SEPs offered greater benefits to the university than to the industry and government institutional spheres. There are also differences within institutional spheres. More specifically, the SERs believed that their SEPs rendered greater non-economic than economic benefits. Furthermore, a combination of factors related to people (SERs and leaders), the organization of the societal engagement units, and the specific types of university societal engagement influenced the reciprocal benefits. Considering the monetary benefits, about 39% of the variance in the amount of money disbursed to the SERs from the SEPs is determined by the source of SEP funds, the type of SEP, the SERs' disciplinary areas, total grants allocated to SEPs, SERs' work experience, SERs academic rank and total funds disbursed to industry and government. Altering the amount of money disbursed to industry and government as the dependent variable and the amount of money disbursed to the SERs as the independent variable yields similar results. In both cases, the total grants allocated to SEPs has the largest effect in determining the variance of money disbursed to SERs, industry, and government. The effect of SERs' work experience, academic discipline, and academic rank reveals mixed results in determining the reciprocal benefits that SERs and industry and government generated from SEPs.

SERs perceived that factors related to SERs, the autonomy and alignment of societal engagement units, the type of SEP, and institutional leaders influenced the reciprocal benefits of SEPs to a moderate extent. The perceptions of SERs who belonged to different academic disciplines, had different work experience, and held different academic ranks appeared to be similar across the factors related to SERs, institutional

leadership, arrangement of societal engagement units, and the nature of the SEPs. However, SERs who belong to different academic disciplines exhibit differences in their perception toward the factors related to nature of SEPs, societal engagement units, and institutional leadership. Furthermore, creating long-lasting partnerships, maintaining task rigor, and developing clear exit strategies are important for enhancing the sustainability of universities´ societal engagement. The mean responses of SERs toward these mechanisms appear to be somewhat similar for all the strategies except the development of a clear exit strategy, in which the responses of the SERs based on their academic rank and academic discipline exhibited substantial differences.

In conclusion, although the ultimate targets of universities' societal engagement are believed to benefit the community, the collaborating organizations—university, industry, and governments—draw reciprocal benefits unique to their organizational nature and characteristics. The reciprocal benefits that the three spheres generate from SEPs, beyond the differences in the spheres themselves, are related to the nature of the societal engagement activities (such as type of societal engagement, sources of funds, and amount of funds), SERs (academic rank, work experience, and disciplinary area), and type of universities' societal engagement. The sustainability of universities' societal engagement appeared to be low among public universities in Ethiopia; thus, institutional-level efforts focusing on information processing and task rigor, the development of long-lasting partnerships, and clear exit strategies are important for enhancing the sustainability of universities' societal engagement. Finally, the implication of the study for future research, and policies and practices of higher education in Ethiopia are discussed.

Keywords: disbursement; Ethiopia; higher education; government; industry; perception; reciprocal benefits; societal engagement; university

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Acronyms

ESDPs	Education Sector Development Plans
FDRE	Federal Democratic Republic of Ethiopia
GTP	Growth and Transformation Plan
KTT	Knowledge and Technology Transfer
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PI	Principal Investigator
SEPs	Societal Engagement Projects
SERs	Societal Engagement Researchers
SEU	Societal Engagement of Universities
STI	Science, Technology, and Innovation
UICL	University–Industry and Community Linkage
VPRCE	Vice President for Research and Community Engagement

1. INTRODUCTION

Universities, in collaboration with other actors, are the key drivers of regional innovation and economic growth (Benneworth, de Boer, & Jongbloed, 2015; Benneworth, Young, & Normann, 2017). They achieve this primarily through their societal engagement activities. Thus, the present study attempts to understand the reciprocal benefits that the university and other actors generate from the universities' societal engagement activities. Hence this chapter introduces the research in seven sections. The first section presents the background of the study, focusing on the 'whatness' and purposes of societal engagement of universities (SEU). The second section highlights the research problem, while the third section synthesizes the research gap. The research questions are highlighted in the fourth section. The fifth section demonstrates the significance of the research to the ongoing discussion on the SEU. The sixth and seventh sections discuss the delimitations and limitations, and organization of the study, respectively.

1.1. Background

1.1.1. The "Whatness" of Universities' Societal Engagement

The function of universities, albeit contentious (Kerr, 2001), has been transformed since the medieval period (Etzkowitz & Zhou, 2007) partly to address the economic, social, and technological changes (Roper & Hirth, 2005). Some of these transformations are described as first and second academic revolutions (Pinheiro, Langa, & Pausits, 2015a) to refer the advent of research and the third mission as a function of universities respectively (Trencher, Yarime, Mccormick, Doll, & Kraines, 2014).

The first academic revolution that was epitomized by the integration of teaching and research (Compagnucci & Spigarelli, 2020) emerged during the university reform in Germany at the beginning of the 19th century (Rüegg, 2004) while the second academic revolution that focused on universities' engagement in regional and societal

development (Cai & Ahmad, 2021; Cai & Amaral, 2021) has evolved since the 1980s (Etzkowitz, 2000). The second academic revolution led to the emergence of the third mission, a multidimensional concept (Nabaho, Turyasingura, Twinomuhwezi, & Nabukenya, 2022) encompassing universities' responsibility beyond their conventional teaching and research activities (Larrán Jorge & Andrades Peña, 2017).

The activities performed beyond teaching and research functions are diverse (Schnurbus & Edvardsson, 2022; Trencher et al., 2014) and represented by varied concepts such as community services (Strier, 2013), community engagement (Bender, 2008; Brown et al., 2016; Weerts & Sandmann, 2010), third mission (Roper & Hirth, 2005), third stream (Molas-Gallart, Salter, Patel, Scott, & Duran, 2002), and regional engagement (Chatterton & Goddard, 2000; Šima, Benneworth, Pinheiro, & Beseda, 2017). These concepts are often used interchangeably, but the need to differentiate one concept from another is growing. Some (Rugambwa, 2020) have tried to differentiate "community service" from "community engagement" and "community partnerships" by focusing on the constructs of service versus engagement. While community services are contractual and unidirectional, community engagement is relational and bidirectional (Knudsen, Frederiksen, & Chester, 2021). Engagement entails the interaction between a university and the wider society (Organisation for Economic Co-operation and Development [OECD], 2019). Therefore, unlike community services, community engagement is "reciprocal and dynamic" (Jacob, Sutin, Weidman, & Yeager, 2015, p. 2). In the case of community engagement, universities not only transfer the outputs of their teaching and research to external stakeholders but also draw benefits that help improve their teaching and research practices (Bender, 2008), including their revenues and reputations (Roper & Hirth, 2005; Schnurbus & Edvardsson, 2022). Briefly put, engagement operates on a "give-and-take" principle (Bidandi, Ambe, & Mukong, 2021, p. 8) while services mainly entail universities' support to nearby communities.

Another distinction worth noting is related to the differences between community and society. Analytically, a community is a sub-structure of a society organized in the form of regions, provinces, or associations (Godelier, 2010). Relying on sociological perspectives, communities have been characterized with 'tick' values and moral entities and are expected to exist in small groups such as neighborhoods, small towns, or a spatially bounded locality, whereas societies have loose values as entities and spatially bounded localities (Delanty, 2018). Depending on historical, national, and institutional policy initiatives, universities can be tasked to change the livelihood

of a specific community, such as the engagement of community colleges in the United States and regional universities in some European countries like Norway and the Czech Republic (Benneworth et al., 2017), or contribute to wider levels of societal aspirations for economic growth and development (Cloete, Bailey, Pillay, Bunting, & Maassen, 2011; Pillay, 2010). In the latter, universities are given the responsibility to affect the livelihood of the broader society rather than a specific community. In light of this, the SEU appears to be more inclusive and applicable to centralized higher education systems (such as universities in Ethiopia) where universities are established and accountable to the federal government rather than to regions or states (Federal Democratic Republic of Ethiopia [FDRE], 2009). Therefore, universities' societal engagement in the present study implies the SEPs "applied to identified development priorities" (Sijde, Popma, & Tushune, 2012, p. 40) to benefit society which, as a consequence, may also benefit the university, including the collaborative actors through formal linkages that led to "collaborative and mutual benefit platforms"(FDRE, 2023b) .

1.1.2. Universities' Societal Engagement in the Developing World

Appe et al. (2017) argue that "the elitist ivory tower position is one that universities can no longer afford to take" (p. 12). Consequently, societal engagement is "naturalized in the conventional wisdom about universities, whatever the country and the policy maker" (Laredo, 2007, p. 446). In light of this, many developing countries are directing their higher education institutions to carry out societal engagement alongside their teaching and research functions. For example, beginning with the Córdoba[1] reform in 1918 (Appe et al., 2017), most countries in Latin America introduced societal engagement as a core function of their universities (Irarrázaval & Valdivieso, 2017). In the African context, the need for universities' societal engagement has been echoed by politicians and policymakers since the 1960s (Nabaho et al., 2022). Julius Nyerere of Tanzania once said

> the university… has a very definite role to play in development… and to do this effectively it must be in, and of, the community.… It's in this manner that the university will contribute to our development.… In this fight the university

[1] The Córdoba reform focused on the social function of higher education institutions to bring about social transformations. The movement was later endorsed by forums such as the First Congress of Latin American Universities in 1949 and the First and Second Latin American Conferences on University Extension and Cultural Diffusion, organized in 1950 and 1972, respectively.

must take an active part, outside as well as inside the walls (Nyerere, 1967 cited in Mtawa, Fongwa, & Wangenge-Ouma, 2016, p. 128).

Although continent-wide data are lacking, most African universities inculcate societal engagement as their core function (Rugambwa, 2019). In South Africa, universities' societal engagement has been discussed at the policy and practice levels since the 1990s (Bender, 2008). Over the same approximate period, similar initiatives have also been observed in Uganda (Mugabi, 2015) and Tanzania (Mtawa et al., 2016). The change in the contentious ideology pertaining to the rate of return of higher education at the beginning of the 21st century (Bloom, Canning, Chan, & Luca, 2014) that were used by pertinent higher education financiers such as the World Bank and the International Monetary Fund (Andoh, 2017; Assie-Lumumba, 2006) contributed to the renewal of African higher education in terms of their functions, governance modalities, and demographic characteristics (Teferra, 2014).

Ethiopian higher education is no exception. The universities have been engaged in different societal affairs since the introduction of Western-style higher education in to the country in the 1950s (Asgedom, 2005). However, universities' societal engagement became the focus of attention of the government and universities toward the beginning of the 21st century, partly due to the country's renewed higher education proclamation, which harnessed all public universities to leverage societal engagement alongside their teaching and research functions (FDRE, 2009). As a result, every public university in Ethiopia is entitled to perform societal engagement activities with different groups of stakeholders such as industry, professional associations, and governmental and non-governmental organizations and offices(FDRE, 2023b). However, amidst the burgeoning demand to institutionalize societal engagement into the universities, efforts made to understand its actual benefits, both to the universities themselves and other actors, appear to be limited.

1.1.3. The Purposes and Dimensions of Universities' Societal Engagement

The SEU, widely known as a third mission, is an omnibus of different components and dimensions (Hart & Northmore, 2011; Laredo, 2007; Pinheiro, Langa, & Pausits, 2015b). Therefore, to gain a comprehensive understanding of the purposes and dimensions of universities' societal engagement, it is essential to consider the context

and evolving models of universities. For example, relying on entrepreneurial university models (Clark, 1998; Etzkowitz & Zhou, 2007) universities' societal engagement drives the economic and non-economic contributions of universities to society (Laredo, 2007; Perkmann et al., 2013), out of which universities in turn can strengthen and sustain their teaching, research (Quoc, Le, & Pham, 2021), and societal engagement activities (Lima, Dieguez, & Conceição, 2022). The economic and non-economic contributions of universities' societal engagement may emanate from a university's capabilities (such as knowledge and facilities) and activities like teaching, research, and communication (Molas-Gallart et al., 2002). Therefore, while the primary purposes of universities' societal engagement are claimed to benefit society, it also has contribution to the university in terms of knowledge and skill mobilization strategies such as internships, collaborative research projects (Cai & Ahmad, 2021); and enhancing universities' moral legitimacy to the public (Godonoga & Sporn, 2023).

In light of this, Krčmářová (2011) classified the purposes of third mission into three categories: enterprising, innovation, and the social third mission. The enterprising dimension implies the financial stability and competitiveness of universities attained through their societal engagement activities. It is characterized by activities such as direct fundraising and the commercialization of their capabilities. The innovative third mission, on the other hand, is concerned with the development of new mechanisms to address local and global needs. The innovation dimension leads to the development of hybrid institutional forms such as incubator centers or science parks that help solve societal problems (Montesinos, Carot, Martinez, & Mora, 2008). Meanwhile, the social and civic dimension of the third mission aims to strengthen the social cohesion and development of democratic culture in society. Relative to the innovative and enterprising dimensions, the social dimension of third mission has lower direct economic value to the university (Montesinos et al., 2008). Krčmářová's (2011) proposal has been supported by Appe et al. (2017), who suggest market-oriented, social justice, and social responsibility dimensions that correspond to the enterprising, innovation, and social third mission, respectively.

The effort to characterize universities' third mission is also reflected in studies focused on the African context. Nabaho et al. (2022) identified four basic dimensions: the third mission as a function of the university, as a social role, as forging partnerships with the community, and as undertaking to benefit the university and community. However, Nabaho and his associates did not characterize

the dimensions in line with the extant literature in the field; thus, the distinctions among the varied dimensions are not adequately discussed.

In sum, the discussion on the purposes and dimensions of universities' societal engagement depends on the inherent institutional and national assumptions regarding how universities impact and contribute to national and regional development. Alongside, the existing literature on the purposes and dimensions of the universities' societal engagement reflect the following complementary arguments. First, the universities' societal engagement can be viewed as a boundary spanning process (Ogunsanya & Govender, 2019) through which universities and other actors interact to enhance the frontiers of knowledge and technology and use their potential to attain mutual benefits (Bhullar, Nangia, & Batish, 2019). According to Ogunsanya and Govender (2019), the boundary spanning processes can be unidirectional (in which the university offers solutions to societal problems), bidirectional (in which the community and university share their potential but without balanced interactions), or fused (in which the university and community engagement partners operate in a spirit of true mutuality). Second, while the varied dimensions have similarities, the specific activities that societal engagement entails remain a matter of debate (Ankrah & Al-tabbaa, 2015; Molas-Gallart et al., 2002; Renwick et al., 2020; Rugambwa, 2019; Secundo, Elena Perez, Martinaitis, & Leitner, 2017). On one hand, societal engagement is used to indicate activities performed outside the teaching and research function of universities (Fitzgerald, Bruns, Sonka, Furco, & Swanson, 2016; Jongbloed, Enders, & Salerno, 2008) such as consultancy, outreach service, training, service learning, community-based research, and community-based projects (Rugambwa, 2019). On the other, some scholars (Brown et al., 2016; Fitzgerald et al., 2016; Laredo, 2007) consider societal engagement as a means to shape the teaching and research functions of universities into useable forms. This latter argument holds that societal engagement is used to enhance the application of teaching and research in the non-academic community (Nabaho et al., 2022). Third, universities' social engagement is also taken as a means to enhance universities' compliance with emerging global agendas like the UN's Sustainable Development Goals, which have led to the development of sustainable entrepreneurial university (Cai & Ahmad, 2021) and responsible university models (Geschwind, Kekäle, Pinheiro, & Sørensen, 2019). The sustainable entrepreneurial and responsive university models, among others, accentuate

economic, social, and environmental concerns in their core activities (see, Cai & Ahmad, 2021).

1.2. The Research Problem

The implementation of universities' societal engagement often calls for a triadic collaboration (Schnurbus & Edvardsson, 2022) that involves dynamic interactions between a university, government, and industry (Cai & Amaral, 2021; Etzkowitz, 2008). The collaboration among these three institutional spheres is epitomized by joint societal engagement projects (see Figure 1), which are implemented through the collaboration of universities, government, and industry to benefit the society in ways such as the discovery of new knowledge, the development of existing knowledge, the dissemination of new knowledge (see, Franz, 2010), and/or other forms of knowledge and technology transfer (KTT), such as creation, sharing, implementation, and commercialization (Sung & Gibson, 2005).

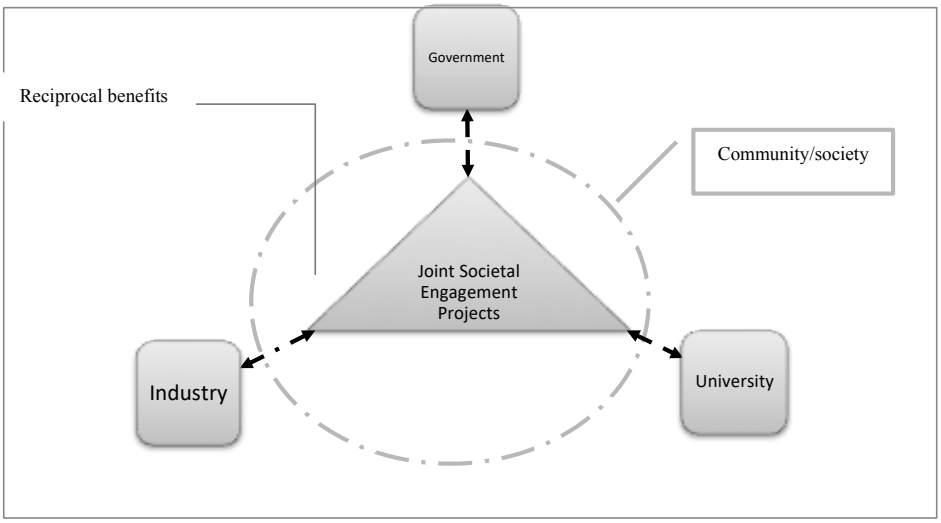

Figure 1 Triadic Collaboration of Industry, University, and Government

Joint SEPs primarily benefit the society and community and ostensibly the three collaborating institutional spheres (Bidandi et al., 2021). Nonetheless, the reciprocal

benefits of universities' societal engagement for the university and the other collaborating actors considering the perspectives and experiences of participants from different institutional spheres have not been adequately discussed (Compagnucci & Spigarelli, 2020; Schnurbus & Edvardsson, 2022). Therefore, there appears a need for research that articulates the reciprocal benefits of universities' societal engagement for the university itself and other implementing partners, particularly industry and government.

The need for such research is also evident in the African context in general and Ethiopian higher education in particular where, continental and national policy directions call for mutual benefits. Nabaho and his associates (2022) reported that the supranational policy directives of the African Union expect universities in Africa to reap mutual benefits from their third mission activities. Furthermore, the need to link universities with industry and governmental and non-governmental entities is reflected in different policy directions of the FDRE government, including the Growth and Transformation Plans (GTPs) I and II (FDRE, 2010, 2016), the Ten Year Development Plan (FDRE-PDC, 2020), a newly drafted education and training policy (FDRE, 2023a), and the harmonized academic staff promotion directive (MoSHE, 2020a). In light of these policy initiatives, offices such as university, industry and community linkages have been established in Ethiopia's several public universities. Among other aims, these offices are responsible to attract potential stakeholders and foster relationships to further research and social engagement agendas. In addition, societal engagement such as community services, consultancy, and KTT are gaining considerable attention, time, and budgetary allocations among higher education institutions in Ethiopia.

Therefore, in addition to filling the gap in the current literature, there is a clear need for empirical research that supports the theoretical discussions and policy directions related to the mutual advantages of universities' societal engagement in Ethiopia. With this in mind, the study aims to investigate the reciprocal benefits that universities and other collaborating stakeholders, particularly industry and government, derive from their engagement in the SEU.

1.3. The Research Gap

Although the terms used to explain the SEU vary, much of the research on universities' societal engagement is discussed in light of the entrepreneurial university model (Cai & Ahmad, 2021) by integrating analytical tools such as the triple helix (government, university, and industry) (Cai, 2014; Elvekrok et al., 2018; Liu & Cai, 2017) and quadruple helix (government, university, industry, and civil society) (Doh, 2018). Researchers (Compagnucci & Spigarelli, 2020; Larrán Jorge & Andrades Peña, 2017) have called for further research focusing on the mutual interests and opportunities that different actors obtain from implementing the SEU. Thus, the present study is positioned and responds to the following key calls for research.

First, at least in knowledge economies (see, Pinheiro et al., 2015a), there appears to be a plethora of empirical evidence pertaining to the benefits of universities' societal engagement to industry, universities, and government. However, previous research has focused mainly on analyzing the benefits of universities' societal engagement from university perspectives and the perception of academic staff (see, Atta-owusu & Fitjar, 2023; Carl & Menter, 2021; Degl, Matousek, & Tzeremes, 2019; Lima et al., 2022; Quoc et al., 2021). In other words, the effort to understand the reciprocal benefits that academia, industry, and government generate from joint societal engagement activities in the context of a single study that involves participants from different institutional spheres is limited (Compagnucci & Spigarelli, 2020).

Second, recent systematic literature reviews (Burbridge & Morrison, 2021; Compagnucci & Spigarelli, 2020) have shown that previous research on the SEU focuses on developed Western countries; thus, much remains to be done to understand universities' societal engagement activities and their reciprocal benefits in the context of the developing world in general (Quoc et al., 2021) and Ethiopia in particular. According to Compagnucci and Spigarelli (2020), "the diverse institutional and historical characteristics of universities, in combination with the unique aspects of each socio-economic context, result in differing degrees of engagement even within the same university and the same department" (p. 19). Thus, while research outputs from the global north are important to higher education development in the global south, exploring the benefits of the SEU in the latter setting may reinforce the ongoing discussion on universities' community and societal

engagement or the third mission of universities from multiple national and organizational contexts. After all, the SEU "can only be understood from within the theoretical, practical and historical contexts in which it originates" (Nkhoma, 2020, p. 170).

Therefore, the remainder of the section is designed to demonstrate the research gap on the reciprocal benefits of universities' societal engagement. The first subsection presents the benefits of SEU at the international, continental, and national levels, while the second subsection summarizes the key research gap in the extant literature.

1.3.1. Research on the Benefits of Universities' Societal Engagement

While the mechanisms relevant to achieving reciprocal benefits are debatable (Burbridge & Morrison, 2021), universities' societal engagement benefits the university's teaching and research functions. A survey conducted among 245 faculty members in Vietnam, found that the third mission has a positive impact on the teaching and research performances of academic staff (Quoc et al., 2021). With this in mind, the same researchers noted that

> the more an academic scholar is involved in academic engagement and commercialization, as well as public engagement and extra work, the higher performance he or she may have in terms of research; whereas the more an academic scholar is involved in public engagement and extra job, the higher performance he or she may have in terms of teaching (p.9).

Similarly, a study by Atta-Owusu and Fitjar (2023) on the perception of 625 academics working at seven European universities revealed that academics perceived that their engagement in knowledge exchange benefits both their research and teaching. However, the effect of engagement in knowledge exchange appears to be higher on research than on teaching activities. This supports earlier researchers (Taliento, 2022) who reported a positive relationship between the quality of research and the third mission.

There is also a growing body of literature examining the benefits of "co-creation" projects for faculty's teaching and research endeavors. For example, academics who participated in co-creation projects that involve universities, companies, civil society,

and governments in Portugal felt that their participation in co-creation projects helped them to develop a better teaching and learning environment and improved their cooperation and networking with industry, which in turn fostered opportunities to test their research agendas in non-university settings (Lima et al., 2022).

Furthermore, participation in societal engagement activities such as knowledge based urban development benefits universities in terms of material resources and symbolic legitimacy (Benneworth & Cunha, 2015). More specifically, societal engagement activities are becoming vital mechanisms and sources of revenue for universities and their faculty members (Guerrero, Urbano, Fayolle, Klofsten, & Mian, 2016), mainly through research commercialization and patenting (Burbridge & Morrison, 2021). Universities, on a quest to support regional economic development through contract research, patenting and licensing, and the formation of spin-offs are likely to generate financial inputs (Degl et al., 2019; Pugh et al., 2022). Faculty members who become involved in societal engagement activities are also likely to gain access to resources that strengthen their research agendas (Perkmann et al., 2013).

The SEU also enhances the compliance of universities with the needs of society and steering bodies, particularly governments and other funding entities. Various studies (Chandramohan & Bhagwan, 2022; Koekkoek, Ham, & Kleinhans, 2021) have shown that community engagement helps universities address part of their corporate social responsibilities such as environmental protection, community rehabilitation, and development programs. In this regard, the social responsibility of higher education has become an important aspect of universities' accountability and legitimacy (Godonoga & Sporn, 2023).

Unlike the university sector, the benefits of universities societal engagement for participating firms and industry in general are limited (Elvekrok et al., 2018). Carl and Menter (2021) showed that the third mission has a positive impact on the motivation and engagement of firms towards the SEU, but that impact was not statistically significant. Surprisingly, the teaching function of the university was found to be positively related to firms' social engagement. Conversely, a study by Lima et al. (2022) on a co-creation project that involves universities, companies, governments, and civil society in Portugal found that participants from industry gained new knowledge and perspectives relevant to the development of their

companies. The same study revealed that participation in co-creation projects enabled companies to easily recruit and access human talent. Furthermore, a longitudinal study undertaken from 2011 to 2013 by Elvekrok et al. (2018) revealed that participation in joint societal engagement activities that involve universities, industry, and government benefited industry in terms of increased access to knowledge and an improved ability to address challenges and consequently make sound decisions. The same study revealed that managers' commitment and shared activities that build relationships, competence, and continuity are essential to enhancing the interaction among industry, university, and government and ultimately impact regional development (Elvekrok et al., 2018).

Governments play a regulatory role (Etzkowitz, 2008; Mêgnigbêto, 2013) in the interaction between industry, universities, and government entities at local levels. Especially in a centralized higher education system such as Ethiopia (Dzisah & Etzkowitz, 2008), the government controls the interaction between academia and industry (Cai & Etzkowitz, 2020). Therefore, societal engagement activities give impetus to the implementations of governments' economic and social policies and eventually ensures regional and national development (Agasisti & Bertoletti, 2022; Benneworth, 2009). However, except for general discussions of the role of higher education as an instrument for economic development, it is difficult to find in-depth analyses of the benefits of universities' societal engagement for governments. The benefits of SEU to the government are less direct and even implicit when compared to the benefits that universities and industry may accrue from those activities.

1.3.2. Research on the Benefits of Universities' Societal Engagement in Africa

At least at supranational levels like the African Union, the third mission of universities is conceptualized as "being mutually beneficial to society and the university" (Nabaho et al., 2022, p. 81). Thus, African universities need to reap benefits from their third mission activities, including enriching scholarship, research, and creative activities and enhancing teaching and learning while addressing the continent's critical social problems. However, apart from such recommendations, the amount of empirical research examining the reciprocal benefits of universities' societal engagement to universities and collaborating actors is scant, and most of it involves the South African context.

For example, Bidandi et al. (2021) posited that the SEU enhances students' practical knowledge and improves their employment prospects after graduation, promotes the university trustworthiness and acceptance by the society. Similarly, Chandramohan and Bhagwan (2022), whose examination of community engagement focuses on its conceptualization, processes, and benefits at the University of Technology in KwaZulu-Natal, South Africa, found that the academic staff of the university understood community engagement as a symbiotic relationship between the university and community in order to address community needs, nurture community partnerships, and ensure sustainable engagement initiatives. The same study highlighted that community engagement creates an opportunity for students and academics to acquire important knowledge, practical skills, and experience.

According to the existing literature in the African context (Bidandi et al., 2021; Chandramohan & Bhagwan, 2022; Nabaho et al., 2022; Nkhoma, 2020; Ogunsanya & Govender, 2019), the benefits of universities' societal engagement to the community and to the primary purposes of higher education institutions—that is, teaching and research—are evolving. However, research that analyses the benefits of universities' societal engagement from the perspectives of triadic collaborations that involve the university, industry, and government is lacking.

1.3.3. Research on the Benefits of Universities' Societal Engagement in Ethiopia

Research on different types of universities' societal engagement, such as community service, KTT, and service-based learning, in Ethiopia is growing with studies to date having sought to illustrate some of the benefits of universities' societal engagement in light of the experiences and perspectives of academics. For example, Desta and Belay (2018) revealed that community engagement helps universities design and adapt curricula in line with community needs. In addition, community engagement benefits faculty members and students in aligning their professional and academic endeavors with real-world issues. The same study revealed that universities' community engagement helped communities share university resources and mitigate some of their problems.

Another line of research focuses on the practices and challenges of universities' engagement in different societal engagement activities. For example, Gobena et al.

(2021) examined the status of KTT among universities located in western Oromia, Ethiopia, and found that the KTT of universities is in its infancy stage due to the country's overall low capacity to absorb new knowledge and technology, a lack of confidence in competition and creative knowledge, poor organizational structures, limited dedication to KTT, and a lack of integration and cooperation among different actors. Similar observations were reported by Gashahun (2020), who studied university–industry linkages at Debremarkos University in Ethiopia and found that a lack of financial support, apathy among academic staff, weak engagement after the signing of a memorandum of understanding, and fragmented research endeavors are among the obstacles to effective university–industry linkages in that country. Consequently, KTT among different institutional spheres is highly delayed.

Mengist (2022) laments the budget shortages, low levels of university–industry linkage, limited commitment among staff, and low levels of monitoring and evaluation affected universities' community service activities in Ethiopia. The same study also disclosed that most community service projects implemented by universities are characterized by low levels of community participation, sometimes fierce community resistance to activities that replace or supplement long-standing social practices like using a donkey to plow a land for growing crops.

1.3.4. Summary of the Research Gap

The above analysis of the extant literature on the benefits of universities' societal engagement has revealed the following gaps. First, the SEU is not uniquely represented in the existing literature: there exist considerable debates related to its name, purposes, and features (Koekkoek et al., 2021). Such debates are also common in the African context in general (Nabaho et al., 2022) and Ethiopia in particular (Cremonini & Adamu, 2021). Hence, exploring the different types of universities' societal engagement and their differences in the context of the study area is important to understand the reciprocal benefits that may be attained.

Second, although there has been growth in research, the effort to understand the reciprocal benefits of universities' societal engagement to governments, universities,

and industry by considering the views of participants from each of those institutional spheres is limited. Compagnucci and Spigarelli (2020) conducted a systematic literature review on the third mission of universities and recommend future research to "explore mutual interests, opportunities and new forms of collaboration between the university and its stakeholders" (p. 20).

Third, while research on different aspects of the third mission has shown increments since 2000, extant research is skewed toward qualitative rather than quantitative approaches. For example, a systematic literature review focusing on third mission activities of Nordic universities (Schnurbus & Edvardsson, 2022) revealed that only 4 (11.42%) of the research articles published between 2000 and 2018 had mixed research designs, while 25 (71.42%) and 6 (17.14%) research articles followed qualitative and quantitative approaches, respectively. Therefore, in line with Schnurbus and Edvardsson's (2022) recommendations, additional studies that employ mixed research designs are important to document the field in different national contexts and the value of a variety of methodological orientations.

Fourth, notwithstanding the aforementioned gaps, there are few studies that explore the SEU in developing countries in general (Koekkoek et al., 2021; Quoc et al., 2021) and Ethiopia in particular (Cremonini & Adamu, 2021).

Fifth, there is also a clear gap regarding suitable theoretical frameworks that help understand universities' societal engagement in different contexts. Most studies rely on systems theories like stakeholder theory and regional innovation models such as the triple helix (Cai & Amaral, 2021), which are primarily applicable to knowledge economies.

Addressing the identified research gaps is significant for the ongoing discussion on the SEU, as stipulated in some specialist journals such as *Sustainability*, *The Journal of Public Service and Outreach*, and *The Triple Helix Journal* and edited books (Jacob et al., 2015; Papadimitriou & Boboc, 2021; Sørensen, Geschwind, Kekäle, & Pinheiro, 2019). More specifically, this study positioned and aspires to extend the existing discussion on universities' societal engagement by taking the practice and experiences of universities and their societal engagement activities in Ethiopia.

1.4. Research Questions

In light of the research gaps and problems discussed above, the present study seeks to answer the following research questions:

1. **How do actors from the university, industry, and government perceive the benefits of universities' societal engagement?**

Actors in this case imply the group of persons working in the university, industry and government in order to fulfill the organizational roles and responsibilities. Besides, the university, industry and government are defined based on the varied national policy frameworks adopted in Ethiopia. The university is an institution that provides academic training to students, and conducts research and community services that address societal problems(FDRE, 2009). The industry entails "any private, public or Non-Governmental manufacturing or service providing sector with potential for partnership or linkage related works"(FDRE, 2023b) with the university and other actors. Government, on the other hand, implies the system and authority designated to govern the societal, economic and political activities of the people at various levels, national, regional and local or woreda[2] levels (FDRE, 1995). Keeping these definitions into account, the basic research question entails the following specific research questions. These are

1.1 What are the types and dimensions of universities' societal engagement in Ethiopia?

Characterizing the third mission of universities both in the African context (Nabaho et al., 2022) and beyond (Perkmann et al., 2013; Quoc et al., 2021) is inconclusive. Hence, the nature and classifications of universities' societal engagement are

[2] The administrative structure of the FDRE at the region level is divided into three levels: zones, woreda, and kebele. Despite variations by geographical area, woreda have populations between 100,000 and 150,000

bounded by context. Therefore, this research question will help identify the types and dimensions of the SEU in Ethiopia.

1.2 What are the reciprocal benefits of universities' societal engagement to the university, industry, and government?

Research on the benefits of universities' societal engagement is growing. However, an exploration on the reciprocal benefits of universities' societal engagement considering the perspectives and experience of actors from both academic and non-academic sectors is limited (Compagnucci & Spigarelli, 2020; Schnurbus & Edvardsson, 2022). Therefore, this research question seeks to identify the reciprocal benefits of universities' societal engagement to the university, industry, and government by considering SEPs implemented through the collaboration of those actors.

1.3 What are the factors that influence the reciprocal benefits of universities' societal engagement for universities, government, and industry?

Universities' societal engagement is a multifaceted phenomenon (Perkmann et al., 2013). Various factors ranging from policy to practice are likely to affect its implementation. However, research on the factors that influence the reciprocal benefits of universities´ societal engagement is limited. Therefore, addressing this research question will help pinpoint the key factors influencing the reciprocal benefits of universities' societal engagement based on the lived experiences of actors from the university, industry and government institutional spheres.

1.4 How do universities enhance the sustainability of their societal engagement activities?

A conceptual discussions and reflection by Mugabi (2015) revealed that universities' community engagement at the African universities are less sustainable, as most projects on community engagement activities rely on the involvement, commitment, and expertise of a limited number of faculty, staff, and students. Similar assertions are also reflected in the Ethiopian context, in which most societal engagement activities, such as community service projects, are viewed as less sustainable (see, Mengist, 2022). Therefore, this research question explores the mechanisms for enhancing the sustainability of universities' societal engagement activities.

1.5. Significance of the Research

The present study has theoretical and practical significance. First, it will contribute to the ongoing discussion related to the benefits of universities' societal engagement to the university itself and to other actors. Second, it makes methodological contributions in response to the call for the application of sequential mixed methods designs to higher education research in general (Cai, 2018) and to the third mission in particular (Schnurbus & Edvardsson, 2022). Third, complying with the directions of the higher education proclamation of the FDRE (FDRE, 2009), university leaders are observed tracing their institutions' societal engagement activities in terms of KTT, community services, and consultancy. Nonetheless, the researcher, from his experience as a faculty member at an Ethiopian public university, observed that university leaders often equated the SEU with merely philanthropic activities in which the university is considered a giver and the community a recipient. Therefore, the present study may offer insights to university leaders and SERs on the reciprocal benefits that universities' societal engagement can offer to universities and other actors. Furthermore, most universities' societal engagement activities in Ethiopia have been subjected to frequent interruptions and discontinuities (Cremonini & Adamu, 2021; Tamrat, 2019); thus, the concern to build sustainable universities' societal engagement received currency from the government of FDRE and higher education practitioners. The outputs of the present study may help university leaders and academic researchers grasp the mechanisms that enhance the sustainability of universities' societal engagement. Fourth, comprehensive and coherent national directives with regard to universities' societal engagement activities are lacking in Ethiopia (Cremonini & Adamu, 2021). Therefore, this dissertation may contribute to the ongoing policy dialogue (Tamrat, 2019) on universities' community engagement in the country.

1.6. Delimitation and Limitations of the Study

The dissertation has qualitative and quantitative stages. The qualitative stage focuses on exploring the types of universities societal engagement, the reciprocal benefits, the factors that contribute to those benefits, and the mechanisms that enhance the sustainability of universities' societal engagement considering the SEPs implemented at Mekelle University during or one year before the study period (i.e., 2019).

Specifically, the qualitative stage considered institutionally recognized SEPs with defined time periods, beneficiaries, teams of researchers, and collaborative actors.

The quantitative stage of the research examines the themes and issues that emerged from the qualitative stage. It is conceptually delimited to examine the perceived and actual benefits of universities' societal engagement to universities, industry, and governments, the extent to which institution, people, and task-related factors contribute to the reciprocal benefits of universities' societal engagement, and the extent to which creating long-lasting partnerships, maintaining task rigor, and developing clear exit strategies enhance the sustainability of universities' societal engagement.

Furthermore, although both private and public universities in Ethiopia are expected to carry out societal engagement activities, the dissertation does not explore the societal engagement of private universities.

Finally, it is worth noting the limitations of the research. The qualitative data were collected during the COVID-19 outbreak, and governmental decrees that restricts the movement of people limited the researcher's ability to undertake field visits to the Integrated Seed Sector Development (ISSD) project sites—a project selected to complete the qualitative stage of the research. As a result, the researcher relied on interview data collected from academics and practitioners working in the government and industry institutional spheres and with adequate knowledge about the ISSD project. Similarly, but coincidentally, the outbreak of war between the federal government troops and the Tigray People's Liberation Front in early November 2020 limited the researcher's ability to collect quantitative data from the industry and government institutional spheres. Hence, the quantitative data involve 123 research participants selected from only five public universities in Ethiopia. The benefits that the industry and government institutional spheres generate from SEPs were computed based on the SERs' responses.

1.7. Organization of the Dissertation

The dissertation is organized into seven chapters (see Figure 2).

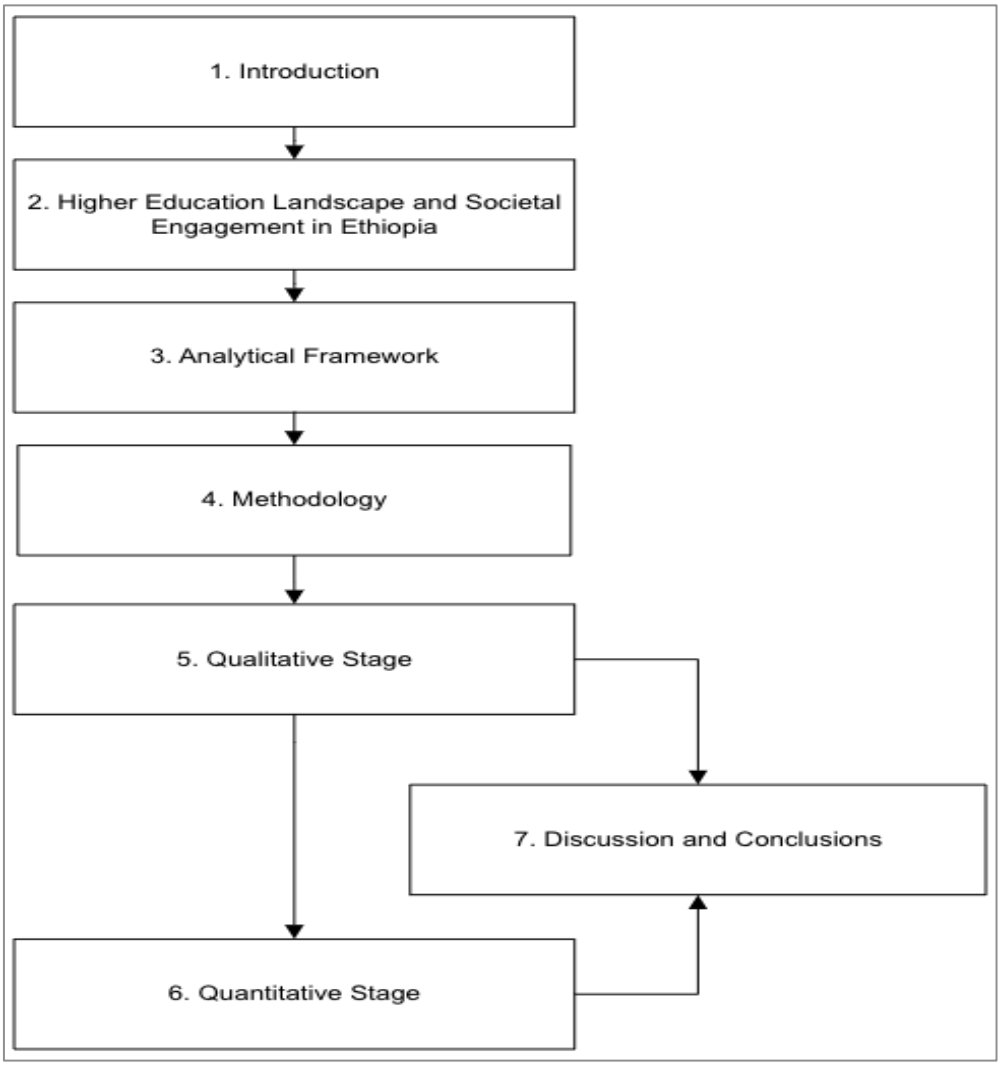

Figure 2 Organization of the Dissertation

As Figure 2 shows, the first chapter of the dissertation introduces the research. The higher education landscape and universities' societal engagement in Ethiopia are described in the second chapter. The third chapter deals with the analytical framework of the research, discussing stakeholder theory, the triple helix, and

boundary spanning and their implications for universities' societal engagement. The fourth chapter focuses on the research methodology; thus, the research design, methods, and ethical considerations are presented. Chapter five presents the qualitative stage of the research while chapter six deals with the quantitative stage. Chapter seven discusses the key findings of the qualitative and quantitative stages, and finally presents the conclusion and implications of the dissertation.

2. HIGHER EDUCATION LANDSCAPE AND UNIVERSITIES' SOCIETAL ENGAGEMENT IN ETHIOPIA

This chapter presents the Ethiopian higher education landscape in three sections. The first gives an overview in to the developments of higher education in Ethiopia since the 1950s. The second section discusses the SEU in Ethiopia, including the nature and definition of universities' societal engagement in the country and how it has evolved over the years. The third section discusses the conditions that shape universities' societal engagement in Ethiopia, discussing the key policies and strategies that drive Ethiopian universities to institutionalize societal engagement into their core functions.

2.1. The Development of Higher Education in Ethiopia

Western-style higher education is a recent phenomenon in Ethiopia. It began with the establishment of the University College of Addis Ababa (now Addis Ababa University) in the 1950s (Bahru, 2014; Molla, 2018). Since then, Ethiopia has experienced four regimes: the imperial regime (1931–1974), the Derg regime (1974–1991), the Ethiopian People's Revolutionary Democratic Front (EPRDF) regime (1991–2018), and the Prosperity Party's regime (2018–present). Despite differences in form and depth, higher education has been reformed under these regimes partly to fit with their political ideologies (Gebremeskel & Feleke, 2016) and not least to address longstanding problems related to access and equity (Molla, 2018). As is the case elsewhere (Altbach, 2006), Ethiopian higher education shifted from centralized to modestly decentralized system, from elitist to mass higher education, and from an academic to a professional- and vocational-laden higher education system (Bishaw & Melesse, 2017).

Although the Imperial and Derg regimes left their own imprints on the country's higher education system, much development was observed in the latter periods of the EPRDF regime (Molla, 2018) and the successor Prosperity Party regime. The

number of public universities, for instance, increased from only 2 in the 1990s (Bishaw & Melesse, 2017; Semela, 2011) to 50 in 2020s (FDRE-[Plan for Development Comission] FDRE-PDC, 2020), and higher education gross enrollment soared from 0.2% in the 1970s (Bishaw & Melesse, 2017) to 13.8% in 2021(FDRE-PDC, 2020).

Access to higher education improved due to the government's commitment to establish public universities across the regional states and private investment in the higher education sector (Amare, 2005). However, the establishment of public universities across the country's regions was debatable. On one hand, there are reflections that claim that the establishment of universities across regional states was carried out haphazardly to reduce public grievances and curb political concerns associated with ethnic identities. Conversely, some (Sijde et al., 2012) have claimed that the establishment of universities at different regional states enhanced access and equity and implicitly contributed to the socioeconomic developments of the states. This latter argument was based on the fact that the establishment of public universities in different states of the country led many cities to blossom, employment opportunities to emerge, and, by and large, many youths come from different cultural and ethnic backgrounds to interact.

Higher education was also opened to private investment in the last decades of the 20th century (Bishaw & Lasser, 2012). Recent reports indicated that in 2020/2021[3], Ethiopia had as many as 238 private higher education institutions at different levels, such as colleges, university colleges, and universities (FDRE-PDC, 2020). In 2017–2018, the percentage of undergraduate and postgraduate students enrolled in the private higher education institutions stood at 13.8% and 3.6%, respectively (MoE 2017 cited in Tamrat & Teferra, 2020). The student body enrolled in private higher education is thus a mere fraction of the students enrolled in public higher education institutions.

Various policy instruments have been issued to regulate the higher education sector since the beginning of the 21st century: among others, a higher education proclamation that was initially developed in 2003 and revised in 2009 (FDRE, 2009),

[3] The Ethiopian fiscal year begins in July and ends in June. The fiscal year is somewhat congruent to the country's calendar that begins in September

a higher education cost sharing proclamation (FDRE, 2003), the establishment of income-generating firms (FDRE, 2019), and a national science, technology and innovation (STI) policy (FDRE, 2012). These instruments were issued to regulate the governance of the higher education sector in academics (teaching, research, and community service), human resources (recruitment, development, and promotion), institutional governance (organizational structure, accountability, and transparency), revenue and financing (cost sharing, tuition fees, and enterprising) and linkages with industries. In addition, consecutive Education Sector Development Plans (ESDPs I to VI) were ratified to revitalize education, including higher education, throughout the country. Higher education was also mainstreamed in national plans to revitalize Ethiopia's economic reform: GTP I (2010–2011to 2014–2015), GTP II (2015–2016 to 2019–2020), and the latest ten-year development plan (2020–2030).

Despite these efforts and concrete achievements, higher education in Ethiopia is experiencing challenges related to quality, relevance, academic freedom, and access and equity (Molla, 2018). Various government reports (MoE, 2018) substantiate that the quality of higher education has been deteriorating in terms of students' learning outcomes and graduate performance, the experience and quality of the teaching staff, and the availability and exploitation of necessary inputs. Similarly, soaring graduate unemployment (Reda & Gebre-eyesus, 2018; Tamiru, 2017) epitomized the deteriorating higher education relevance to the market demand. The deterioration in quality of higher education and its relevance to the market is also linked with the quality of general education (Pre K to grade 12). Some (Amare, 2005; Ashcroft & Rayner, 2012) also laminated that the country's fast growing higher education sector led to the marked decline in the quality of teaching and research activities of the higher education institutions.

In an attempt to solve some of these challenges, the Ethiopian government (under the prosperity regime) has recently introduced three reform schemes. First, higher education institutions are classified in to four bands, comprising research universities, applied universities, comprehensive universities and technology specialized universities. However, the classification of universities into these four bands was not supported by differentiated funding and student enrollment policies. Second, despite the ambiguities related to conceptualization and means of operationalization, the Ethiopian government named Addis Ababa university as

chartered (autonomous) university and there are ongoing plans to increase the numbers of these universities into eight. Third the education and training policy that has been implemented since 1994 was reformed. Thus, the newly drafted education policy changed the educational cycle from 8 years (primary), 2 years (general secondary) and 2 years (preparatory) into six years (primary), 2 years (junior school) and 4 years (secondary). Under the new education and training policy, undergraduate education is extended from three years to four years (FDRE, 2023a).

2.2. Universities' Societal Engagement in Ethiopia

Universities' societal engagement is one of the core functions of universities in Ethiopia. Therefore, the nature and definitions of universities' societal engagement, its historical development and the key national policy initiatives that drive universities to institutionalize societal engagement into their core functions are discussed in the following sections.

2.2.1. The Nature and Definitions of Universities' Societal Engagement

As elsewhere in Africa (Nkhoma, 2020; Ogunsanya & Govender, 2019) and beyond (Koekkoek et al., 2021), the SEU is a loosely defined concept in Ethiopia. Although national framework and legislations are lacking (Cremonini & Adamu, 2021), the functions of the university outside the teaching and research activities are represented using a single or a combinations of broad concepts such as community services/engagement, KTT, and consultancy services (Mengist, 2022; Mulu, 2017). On the top of this, the activities that the university's societal engagement entailed are used to be diverse comprising internships, externships, outreach services (Alemie, 2014), continuing education, training courses for non-university audiences, technical expertise provided to development projects, legal aid to weakest groups (Eddine & Asgedom, 2015). Therefore, universities' societal engagement in Ethiopia could be understood as a bundle of activities delivered under the themes of KTT, community services and consultancies to the community surrounding the higher education institution (Mekelle University, 2020; Sijde et al., 2012).

However, given universities' societal engagement are related to the historical accounts of higher education and countries' economic developments (Nkhoma, 2020), the definition and nature of universities' societal engagement in Ethiopia

(highlighted above) is neither bounding nor conclusive. Ethiopia experienced different government regimes since the inception of western type higher education in the country. Hence, the definition and dimensions of universities' societal engagement are likely to differ across the different regimes. Besides, as the scope and depth of universities' societal engagements differ in line with the nature of the higher education institutions and disciplinary areas (Compagnucci & Spigarelli, 2020), it is difficult to find one single definition for universities' societal engagement in Ethiopia that fits to all universities and disciplinary areas.

Against this backdrop, universities in Ethiopia are required to collaborate with industries, government entities (such as regional governments, and government ministries) and other non-government organizations to carry out their societal engagement activities. For example, the ten year (2020–2030) lead plan of the former Ministry of Science and Higher Education urge higher education institutions to create "strong partnership and linkages with similar academic institutions, different government sectors, industries and other stakeholders" (Ministry of Science and Higher Education-MoSHE, 2020c, p. 51) to effectuate their teaching, research and engagement functions and enhance innovation and technology development within the country (FDRE, 2012). Therefore, collaboration with external stakeholders is taken as key strategy to implement the societal engagement activities of universities. Nonetheless, the form and numbers of stakeholders to be collaborated with the university largely depends on the type of the societal engagement activities and other issues such as commitment, experience of university leaders and SERs, and institutional set up of the higher education institutions.

2.2.2. Historical Development of Universities' Societal Engagement

The concern for diversified functions of universities (that is beyond teaching and research) has been evident in Ethiopia since the establishment of the first higher education institution in the country (Desta & Belay, 2018). For example, following the establishment of the University College of Addis Ababa (now called Addis Ababa university), different colleges that had similar mission with the land-grant colleges in the United States were established (Asgedom, 2005; Molla, 2018). These include the college of engineering (established at Addis Ababa in 1952); the Institute of Building technology (established at Addis Ababa in 1954); the college of agriculture

(established at Haremaya in 1952); the public heath college (established at Gondar in 1954), and the Theological college of the Holy Trinity (established at Addis Ababa in 1960). These colleges, in addition to their teaching function, were established to serve the local community in health, construction, agriculture and education (Bishaw & Melesse, 2017) through their 'location' factor, and deployment of their resource capabilities and activities. The colleges were later merged with the Addis Ababa University College to form Haile Selasie I University (now Addis Ababa University) in 1961 (Asgedom, 2005).

Some forms of societal engagements were also practiced after the establishment of Haile Selasie I University in 1961. For example, following the establishment of the Ethiopian University Service Program in 1964, university students were deployed into rural areas to provide community-based services for at least one year before their graduation (Molla, 2018). The Ethiopian University Service Program was designed to support rural residents in agriculture, literacy, environmental rehabilitations, health, administration and finance. According to Asgedom (2005), about 3,792 students participated in the service program from 1964-1974. Furthermore, the Haile Selasie I university established a Research and Publication Office (RPO) in 1971 to steer its research, publications and relationships with other research driven organizations (Asgedom, 2005). In 1973, Haile Selasie I University also established a University Famine Relief and Rehabilitation Organization to provide support to the people affected by drought. Members of the organization were professors and students (Asgedom, 2005). At the same time, the university was offering in-service summer and extension programs to different group of civil servants including teachers and other professionals (Molla, 2018; Tamrat, 2019).

Therefore, the SEU has been an area of involvement for Haile Selasie I University since the early 1960s. And, in line with Bender's (Bender, 2008) framework, the university's societal engagement inclines to teaching (such as service learning) and research (such as community based research) activities. Concurrently, the deployment of faculty members and students to participate in the rehabilitation and reconstructions of communities affected by natural and manmade disasters epitomizes the university's engagement in philanthropic activities that support societal wellbeing.

Universities' societal engagement was also evident during the Derg regime (1974-1991) in the form of coercive deployment of students and faculty members to different campaign programs such as adult education and literacy campaign (1976–1977), and participation in relief and rehabilitation programs (1983–1984) (Bishaw & Melesse, 2017). A committee accountable to the central government was established to design and organize the campaign programs. Albeit its contribution to the reduction in illiteracy rates and community development, many (Negash, 1990) believed that the campaign programs offered during the Derg were missioned to expand the regime's political ideology and, at the same time, to reduce the fierce unemployment rate that the regime was facing. Consequently, the campaign programs did not only detach students from their academic responsibilities (Bishaw & Melesse, 2017) but also prompt them to organize different political groups and armed struggles that eventually led to the downfall of the regime in 1991. Hence, during the Derg regime, universities' societal engagement were coercively planned and implemented by the central government and the piecemeal societal engagement activities were not linked to students' academic responsibilities (Bishaw & Melesse, 2017). Accordingly, the effort to link societal engagement activities with teaching and research functions at the Haile Selasie I university was cut short during the Derg regime.

The EPRDF-led government (1991–2018) introduced considerable changes to the engagement functions of higher education institutions. The higher education proclamation which was initially drafted in 2003 and revised in 2009 recognized societal engagement as core function of higher education institutions. According to the proclamation (FDRE, 2009), universities are entitled to achieve nine objectives. Some of the objectives uphold for the teaching, research and societal engagement functions while others call for the development of democratization, accountability and transparency. The objectives that suit for teaching, research and societal engagement activities in a respective order are 1) prepare knowledgeable, skilled, and attitudinally mature graduates in numbers with demand-based proportional balance of fields and disciplines so that the country shall become internationally competitive; 2) promote and enhance research focusing on KTT consistent with the country's priority needs and 3) design and provide community and consultancy services that shall cater to the developmental needs of the country (FDRE, 2009, p. 4979).

Accordingly, every university in Ethiopia is mandated to execute at least three functions-teaching, research and community engagement (Sijde et al., 2012).

Therefore, the SEU in Ethiopia tends to experience new dynamics since the first decades of the 21st century. First, universities' societal engagement was set as a legitimate function of universities. As a result, all public universities in Ethiopia have institutionalized organizational units relevant for research, and community and consultancy services (Eddine & Asgedom, 2015). The public universities institutionalized societal engagement units at the top (at the vice president levels), college (at the college and institute) and, in some cases, at the departmental levels (see, Addis Ababa University, 2020; Mekelle University, 2020). The institutionalization of universities' societal engagement is also reflected in terms of the load requirements of the faculty in which all teaching staff (tenured as teaching staff) are expected to spend 75 percent of their time in teaching and 25 percent in research while this load is reversed for faculty members employed as research staffs (Cremonini & Adamu, 2021; Eddine & Asgedom, 2015). However, unlike teaching and research, the amount of time that faculty members spend in societal engagement activities was not clearly presented in the higher education proclamation and universities´ legislations and this seems to substantiate Nabaho et al. (2022), who claimed that the "third mission is considered as peripheral activity as opposed to being regarded as part of the academic core"(p.87). However, this seems to be corrected in the newly ratified education and training policy which states the load distribution of the teaching staff as 60% for teaching, 25% for research and 15% for community service (FDRE, 2023a). In the same line, a nationwide harmonized promotion criterion which gives 15 percent to the academic staff's participation in community service was introduced in 2020 (MoSHE, 2020a).

However, the practice of universities' societal engagement in Ethiopia is not without problems. Among others, low attention to societal engagement activities (for example, in terms of load distribution of faculty members) (Asgedom, 2005; Tamrat, 2019), lack of relevant resources (Sijde et al., 2012), mismatch between demand and supply (Tamrat, 2019) and lack of differentiation (Ayenachew, 2015) of the higher education system are likely to affect the practice of universities' societal engagement.

2.2.3. Conditions that Derive for Universities' Societal Engagement Functions

Research in different European countries revealed that organizational changes in higher education institutions are affected by government policies and programs (Gornitzka, 1999). Ethiopian higher education is no exception. The varied government policies and strategies, including the commitment and policy directions of the international funders such as the World Bank and the International Monetary Fund influenced higher education expansion in Ethiopia (Molla, 2018), and the higher education institutions experienced diverse organizational changes in response to the global and national pressures (Mehari, 2016). In light of this, various government policies and strategies prompt universities to institutionalize societal engagement into their core activities. Some of these conditions emanate from the higher education policy instruments and frameworks while others are from the national economic policies/plans ratified since the first decade of the 21st century.

Higher Education Policy Instruments and Frameworks

The endorsement of FDRE higher education proclamation in 2003 set legal ground for the institutionalization of various activities to the universities in Ethiopia (Bishaw & Melesse, 2017) of which societal engagement is amongst others (Tamrat, 2019). Article 4 of the FDRE higher education proclamation asserted that teaching, research, and community and consultancy services are pertinent functions of universities in Ethiopia. With regard to the community and consultancy services, the proclamation asserted that universities are mandated to "design and provide community and consultancy services that shall cater to the developmental needs of the country" (FDRE, 2009, p. 4979). Hence, the proclamation prompted universities to be responsive to the economic and developmental needs of the country not only in terms of teaching and research but also in terms of community and consultancy services. Furthermore, the new education and training policy claimed for the foreseeable linkages and partnerships between the universities and other actors as "[translated] there should be viable linkage between technical vocational education and training, universities, research institutes and industries to enhance the relevance,

competitiveness and productivity of higher education and their academic programs" (FDRE, 2023a, p. 12). As a result, public universities in Ethiopia institutionalized different organizational units that respond to the national directives included in the higher education proclamation, and education policies and directives. Not least, the introductions of harmonized promotion policy for the academic staff is giving an imputes for the institutionalization of universities' societal engagement (MoSHE, 2020a).

Compounded with the higher education policy instruments, the institutionalization of societal engagement among public universities in Ethiopia is seemingly linked with the three processes of isomorphism: coercive, mimetic and normative isomorphism (Dimaggio & Powell, 1983). In terms of coercive isomorphism, the government introduced similar legal and accountability framework through its national policy instruments such as education policy (see, FDRE, 2023a) and higher education proclamations (FDRE, 2009). Besides, in terms of mimetic isomorphism university leaders imitate the name and organizational structure of other local /international universities and install into their universities. The infamous experience sharing through different formal and informal forums preclude for the mimetic isomorphism among education institutions in Ethiopia. Furthermore, the growing professional norms and networks, both within Ethiopia and internationally, have contributed to the institutionalization of SEU in a similar manner.

National Economic Policies and Plans

In addition to the higher education policy instruments, universities were prompted by various economic plans and policies to incorporate societal engagement into their core activities. The Sustainable Development and Poverty Reduction Program (SDPRP) (2000/01-2004/05); the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) (2005/06-2009/10); The consecutive ESDPs; the GTP I (2010/11–2014/15), and GTP II (2015/16–2019/20), and the STI policy are amongst others. Although comprehensive analyses into the varied economic policies and plans are lacking, these economic policies reinforced Ethiopian universities to act beyond their teaching and research responsibilities.

The SDPRP and PASDEP were guided by agriculture led industrialization (FDRE, 2010), which focused on the assumption that agricultural development precedes industrialization. Accordingly, the two economic policies (i.e., SDPRP and PASDEP) have given much emphasis to the development of agriculture. Besides, as the SDPRP and PASDEP were designed during the advent of the UN's Millennium Development Goals(MDG), the country was expounding its effort to achieve the eight goals of MDGs (FDRE, 2010). Ethiopia is rural dominated country. Hence, the SDPRP and PASDEP´s emphasis to agricultural development compared to industrialization elated policy makers and practitioners alike.

Although the SDPRP and PASDEP were vital to the expansion of the higher education institutions, the policies did not bring such bold effects in branding universities in terms of teaching, research and societal engagement functions. During the two strategic periods, much attention was given to the teaching than research and societal engagement functions of the university. Before the advent of the GTPs, the research function was not integrated into the universities organizational structure adequately (Dufera, 2004). The meager research practices were also challenged by lack of transparent , accountable and responsive organizational structures and practices (Yizengaw, 2004). Therefore, at least before 2003 there was no clear national policy that stipulates universities' activity into the teaching, research and societal engagement.

The GTPs were designed to bring structural shift in the country´s economy from agriculture-led to manufacturing driven economy (Oqubay, 2015). Specifically, unlike the SDPRP and PASDEP, the GTPs were designed to uplift the country's national economy into lower middle income country by 2025 (FDRE, 2016). Hence, in an effort to support the presumed national economic growth, the federal government enticed universities to establish strong linkage with industries. For example, the demand for university-industry linkages is emphasized as:

> In order to fulfill this requirement, emphasis will be given to establish strong linkage between the sector and universities, technical vocational education and training, college and other relevant institutions to make their programs well-matched with the sector's needs. (FDRE, 2010, p. 30).

Therefore, the GTPs considered universities as essential ingredient for the country's industrial development. By and large, much attention was given to match the universities training with the demand of the industrial and manufacturing sector. Furthermore, following the development of the first GTP, the first STI policy was developed and adopted in 1993 under the name "National Science and Technology Policy" (FDRE, 1993). However, the National Science and Technology policy framed in 1991 did not consider universities as center of science and technology. Consequently, following the draft of the national vision to become a lower middle-income country by 2025 (as stipulated in the GTPs), the national science and technology policy was replaced by a new STI in 2012 (Gizaw, 2019). The new STI (FDRE, 2012) envisions to "see Ethiopia undertaking coherent STI initiatives which eventually lead the country to begin exporting its own technologies by the year 2025"(p.1).The STI policy was actually drafted following the Grand National policies implemented since 2010. It was planned to support the country´s endeavor in ensuring economic growth and development. Similar to the GTPs, the STI provoke universities to exert commendable effort on the institutionalization of societal engagement in their structure. The STI policy sketched twelve[4] critical policy issues (FDRE, 2012) to be considered as basic issues and directions across different sectors. Three of the 12 issues (i.e., technology transfer, research and university-GRI [government research institutes]-industry linkage) have direct implications to universities´ societal engagement.

The economic policies and plans exercised in Ethiopia since 2000 affect the focus and experience of universities in at least two ways. First, the economic policies and plans provoked higher education institutions to create linkage with non-academic stakeholders (mainly the industry). For example, the ESDP V (MoE, 2015) emphasized as "universities are required to work more closely with industry stakeholders to set the research agenda, improve research processes and cultivate stronger links between knowledge and practice" (p.111). Similarly, the STI policy envisioned for tripartite partnerships between industries, universities and the technical, educational and vocational training centers (FDRE, 2010). Hence,

[4] National and regional innovation systems; technology transfer; human resource development; business firms; research; financing and incentives; national quality infrastructure; university–government research institute–industry linkage; intellectual property rights; science and technology information; environmental technologies; and international cooperation.

universities started to restitute different aspects of societal engagement offices such as KTT, university-industry linkages and community services into their organizational structures. Second, the policies and plans prompted universities to enhance their linkage with different stakeholders in terms of KTT, community services and consultancies. The STI policy, for example, asserted as:

> The current situation in Ethiopia is that universities are lagging behind the industry sector in-terms of understanding and using technology. This necessitates the linkage to be strengthened with a two-way technological flow between the universities and the industries. Their joint efforts shall be focused on identifying technologies and their sources, understanding the technologies through learning-by-doing and adaptation of these technologies. Creating a synergy of Universities, GRIs [Government Research Institutes] and Industries in imitating, adapting and generating appropriate technologies through the establishment of strong linkage shall be an urgent task.(FDRE, 2012, p. 8)

Therefore, the creation, adaptation and adoption of technologies become the concern of universities and other sectors. Consequently, the government harnessed its universities, industries, technical vocational education and training, and micro and small firms to create linkages that foster KTT among different institutional spheres.

2.3. Summary

The SEU grew together with the introduction of Western higher education to Ethiopia in the 1950s. Since then, it has shown relative improvements in its scope and institutionalization to the higher education institutions. During the 1960s, the scope of universities' societal engagement in Ethiopia was limited to outreach and service based learning activities. This was epitomized by the deployment of university students to give one year of service before their graduation and the formation of university-wide associations to participate in societal rehabilitation and reconstruction processes caused by drought and political upheavals. Therefore, between 1960 and the 1990s, the forms of universities' societal engagement in Ethiopia inclines towards service learning—a process through which students provided services to the community as a requirement of their university studies. In

addition, the university community was also participating in various philanthropic activities to deliver economic and humanitarian support to the society.

The scope and form of universities' societal engagement in Ethiopia has improved since the beginning of the 21st century. By and large, the development of the national higher education proclamation in 2003 envisioned societal engagement as one function of universities. Ever since that draft, the SEU has begun to take some institutional form and space in the higher education context as stipulated in the formation of units at the vice president, college, and departmental levels. Unlike the trends before the 1990s, various national and institutional efforts provoked universities to incorporate societal engagement as their core functions.

The institutionalization of societal engagement into the institutional setup of universities in Ethiopia could be taken as a response to the national and global shift in the roles of higher education institutions. Some of the national conditions that drove universities to institutionalize societal engagement into their core activities are linked with the development of the higher education sector (e.g., the higher education proclamation) and with other national economic policies and plans (e.g., GTPs I and II). The latter influenced higher education institutions to respond to society, not only by teaching and research, but also in terms of university–industry linkages, community-based intervention, and outreach activities.

3. ANALYTICAL FRAMEWORK

This chapter illustrates the analytical framework that guides the dissertation. The framework was developed by synthesizing the relevant literature on stakeholder theory, the triple helix, and boundary-spanning approaches. The chapter is divided into three sections. The first discusses theories that inform universities' societal engagement. Specifically, stakeholder theory, the triple helix, and boundary-spanning approaches are explored. The second deals with the conceptual framework, focusing on the pertinent themes related to the reciprocal benefits of universities' societal engagement, the factors that influence the reciprocal benefits of universities' societal engagement, and the mechanisms through which universities can enhance the sustainability of their societal engagement activities. The conceptual framework is developed by distilling the major theories (Kezar, 2006; Ngulube, Mathipa, & Gumbo, 2015) so as to address the pertinent tenets of the research questions. The third section of the chapter introduces the analytical model developed from the pertinent theories and extant literature on universities' societal engagement.

3.1. Theories Informing Universities' Societal Engagement

Previous research (Benneworth & Jongbloed, 2010; Jongbloed et al., 2008) highlights the relevance of stakeholder theory to justify and study universities' societal engagement. Societal engagement help universities address parts of the needs reflected by their stakeholders. Along this line, the implementation of universities' societal engagement calls for sustained linkages among different groups of actors (Chandramohan & Bhagwan, 2022; Janke, Flores, & Edwards, 2022) that interact across institutional boundaries (Comacchio, Bonesso, & Pizzi, 2012). Therefore, in addition to stakeholder theory, conceptual models that address partnership and interaction across institutional boundaries (such as the triple helix and boundary-spanning approaches) may also offer insights into the practice of universities' societal engagement. Therefore, this section discusses the three theories—stakeholder theory, the triple helix model, and boundary spanning approach—that provide a framework for analyzing universities' societal engagement.

3.1.1. Stakeholder Theory

Stakeholder theory remained a prominent theory in business management since the 1980s (Stieb, 2009). It asserts that "business is about how customers, suppliers, employees, financiers (stakeholders, bondholders, banks, etc.), communities, and managers interact and create value" (Freeman, Harrison, Wicks, Parmar, & de Colle, 2010, p. 24). Stakeholder theory demonstrates how business organizations map, interact, and manage their stakeholders (Ackermann & Eden, 2011). A stakeholder is an individual or group with an interest in the operations of a business organization (Mitchell & Wood, 1997).

Stakeholder theory is based on two key assumptions. First, the survival of a business is not only determined by its shareholders (Argandoña, 2011). Traditionally, business organizations strove to maximize profit for their shareholders and thus paid little attention to non-shareholders. However, later developments in the strategic management of business organizations chronicled that shareholders are not the only groups that determine an organization's fate. In addition to shareholders, business organizations are influenced by groups of stakeholders that have direct or indirect relationships with them; thus, a firm should be managed for all stakeholders (Ackermann & Eden, 2011).

Second, interaction and value creation are sources of organizational success. Interaction implies reciprocal communication between a firm and its stakeholders (Freeman et al., 2010). It helps identify the needs of stakeholders and craft organizational responses that address those needs. Among the types of interactions is a contractual agreement between the business and its stakeholders (Freeman, Harrison, & Wicks, 2007). Value creation, on the other hand, captures the monetary or non-monetary benefits that stakeholders gain from business interactions (Jensen, 2002). While monetary values are extrinsic, non-monetary values are intrinsic. Argandoña (2011) further classifies non-monetary values into intangible extrinsic (e.g., recognition), psychological intrinsic (e.g., satisfaction with the work done), intrinsic learning (e.g., the acquisition of knowledge), transcendent (e.g., the acquisition of new values and principles), and negative or positive externalities (e.g., spillover effects that benefit or harm the environment).

Stakeholder theory assumes that value creation and interaction have key effects on the success of business organizations. A business is not only established to make financial profits but also to create an environment where stakeholders, including shareholders, gain both economic and non-economic benefits. A business that focuses on its owners without paying attention to customers, employees, and suppliers is a business in decline (Freeman et al., 2010).

However, not all stakeholders are equal. Freeman et al. classified stakeholders into primary and secondary groups; the former are "those groups without whose support, the business would cease to be viable" (Freeman et al., 2010, p. 25). Primary stakeholders have strong effects on organizations relative to secondary groups of stakeholders. Hence, a business would be at risk of failure if its interactions with primary stakeholders is insufficient. Secondary stakeholders, on the other hand, are groups "that can affect or be affected by the realization of an organization's purpose"(Freeman et al., 2010, p. 26). Compared to primary stakeholders, secondary stakeholders have limited power to influence business organizations.

Freeman et al. attempted to enumerate primary and secondary groups of stakeholders. Accordingly, while the primary stakeholders of a firm comprise owners, suppliers, employees, customers, and communities, secondary groups of stakeholders embrace media, special interest groups, consumer advocacy organizations, competitors, and governments. However, the types of primary and secondary stakeholders vary with the nature of a firm (Ackermann & Eden, 2011). Hence, the classification of stakeholders into primary and secondary groups is not universally applicable to all cases.

Another way of classifying stakeholders is on the basis of interest and power domains. Power refers to stakeholders' influence on other groups of stakeholders; it is, "the ability of individuals or groups to persuade, induce or coerce others into following certain courses of action" (G. Johnson, Scholes, & Whittington, 2008, p. 160). Some stakeholders have more power than others. Interest, on the other hand, refers to stakeholders' levels of expectation from business organizations (Ackermann & Eden, 2011). Therefore, on the basis of the power/interest matrix, stakeholders can be classified into four groups (Ackermann & Eden, 2011; Williams & Lewis, 2008).

Table 1 Power/Interest Matrix of Stakeholders

		Interest	
		High	Low
Power	High	Key players (Quadrant 1)	Keep satisfied (Quadrant 2)
	Low	Keep informed (Quadrant 3)	Minimal effort (Quadrant 4)

Source: Mendelow (1991), as cited in G. Johnson et al. (2008)

As indicated in Table 1, Quadrant I (Q1) comprises stakeholders with strong power and high interest in the function of the business. Ackermann and Eden (2011) assert that stakeholders with high power and high interest can easily sabotage a firm. In short, stakeholders with high power and high interest are *´key players´* in the overall function of an organization.

Quadrant 2 (Q2) contains stakeholders with high power to influence but with low interest in how the business performs. They have the same high power as those key players, but their interest in influencing the organization is low. Therefore, businesses are expected to keep Q2 stakeholders satisfied. Provided that they are satisfied, stakeholders with high power and low interest are less likely to influence the organization (Ackermann & Eden, 2011; G. Johnson et al., 2008). Ackermann and Eden (2011) describe the stakeholders in Q2 as future context setters.

The next groups of stakeholders are those with low power and high interest; they are in Quadrant 3 (Q3). These are highly interested in knowing about the performance of an organization, but their power to influence an organization compared to other group of stakeholders is low. Hence, the business is expected to keep these groups of stakeholders informed. Finally, stakeholders with both low power and low interest are in Quadrant (Q4); they have a negligible effect on the organization. Ackermann and Eden (2011) characterize this group of stakeholders as currently exhibiting "neither interest in nor power to influence strategy outcomes" (p. 183). Therefore, managers should expend minimal effort on the Q4 group

because they have limited interest in or ability to contribute to (or impede) the success and sustainability of the business.

Mitchell and Wood (1997), meanwhile, proposed three attributes to understand the salience of stakeholders: power, legitimacy, and urgency. Salience refers to the degree to which an organization gives priority to the intentions and demands of stakeholders (Cho, 2017). Theoretically, the three attributes complement one another. Power involves the capability of stakeholders to influence the firm using its coercive (the application of physical measures), utilitarian (the application of material rewards), or normative (the application of normative or social symbols) abilities. Legitimacy refers to the acceptability of stakeholders' behavior and action in relation to the organization's values, principles, and traditions. For example, given intense market competition and budget cuts, it is becoming legitimate for higher education institutions to create relationships with various stakeholders in industry or to diversify their stakeholders beyond traditional ones such as students and governments. Urgency implies how pressing, critical, sensitive, or demanding the involvement of stakeholders is to address problems. Stakeholders that address an organization's critical issues are more important than those focused on less urgent and less sensitive issues. Mitchell and Wood further classified stakeholders with one attribute as latent, stakeholders with two attributes as expectant, and those with all three attributes as definitive.

There is thus no consensus on mapping and classifying stakeholders. Organizational type and the purpose of interactions between an organization and stakeholders may contribute to differences in classifying stakeholders, who may even occupy multiple positions in an organization (Ackermann & Eden, 2011), depending on the nature of their interactions and the organization's work processes. A stakeholder could be a primary stakeholder in one regard (e.g., the work process of an organization) and secondary in other aspects. In sum, the understanding of stakeholder management remains unclear: "that is, who (what) are the stakeholders of the firm? And to whom (what) do managers pay attention?" (Mitchell & Wood, 1997, p. 853).

Applications of Stakeholder Theory to Higher Education Institutions

The stakeholder theory was built for corporate business companies (Benneworth & Jongbloed, 2010), that are different from universities. Hence, its application to public and non-profit originations such as universities requires careful examination (Chapleo & Simms, 2010) focusing; first, universities as firms or businesses and their interactions with different groups of stakeholders, second, society and its varied components as stakeholders, and, third, the value that universities create for their stakeholders.

A firm is a business organization that buys and sells goods and services for profit. According to Taylor (2006), the "firm is seen as a key driver of economic change, innovation, and knowledge transfer. It is the site of enterprise and entrepreneurial endeavor. It is the locus of job and wealth creation. It is the source of competitive advantage" (p. 87). Therefore, despite the difference in purpose and practice, there appears to be a growing convergence between the nature of firms and contemporary models of higher education institutions. The similarity between a firm and a university is evident among contemporary university models, particularly the entrepreneurial universities. Etzkowitz (2013) summarized as strategy and priority formulation, regional and societal development, and technology transfer are the key characteristics of entrepreneurial universities. As for firms, higher education institutions develop long- and short-term strategic plans that are based on systematic environmental scanning—a processes of collecting, analyzing, and acting on the demands of the external environment (Mendelow, 1981). Higher education institutions perform situational analysis in the form of strengths, weaknesses, opportunities, and threats, identify key stakeholders, and set and prioritize strategic goals (Dooris, Kelley, & Trainer, 2004). Therefore, like business firms, higher education institutions collect, analyze, and act on environmental demands through strategic plans and setting priorities.

Universities are also engaged in transferring knowledge and technology to ensure regional and economic development. Contemporary universities are not isolated institutions like they were in the medieval period; nor are they merely teaching and research organizations, as they were at the beginning of the 19th century. Today's universities play fundamental roles in social development (Etzkowitz, 2008) through

societal engagement activities (Kohoutek, Pinheiro, Čábelková, & Šmídová, 2017; Roper & Hirth, 2005) and other externalities (Peer & Penker, 2016; Watson, 2007).

There is also a growing convergence between businesses and universities in terms of governance and organizational structures. This is exemplified by, among other aspects, the introduction of business management models (Mehari, 2016; Reda, 2017; Soares, Steele, & Wayt, 2016) such as the Balanced Scorecard, business process reengineering, and Kaizen. Hence, although universities are often described as unique institutions, considerable elements of their internal operations and structures are similar to business organizations. Therefore, as businesses strive to map and manage their stakeholders, so do universities (Dooris et al., 2004).

Universities have multiple stakeholders (Kettunen, 2015). However, mapping the stakeholders of universities is difficult. Musial (2010) classified the stakeholders of a university following Freeman *et al.'s* classifications of primary and secondary stakeholders. The same author has classified university stakeholders on the basis of geographical location into internal and external stakeholders. Others (Cho, 2017; Jongbloed et al., 2008; Kettunen, 2015) used similar analytical frames to map university stakeholders.

Kettunen (2015) asserts that primary stakeholders without whose support the university would cease to exist includes customers (students), employees (faculty and administrative staff), communities (the societal groups and institutions that receive services from universities), funders (the state or private sources), and suppliers (companies that produce educational equipment and provide other services to universities). Conversely, secondary groups of stakeholders that influence or are influenced by the university may include media, interest groups, competitors, student unions, and alumni (Kettunen, 2015). Unlike the primary stakeholders, the influence of secondary stakeholders on a university tends to be indirect and implicit.

Furthermore, not all universities have similar types of primary and secondary stakeholders. The dynamics of universities may contribute to differences in the types of primary and secondary stakeholders. For example, private for-profit universities pay significant attention to the needs of their shareholders than the government. Conversely, public universities consider governments to be the major reason for

their existence. Therefore, categorizing universities stakeholders into primary and secondary group is not a simple exercise; what is primary for one type of university could be secondary for another.

Researchers such as Benneworth and Jongbloed (2010) applied the salience of stakeholders to understand the varied groups of universities' stakeholders. Specifically, they argued that the salience of stakeholders in humanities, arts, and social science is different from those in hard science disciplines. These researchers revealed that external conditions such as policy directions and the network of relationships among different actors contribute to the salience of university stakeholders. Accordingly, they proposed a multi-level approach to understand those stakeholders. Meanwhile, Chapleo and Simms (2010) identified three key factors to determine the influence of stakeholders on a university: students recruitment and satisfaction, financial implications, and the potential impact on the strategic direction of the organization.

In light of stakeholder theory, two assumptions can be drawn to analyze universities' societal engagement activities. First, universities are not only responsible to their major funders. Universities serve many stakeholders. Kerr (2001). asserts that the university's "edges are fuzzy—it reaches out to alumni, legislators, farmers, businessmen, who are all related to one or more of these internal communities" (p.14). Second, universities interact with and create value for their stakeholders, including society as a whole. Unlike traditional ivory-tower understandings, contemporary universities strive to address societal needs in terms of human capital development, knowledge production, and spin-off activities (Jongbloed et al., 2008). The SEU addresses the demand of stakeholders for knowledge, technology and social, cultural, and economic development (Secundo et al., 2017).

Therefore, relying on stakeholder theory, it is possible to hypothesize that through societal engagement universities interact with and create value for society, which is made up of different entities. However, stakeholder theory lacks specificity. First, who are the key stakeholders in the implementation of these societal engagement activities? Second, what do universities give and receive from society and other stakeholders, and how do they create value from their interactions with different stakeholders? As stakeholder theory was developed to explain the relationship

between firms and their stakeholders; thus, it cannot be expected to specify the key stakeholders and activities of universities in terms of societal engagement. In this regard, the application of the triple helix may help overcome some of the limitations of stakeholder theory regarding the SEU.

3.1.2. Triple Helix Model

The triple helix model demonstrates the dynamic interactions between governments, industry, and universities to foster innovation and economic growth (Cai & Lattu, 2022; Etzkowitz, 2008). Depending on the nature of those interactions, Etzkowitz (2008) identified three paths: statist, laissez-faire, and interactionist.

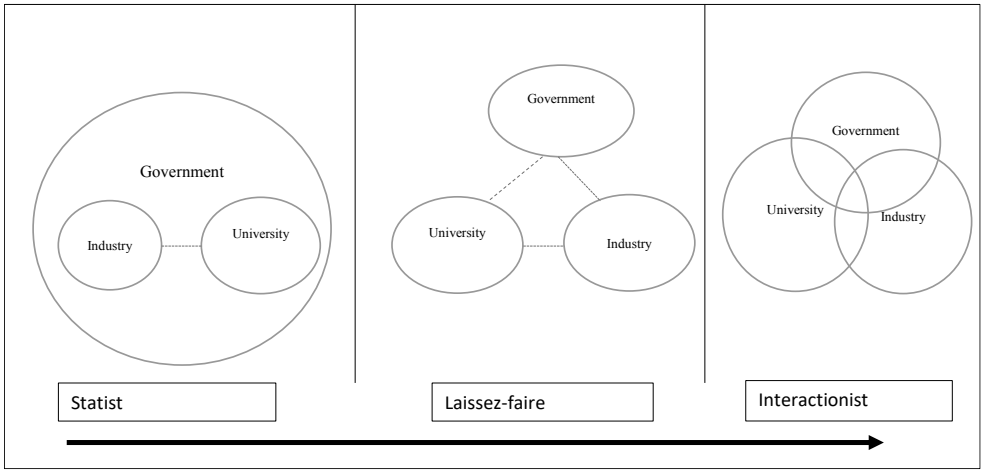

Figure 3 The Three Paths to the Triple Helix
Source: Etzkowitz (2008)

In the statist approach, the central government "plays the lead role, driving academia and industry" (Etzkowitz, 2008, p. 8). Thus, universities produce knowledge and human capital that industry requires, and the government focuses on the provision of resources and regulatory tools that enhance interactions between industry and universities (Etzkowitz & Zhou, 2007). The statist approach characterizes higher

education systems in developing countries, where government involvement in the expansion and governance of industry and university is prevalent (Etzkowitz & Dzisah, 2007). The statist model of the triple helix has been dominant in the former Soviet Union, France, and many Latin American countries (Cai & Etzkowitz, 2020).

In the laissez-faire approach, the three institutional spheres interact across strong organizational boundaries (Cai & Etzkowitz, 2020). The university is engaged in the production of a trained labor force and the production of knowledge applicable to industry, which is, in turn, involved in the production of goods and services. Hence, in the laissez-faire approach, the role of the government is limited to addressing market failures (Cai & Etzkowitz, 2020; Etzkowitz & Dzisah, 2007); thus, it is up to the individual elements of the helix to find and interact with one another (Etzkowitz, 2008). Compared to the interactionist path, the interaction among different helixes is weaker in the laissez-faire approach (Etzkowitz & Zhou, 2007).

The interactionist approach is also called a balanced triple helix (Cai & Etzkowitz, 2020) and consists of overlapping but relatively independent institutional spheres (Etzkowitz & Dzisah, 2007). In the interactionist approach, each institutional sphere takes on the roles of the other spheres: "The university can play industry's role, in assisting firm formation and technology transfer, but not as a true enterprise. The same holds for industry and the government. The industry may perform like a university, but it is unlikely to stray too far from its core mission" (Etzkowitz, 2008, p. 18). The interactionist approach is the ideal approach of the triple helix perspective (Liu & Cai, 2017); unlike the other paths, valorization and interaction clearly exist (Cai & Etzkowitz, 2020). Valorization, according to the OECD (2019), implies the effort to maximize "access to and impact of academic research [and] expanding its value beyond academia"(p.383).

Furthermore, depending on who initiates an innovation, Etzkowitz & Zhou (2007) proposed three variants: the university-pushed, the government-pulled, and the industry-led triple helix models. These classifications are congruent with the statist, laissez-faire and interactionist or balanced models of the triple helix, respectively. In the university-pushed triple helix, the university initiates the innovation and eventually collaborates with the other two spheres. Similarly, in the government-pulled model, the government is a key actor in initiating and organizing innovation.

Thus, it establishes centers of innovation that can eventually cooperate with universities and industry. In the industry-led triple helix model, the industry takes the initiative to develop innovations and circulate them to the other spheres. The university-led model has been dominant in the United States (at least before World War II; (Cai & Etzkowitz, 2020), while the government-pulled and industry-led approaches were commonly exercised in China and Germany, respectively (Etzkowitz & Zhou, 2007). The variants of the triple helix models proposed by Etzkowitz and Zhou (2007) reveal that the epicenter of innovation varies depending on country's economic and social development.

Several studies have attempted to extend the institutional spheres of the triple helix. Carayannis and Campbell (2009) expanded the institutional spheres into a quadruple helix and then into *N*-helixes. The quadruple helix added civil society, which has led to the argument that the institutional spheres behind innovation and economic growth are theoretically infinite.

However, proponents of the triple helix (Cai & Etzkowitz, 2020; Leydesdorff, 2012) contend the inclusion of additional strands to the triple helix model. Amidst the varied representations like consumer (Ivanova, 2014), community (Doh, 2018), non-governmental organization (Lindberg, Lindgren, & Packendorff, 2014), civil society (García-terán & Skoglund, 2018), and the glocal dimension (Leydesdorff, 2012), civil society is difficult to consider as an institutional sphere at the same level as government, industry, and universities (Cai & Etzkowitz, 2020). Leyderdorff (2012) goes on to assert that "the helices represent specialization and codified systems which evolve from and within civil society. A pluriform 'society' is no longer coordinated by a central instance (such as 'Rome' or 'Moscow') but functions in terms of interactions among variously coded communications" (p.30).

The distinction between the triple helix and the quadruple helix has attracted the attention of several researchers. Cai and Lattu (2022) identified three perspectives: the triple and quadruple helixes as isolated, the triple and quadruple helixes as an evolutionary move, and the triple and quadruple helixes as supplementary concepts. These three perspectives fall along a continuum with isolated at one end and integrated on the other.

Others have attempted to extend the triple helix model by focusing on the role of the central and local governments. For example, two forms of triple helix models (see, Fig 4) were developed from the explorations of the triple helix in regions and economic zones in China. These include the delayed government-led model (Cai, 2014) and the statist-fading balanced model (Liu & Cai, 2017). The difference between these two models is the position of central and local governments in the interaction among the three institutional spheres. In the delayed government-led model, the role of the central government increases through time and hence tends to replace local or regional governments. By contrast, the role of the central government in the statist-fading balanced model tends to disappear over time and be replaced by local governments (Liu & Cai, 2017).

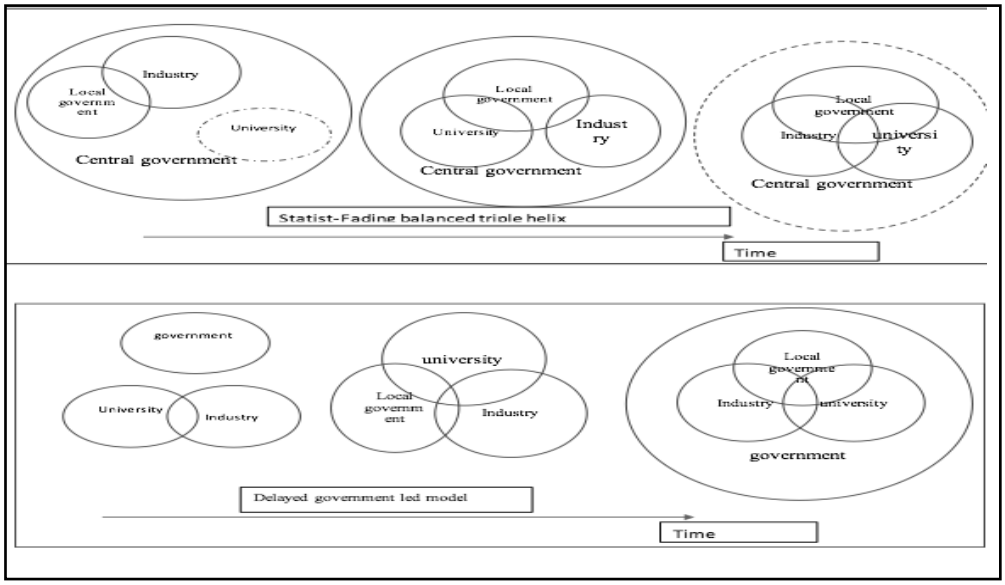

Figure 4 Variations of the Triple Helix
Source: Cai (2014) and Liu and Cai (2017)

The triple helix models proposed by Cai and Liu have two contributions. First, the models show that the government has various analytical layers (Cai & Etzkowitz, 2020), such as central, regional or provincial, and local levels. Second, the forms of interaction among different helixes vary with the passage of time. Therefore, the context within which the three institutional spheres operate may contribute to the diversity of actors and forms of interaction. Hence the path to the triple helix model

is not linear. Depending to the context and the maturity of interactions (Cai, 2014; Liu & Cai, 2017), the relations between the three institutional spheres are dynamic (Etzkowitz & Dzisah, 2007).

Key Characteristics of the Triple Helix Model

Triadic Interaction and Mutual Benefits: The triple helix holds that there are symbiotic relationships among the three institutional spheres (Cai & Etzkowitz, 2020). Hence the interaction among the three spheres is reciprocal and mutual (Etzkowitz & Dzisah, 2007). However, mutual does not mean equal. In addition, depending on the nature of the institutions, the contribution of each institutional sphere to the tripartite interaction is not identical (Etzkowitz, 2008). The government, for example, sets national policies that help the other two institutional spheres function individually and collaboratively. Similarly, as universities contribute knowledge and human capital, industry may contribute funding and research settings for academia. Therefore, the maturity of interactions as explained in terms of length of time, and context compounded with the institutional logics (Cai, 2014; Liu & Cai, 2017) contribute to the mutual interactions across the three institutional spheres.

Evolutionary Interaction: According to Etzkowitz (2008), the reciprocal interaction among the three spheres unfolds across three sequential levels: collaborative, role-taking, and trilateral interactions. At each level, the roles of government, industry, and universities are different. At the collaborative level, the institutional spheres cooperate to one another retaining their traditional tasks. For example, industry and government receive knowledge and technology from universities, while academia receives resources from industry (Etzkowitz, 2008). However, at the role-taking stage, each institutional sphere is engaged in tasks that are not part of its traditional role. Industry, for example, may provide academic training, while universities may establish for-profit businesses. Unlike the collaborative stage, the role-taking stage transforms the internal dynamics of the three institutional spheres (Cai & Etzkowitz, 2020; Etzkowitz, 2008). In the trilateral stage, the three institutional spheres fuse their efforts and form business ventures like incubator centers and science parks;

thus, each institutional sphere makes a legitimate effort to reinforce innovation across the interacting boundaries (Etzkowitz, 2008).

Circulation of Knowledge, Technology, and People: As indicated by Viale and Etzkowitz (2005), knowledge is the DNA of the triple helix model. It defines the constant maneuver of the three strands and leads to innovation and economic growth. Depending on the nature of the paths to the triple helix, knowledge and technology could be centered in either universities or industry. For example, in the statist model, knowledge and technology are likely to start in the university and ultimately be transferred into industry. However, in the laissez-faire and interactionist levels, knowledge and technology can be produced by industry and transferred to universities. In both the statist and laissez-faire paths, the centrality of knowledge and technology may be transferred from universities to industry. However, as the interaction between the three institutional spheres mature and reach their ideal shape—that is the interactionist stage (Etzkowitz, 2008), knowledge and technology are shared among all three institutional spheres rather than being transferred from one to another.

The circulation of people generally implies the movement of personnel from one strand into another. It can be realized in different forms, such as unidirectional or permanent movement, in which people change their work environments from one institutional sphere to another, double-life movement, in which people simultaneously hold positions in two spheres, and alteration, in which individuals change positions across different institutional spheres. The circulation of people facilitates the circulation of knowledge and technology across the three institutional spheres (Etzkowitz & Zhou, 2007).

The triple helix model is not self-organized (Cai & Etzkowitz, 2020); indeed, the commitment and capability of leaders in the three institutional spheres are essential to achieving the purposes of the triple helix model.

3.1.3. Boundary Spanning

Boundary spanning is part of systems theory, which asserts that the components of a system are interdependent with one another (Lai & Lin, 2017). With its roots in systems theory, boundary spanning demonstrates the processes of linking, partnering, and cooperating by different organizations within a given environment (Ernst & Chrobot-Mason, 2011) through boundary roles and spanners (Schotter, Mudambi, & Doz, 2017).

According to systems theory, organizational boundaries can be thought of as "barricades" (Ringel, Hiller, & Zietsma, 2018, p. 2) that serve as a checkpoint for things that come into and go out of an organization. Therefore, boundaries separate organizations from their external environments (Pilbeam & Jamieson, 2010). For instance, they separate people into groups of "us" and "them" (Ernst & Chrobot-Mason, 2011). Since all components of a system are interdependent (Bess & Dee, 2008a), one organization is likely to cross the boundary of another organization in a process known as boundary spanning (Aldrich & Herker, 1977). Boundary spanning fosters innovation through the exchange of people, resources, knowledge, and technology (Mull & Jordan, 2014).

Relying on systems theory, boundaries are classified into two types: permeable or impermeable (Ringel et al., 2018). The former allows the free flow of resources and information to and from an environment. Organizations with permeable boundaries freely accept inputs and distribute outputs to the environment. Conversely, impermeable boundaries are closed boundaries that restrict the flow of information and resources into and out of an organization. However, absolutely impermeable or permeable boundaries are practically nonexistent (Ringel et al., 2018). In an open system such as universities, the boundaries between organizations and other environmental components are relatively open (Bess & Dee, 2008a). Scott (2003) emphasizes that organizational boundaries are symbolic; they are used to control inappropriate or deleterious elements.

Ernst and Chrobot-Mason (2011) propose five organizational boundaries on the basis of power, directions of interactions, and geographical proxies. These are vertical boundaries (across levels, rank, and seniority), horizontal boundaries (across

functions, units, peers, and expertise), stakeholder boundaries (taking in external partners); demographic boundaries (between diverse groups, including the full range of human experience), and geographic boundaries (across distance, location, and culture). These five boundary types are applicable for understanding the power differences of different organizational boundaries. In boundary spanning, the power difference between organizations may define the form, depth, and scope of interactions (Aldrich & Herker, 1977).

Organizational boundaries perform various functions. According to Aldrich and Herker (1977), information processing and external representation are the key functions of boundaries. In the case of information processing, organizational boundaries refine and process external information through different scanning strategies. In so doing, they disseminate information into different units of the organization and, when necessary, to external stakeholders. Information processing helps filter, store, and transfer information. In addition, in the case of external representations, organizational boundaries play pivotal roles in personifying the institution's "public face" (Bess & Dee, 2008b, p. 722). Information processing and external representation are interdependent and thus help create an interface among different organizational boundaries (Pilbeam & Jamieson, 2010).

Boundaries help divide organizations into internally cohesive parts or units, which enhances the effectiveness of organizational leadership and management. Without division, it would be difficult to manage any organization. Boundaries are also used to distinguish a given organization from others. For example, in the context of higher education institutions, boundaries are used to distinguish academic disciplines (such as those in the natural science *vs.* the social science disciplines), employees (such as academic *vs.* support staff), students (e.g., undergraduate *vs.* postgraduate), and functions (such as teaching *vs.* research; (Pilbeam & Jamieson, 2010). Each organizational unit has a boundary that separates it from the others. Therefore, organizational boundaries are used to distinguish and characterize organizations (Schotter et al., 2017). According to Scott (2003), there cannot be an organization in the absence of boundaries, which are essential to drawing lines (such as physical or virtual territories) that separate the internal context of an organization from its external environment (Bess & Dee, 2008a; Schotter et al., 2017) or different components within an organization from one another (Pilbeam & Jamieson, 2010).

Boundary spanning relies on boundary spanners (Wyborn, Meyer, Addison, & Curran, 2018) that involve practitioners like leaders, management teams, and extension workers (Pilbeam & Jamieson, 2010) and organizational units or subunits like technology or knowledge transfer centers and community service centers (Comacchio et al., 2012). Without boundary spanners, organizations can barely survive. Bess and Dee (2008b, p. 707) suggest that "boundary-spanning personnel occupy key, strategic roles for processing information from the external environment. They also identify and work with external stakeholders who have some degree of involvement in or influence over the institution" (p. 707). Thus, boundary spanners bridge the space between an organization and other components of the system. Mull and Jordan (2014, p. 57) state that the boundary spanner "is much like a bridge that allows cars, vehicles, and pedestrians to traverse dangerous waters, uneven land, or unknown items below" (p. 57). They possess unique skills, responsibilities, and commitment to link their organization with other components of systems (Sandmann, Jordan, & Mull, 2014) and are at the frontline of the organization in executing its functions and creating relationships with stakeholders and other actors.

Boundary spanners play a considerable role in the interactions between organizations and the wider ecosystem. Previous research (Bess & Dee, 2008b; Pilbeam & Jamieson, 2010; Wyborn et al., 2018) has identified four roles of boundary spanners: communication with a diverse group of stakeholders, creating relationships with others for mutual benefit, acquiring resources, and mediating conflicts between two or more actors.

Nonetheless, it is important to note that boundary-spanning roles are not always explicitly identified. Leaders spend much of their time on things that are barely mentioned in their job descriptions, such as information gathering and enhancing external representation (Pilbeam & Jamieson, 2010). Waugh argues that university "presidents are being held more accountable to external constituencies, particularly the public officials and business leaders involved in hiring them" (2003, p. 84); thus, they spend much of their time in meetings and discussions, including dealing with emails and phone calls (Mcminn, 2014).

Boundary spanning is guided by different mechanisms. For example, Scott (2003) indicates that bargaining, contracting, co-optation, joint ventures, hierarchical contracting, strategic alliance, mergers, and associations are among the common boundary-spanning mechanisms in organizations. These mechanisms help organizations reduce uncertainty and manage power differences with other organizations (Pfeffer & Salancik, 2003).

Application of Boundary Spanning to Higher Education Institutions

Boundary spanning characterizes all organizations (Aldrich & Herker, 1977). In the context of higher education, the elements of boundary spanning are applied in organizational structure and the development of leadership. As to the former, boundary spanning is demonstrated by organizational reliance on boards, top executives, middle managers, and practitioners (Pilbeam & Jamieson, 2010). Boundary spanning is not performed by a single person (Friedman & Podolny, 1992) but involves the participation of various actors and units in an organization. Thus, organizations like universities develop structures and leadership models that help span their boundaries with different aspects of the environment (Ernst & Chrobot-Mason, 2011).

Universities are networked organizations (Pilbeam & Jamieson, 2010), so they perform intra- and inter-boundary-spanning processes. In their intra-boundary spanning processes, they cooperate with other universities, while in their inter-boundary spanning endeavors, they are partnered with organizations like firms, research centers, and governments (Comacchio et al., 2012) to increase access to resources, solve societal problems, and build partnerships (Adams, 2014; Pilbeam & Jamieson, 2010). Through boundary spanning, universities are likely to enhance their resource base, information sharing, and competence to deal with external complexities (Ernst & Chrobot-Mason, 2011; Pilbeam & Jamieson, 2010). The emergence of the entrepreneurial (Etzkowitz, 2013) and engaged (Mcdowell, 2003) university models epitomizes how boundary-spanning processes have become vital in ensuring the sustainability of higher education amid external complexities. Boundary spanning is an essential strategy for universities to extend their boundaries

and incorporate potential funders and cooperating actors (Clark, 1998; Sandmann et al., 2014).

Boundary spanning is also becoming an instrument to reshape the leadership of higher education institutions. Boundary-spanning leadership, a model that focuses on the "capability to create direction, alignment, and commitment across boundaries in service of a higher vision or goal" (Fick-cooper, Williams, Moffatt, & Baker, 2019, p. 288), is the hinge of boundary-spanning processes. It scaffolds universities' abilities to secure resources in the face of stringent financial measures. For example, in the United Kingdom, the removal of block-grant government funding, a changing regulatory environment, internationalization, external engagement, and rapid developments in information and communication technologies have led universities to implement boundary-spanning leadership (Prysor & Henley, 2018), which involves three strategies and six tactics (see Table 2).

Table 2 Strategies and Tactics of Boundary-Spanning Leadership

RN	Strategies	Tactics	Description
1	Managing boundaries (focus on differentiation)	Buffering	Defining boundaries and scope of work units.
		Reflecting	Understanding how different groups and units work.
2	Forging common ground (focus on integration)	Connecting	Creating new networks and deeper relationships that lead to trust.
		Mobilizing	Creating new tone and structure suitable for interaction.
3	Discovering new frontiers (focus on differentiation and integration)	Weaving	Creating innovative ideas and new solutions and advance interdependence.
		Transforming	Nurturing new processes that reimaging existing practices.

Sources: Ernst and Chrobot-Mason (2011); Fick-Cooper et al. (2019).

The strategies and tactics of boundary-spanning leadership prompt organizations to enter new areas of cooperation and partnership. Ernst and Chrobot-Mason (2011) note that "through these practices you will be able to transform borders into new frontiers to solve problems, create innovative solutions, and evolve and transform your organization to thrive in a flat world" (p. 4).

Boundary-spanning leadership is clear in today's universities. Pilbeam and Jamieson (2010) state that "universities operate within an higher education sector that increasingly requires institutions to interact with multiple stakeholders across organizational boundaries" (p.774). Moreover, in terms of universities' societal engagement, Weerts and Sandmann (2010) identify four distinct boundary-spanning roles: community-based problem solver, engagement champion, technical expert, and internal engagement advocate.

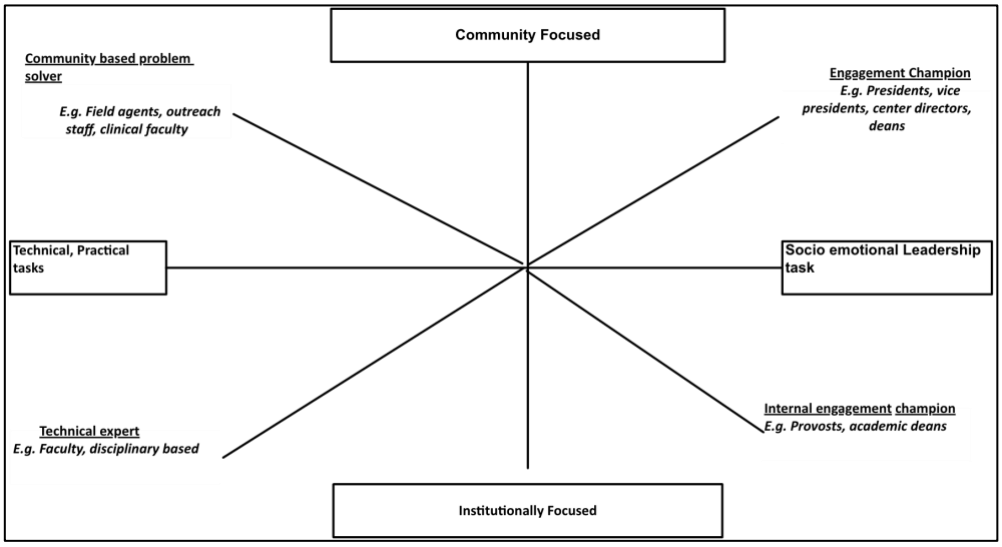

Figure 5 Boundary-Spanning Roles in the Community Engagement of Universities
Source: Weerts and Sandmann (2010)

Figure 5 depicts the boundary-spanning roles in the SEU. The horizontal line demonstrates task orientation, while the vertical line demonstrates the social closeness of boundary spanners. Task orientation stretches from purely technical and practical skills to social-emotional and leadership tasks. Similarly, the continuum for social closeness ranges from institutionally focused and thus inward looking to community focused: i.e., outward looking. On the basis of these perspectives, Weerts and Sandmann (2010) propose four boundary-spanning roles applicable to universities' societal engagement. However, those roles are neither static nor mutually exclusive (Sandmann et al., 2014).

The community-based problem solver is characterized by high social closeness and high task orientation. Boundary spanners who fall into the community-based

problem solver quadrant are engaged in societal problems that require technical skills and applications. Weerts and Sandmann (2010) posit that "community-based problem solvers are on the front lines of making transformational changes in communities; they typically focus on problem support, resource acquisition, and overall management and development of the partnership" (p. 643).

The technical expert boundary spanner possesses a practical and content-focused task orientation. Technical experts are more closely connected to the university than the community. Therefore, they place significant emphasis on the production of technical knowledge. According to Weerts and Sandmann (2010), the characteristics of technical experts are congruent with the behaviors of traditional faculty—that is, those who are focused on the production of knowledge and skill rather than its application and relevance to the community.

Internal engagement advocates are closer to the institution than to society. Accordingly, they focus on the development of an internal infrastructure that can support universities' societal engagement. Internal engagement advocates hold leadership positions and help direct higher education institutions toward their societal engagement responsibilities (Weerts & Sandmann, 2010).

The engagement champion boundary spanners are equipped with socio-emotional leadership tasks and have a stronger external dimension to their work (Weerts & Sandmann, 2010). Hence, they champion interactions between the university and society. Engagement champion boundary spanners embrace top leaders who possess adequate mediation skills to manage relationships between their universities and external authorities.

The aforementioned discussions reveal that the boundary spanning can be applied in higher education institutions to diagnose and direct their interactions with external stakeholders. Universities are engaged in the transverse of historically divided lines to ensure their existence or to bolster national and regional development through research, teaching, and outreach activities.

Therefore, relying on the literature discussed above, four assumptions can be drawn to explore issues of universities' societal engagement. First, the SEU is part of the

wider endeavors that universities carry out to span boundaries. It is a means to cooperate with other actors that, in one way or another, contribute to their sustainability and responsiveness of universities to their stakeholders. Second, the SEU as a boundary-spanning process is affected by both boundary-spanning individuals (practitioners and leaders) and boundary-spanning units in higher education institutions and other actors that have partnered with the university. Practitioners with an ample understanding of and commitment to solving societal problems are likely to foster the sustainability of societal engagement activities. In addition, the ways through which boundary interfaces are created contributes to the mutual benefits of universities' societal engagements. Third, the role of boundary spanners is bidirectional. On one hand, they transfer knowledge and skills to stakeholders; on the other, they bring emerging issues in society to the university or vice-versa (Mull & Jordan, 2014). Fourth, the alignment and coherence of boundary spanners working at multiple levels contribute to the sustainability and mutual benefits of universities' societal engagement. Pilbeam and Jamieson (2010) note that university leaders perform a substantial boundary-spanning role beyond their other management responsibilities. University leaders often engage with other institutional spheres such as industry and regional development agencies to develop their universities' resource bases. Therefore, through boundary spanning, university leaders increased the possibility of understanding potential allies and their demands of the university. In addition, higher education leaders use boundary spanning to enhance the relevance and ultimately position their institutions within the local, regional, national, and international environments.

3.2. Integrating Stakeholder Theory, the Triple Helix, and Boundary Spanning

Three theories that give insights into universities' societal engagements are discussed in the preceding sections. As no single theory is complete (Kezar, 2006; Ngulube et al., 2015), the theories were chosen so as to make up for the weaknesses of one theory by the strengths of another. In so doing, the researcher seeks to fit the theories with the core concern of the study.

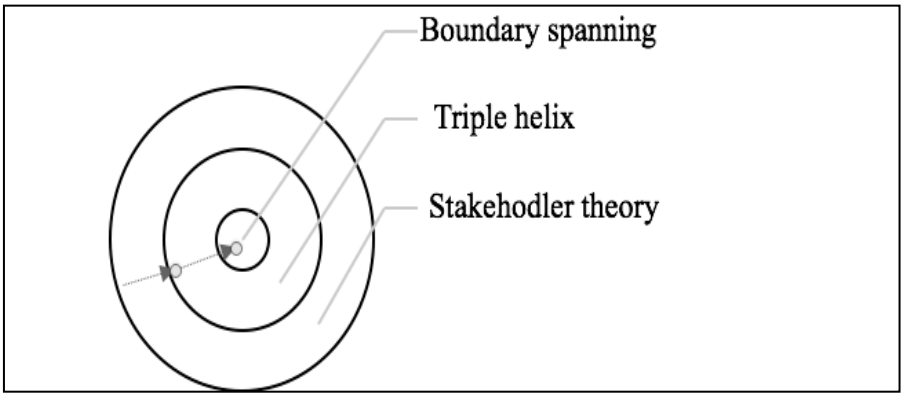

Figure 6 Integration of Theories that Inform the SEU

As indicated in Figure 6, the three theoretical approaches that inform universities' societal engagement have logical sequences and synergies. Stakeholder theory assumes that business organizations must interact and create value for their stakeholders, but it is difficult to enumerate the stakeholders with which a university is supposed to interact with and for whom it is expected to create value. The triple helix model offers insights into these stakeholders and the value that universities are expected to create through its societal engagement activities. Through the triple helix, the researcher has been able to specify the stakeholders and the values that universities and other actors create from their tripartite interactions. Although the helix models were established to understand complex interactions among different spheres, they also chronicle key actors (i.e., stakeholders) in the interaction between a university and other components of the helix (Liu & Cai, 2017). Therefore, the triple helix identifies the key stakeholders that collaborate with the university to execute its societal engagement agenda. The triple helix model makes it reasonable to propose that industry and government are the pertinent stakeholders that cooperate with the university in executing societal engagement activities. In this regard, it is important to note that community could also be taken as stakeholders of universities, especially when considering societal engagement activities.

Helix models have the potential to explain innovation and economic growth in knowledge-based economies (Leydesdorff, 2012). However, given African higher education institutions are being advised to apply the triple helix to reinvigorate the quest for innovation and economic development (Dzisah & Etzkowitz, 2008), using

it to craft the theoretical foundations relevant to explore the reciprocal benefits of universities' societal engagement could be important.

However, Cai and Etzkowitz (2020, p. 26) note that "in spite of positive progress in terms of theoretical underpinnings of the Triple Helix model, its explanatory power still has room for improvement through meso-level theories that have the capacity to connect both the macro and micro-level analysis" (p. 26). Therefore, boundary spanning may enhance the application of the triple helix at the micro level. Cai and Etzkowitz (2020) assert that the most favorable environments for innovation are created at boundary spaces; that is, at the *intersections* of institutional spheres.

3.3. The Conceptual Framework

In light of the theories discussed above, it is now crucial to develop a conceptual framework that can be used to understand the benefits of universities' societal engagement. Therefore, while developing the conceptual framework, every effort was made to map and define the stakeholders of universities, conceptualize the benefits of universities' societal engagement, identify factors that may contribute to the reciprocal benefits of that engagement, and pinpoint the themes that help analyze the mechanisms for enhancing the sustainability of the SEU.

3.3.1. Key Stakeholders

Following Freeman et al.'s (2010) definition, universities' stakeholders can include any groups or individuals that can affect or be affected by a university's actions. In line with this, Benneworth and Jongbloed (2010) crafted a list of stakeholders that included governing entities, administration, clientele, employees, suppliers, competitors, donors, communities, government regulators, non-government regulators, financial intermediaries, and joint venture partners. The question, then, is how to conceptualize the stakeholders of a university on matters related to societal engagement activities?

Freeman et. al. (2010) assert that a "pragmatic approach" to conceptualizing stakeholders is important to reduce confusion in the identification of stakeholders. Research on the university stakeholders (Jongbloed et al., 2008) also notes that the effort to identify university stakeholders is not straightforward. In light of the triple helix model, the group of institutions that have a stake in the implementation of universities' societal engagement can be classified into two categories: *partners* and *recipients (see Fig 7)*. Partners are stakeholders that collaborate with the university to implement its societal engagement activities. Theis includes the three institutional spheres (Etzkowiz, (2008). These groups of stakeholders share similarities with the primary group of stakeholders proposed by Freeman et al. (2010) in such a way that their collaboration is necessary for the implementation of universities' societal engagement.

Conversely, recipients are groups that receive the outputs of a university's societal engagement activities. Recipients, unlike partner institutions, are the target beneficiaries of that societal engagement; they are regarded as end users of the processes. Unlike partner stakeholders, the role of recipient stakeholders in defining, initiating, implementing, and evaluating universities' societal engagement is modest at best.

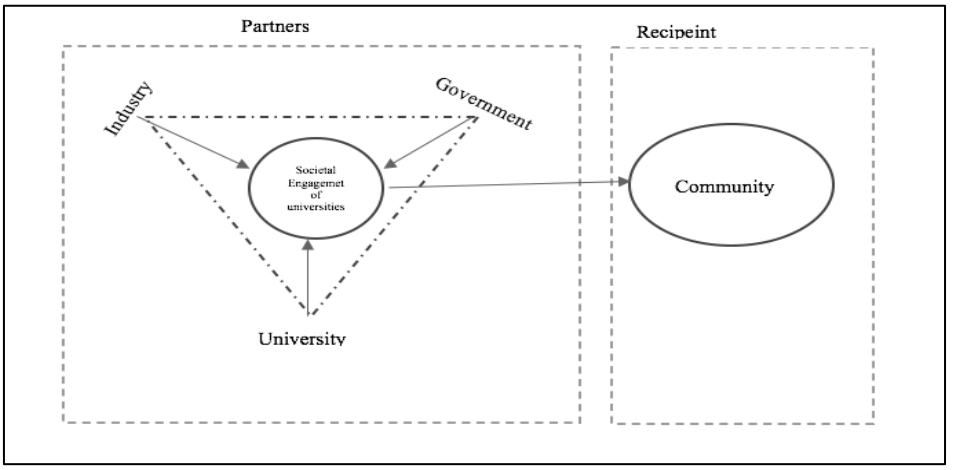

Figure 7 Stakeholders in the SEU

Stakeholders designated as partners are defined in line the triple helix model: the university is the institutional sphere that generates knowledge; industry the sphere that uses knowledge, and government the sphere that regulates the interactions

between universities and industry to ensure societal development (Cai & Amaral, 2022). The government could have analytical layers related to local, regional, and central governments (Cai & Etzkowitz, 2020).

3.3.2. The Benefits of Universities' Societal Engagement

According to the stakeholder theory the interactions among different stakeholders can enhance value creation processes—that is the sum of surplus generated from a business activity (Argandoña, 2011). In its broadest sense, value creation implies the benefits that stakeholders seek as a result of their interactions with a firm. Value is generated through the joint efforts of different stakeholders (Argandoña, 2011; Freeman et al., 2010). However, stakeholders neither make equal contributions nor receive identical benefits from the business interaction. The contributions and benefits of stakeholders are likely to vary in line with their salience (definitive, latent, expectant) or in terms of the power/interest matrix of stakeholders (see section 3.1.1).

Therefore, on the basis of the stakeholder theory, the key stakeholders that collaborate in the implementation of universities' societal engagement (see section 3.2.1) are likely to generate economic (extrinsic) or non-economic (intrinsic) benefits (Argandoña, 2011).

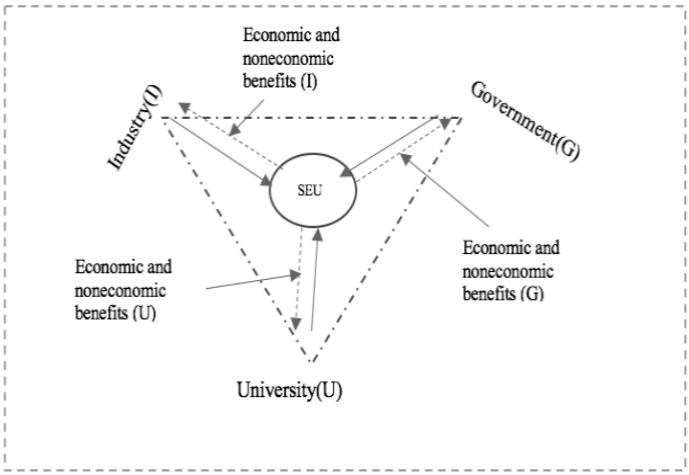

Figure 8 Economic and Non-Economic Benefits

As indicated in Figure 8, stakeholders that cooperate with the university including the university itself are likely to generate both economic and non-economic benefits. Economic benefits are monetary benefits, while non-economic benefits are intrinsic or non-monetary benefits (Argandoña, 2011) that different stakeholders generate from their interactions with other organizations. Compared to non-economic benefits, economic benefits are measurable (Perkmann et al., 2013) through money and other markers. However, non-economic benefits are difficult to measure because social returns are less visible and hard to identify with precision(Schnurbus & Edvardsson, 2022). Ankrah and Al-Tabbaa (2015) divide the benefits of universities' societal engagement into three categories: economic, institutional, and social benefits. Social and institutional benefits typically take the form of non-economic benefits. The economic and non-economic benefits of universities' societal engagement are presented in Table 3, using examples from the higher education literature.

Table 3 Economic and Non-Economic Benefits of Universities' Societal Engagement

Benefits	Description	Examples
Economic	Includes the monetary benefits that the three institutional spheres generate from societal engagement activities.	Enterprising third mission (Krčmářová, 2011); market-oriented societal engagement (Appe et al., 2017); economic dimension of the third mission (Laredo, 2007); academic commercialization (Perkmann et al., 2013); entrepreneurship, technology commercialization, paid advisory work, commercialization of facilities (Molas-Gallart et al., 2002); development of the entrepreneurial university and academic entrepreneurship and commercialization(Schnurbus & Edvardsson, 2022)
Non-economic	Includes the non-monetary benefits that the three institutional spheres generate from societal engagement activities.	Social justice and social responsibilities (Appe et al., 2017); benefits to teaching and learning and research (Bender, 2008); social dimensions of the third mission (Laredo, 2007); access to employment, access to new knowledge and technology (Molas-Gallart et al., 2002).

The push and pull factors of economic and non-economic benefits of universities' societal engagement are not identical across collaborating institutions. Altbach (2006) asserts that the cost of higher education is "shifting from public purse to the individuals" (p. 97). Therefore, universities seek to collaborate with different

stakeholders to mitigate their budget constraints and enhance their relevance to society. Although the benefits vary with contextual differences, universities can generate fund from the societal engagement activities they render to businesses (Altbach, 2006; Koryakina, Sarrico, & Teixeira, 2015a).

Hence, while benefiting society, the SEU is also used to diversify universities' income sources. For example, Koryakina et al. (2015b) poisted as "the generation of revenue beyond government appropriation through commercialization of research, technology transfer, consulting, life-long learning and customized courses, generating funds from assets and alterations in financial decision making and management as well as other activities" (p. 64). The economic benefits of universities' societal engagement can thus be realized through activities such as the development of entrepreneurial units, technology commercialization, paid advisory work, the commercialization of facilities (Molas-Gallart et al., 2002), and university spin-offs (Donatiello & Gherardini, 2018).

Non-university stakeholders may also generate economic benefits from the SEU. In light of the stakeholder theory, the benefits (economic or non-economic) are shared among stakeholders. Access to new knowledge and practices, social legitimacy, alleviation of social problems, and improvement in the quality of teaching and learning and research can all be considered non-economic benefits of universities' societal engagement (Benneworth, 2009; Carl & Menter, 2021; Lima et al., 2022; Quoc et al., 2021).

However, bearing the assumptions of stakeholder theory and the triple helix in mind, it is worth noting that the different institutional spheres are likely to vary in terms of the benefits they generate from universities' societal engagement activities, and the paths and forms of interaction (collaborative, role-taking, and trilateral interaction), forms (statist, laissez-faire, and interactionist), including stakeholder salience (legitimacy, urgency, and power) and the stakeholders' power/interest matrix may contribute to differences in the benefits of universities' societal engagement. The distinction among the different forms and paths of the triple helix and forms of stakeholders are discussed in section 3.1.2.

3.3.3. Factors Affecting the Reciprocal Benefits of Universities' Societal Engagement

Academic engagement is a multi-level phenomenon (Perkmann et al., 2013). Hence, a country's national, regional, and institutional policies and strategies and the behavior of faculty members and other researchers can all affect the SEU (Donatiello & Gherardini, 2018; Fongwa, Marais, & Atkinson, 2014; James & Janet, 2002). At the national level, factors such as public policies and strategies pertaining to higher education institutions and their engagement processes, an emphasis on STI, and broader policies and strategies pertaining to higher education and regional engagement are likely to affect the SEU. Moreover, institutional-level factors such as policies and strategies, organizational structures, and faculty commitment and responsiveness to societal engagement can affect the SEU (Mtawa et al., 2016).

The question, then, is how to understand the factors that affect the reciprocal benefits of universities' societal engagement? A look at the range of factors that determine the benefits of universities' societal engagement in a single scene is challenging. However, a synthesis of factors could be undertaken from the perspectives of one or more theories discussed in the previous sections.

As discussed in section 3.1.3, boundary spanners and their roles affect the interaction among different group of stakeholders. Therefore, the benefits that the three institutional spheres generate from societal engagement activities are likely to be related to the behavior and characteristics of the boundary spanners, whether human agents (Hawkins, 2012), organizational units (Bess & Dee, 2008b), or objects or tasks (Hawkins, 2012).

Boundary-spanning personnel generally comprise individuals responsible for cross-organizational partnerships and relationships (Bess & Dee, 2008b) such as leaders of different institutional spheres and units institutionalized within those three institutional spheres. In addition, in the context of the SEU, researchers who design, implement, and evaluate different societal engagement activities could be considered as boundary-spanning agents. The definition of boundary spanning personnel is relatively open (Aldrich & Herker, 1977). Some organizations have explicitly assigned personnel and roles, while others do not. Membership in the group of

boundary-spanning personnel can be either in a single organization, in which case they are known as boundary translators, or in two or more institutions and thus called multi-community members (Hawkins, 2012).

Organizational units refer to units designed to manage the university's societal engagement such as research and community service offices, KTT units in universities, and research and development offices in industry. These boundary-spanning units are part of the organizational structures designed to manage the interactions of an organization with its external stakeholders. The precise form and number of boundary-spanning units are likely to vary in line with environmental complexities, including organizational inputs, processes, and outputs (Aldrich & Herker, 1977; Bess & Dee, 2008b).

Finally, boundary-spanning objects or tasks refer to the activities performed to cross the boundaries of other organizations. According to Hawkins (2012) "a boundary object refers to a physical, abstract, or mental object that serves as a focal point in collaboration [with] … parties to represent, transform and share knowledge" (p. 1805).

Table 4 Major Factors that Contribute to Reciprocal Benefits

Type of Boundary Spanner	Description and Examples
Personnel	Leaders at different levels of the university, industry, and government. Researchers who design and implement different societal engagement activities.
Organizational Unit	Form and configuration of different societal engagement units, such as organizational unit-related KTT, community service, and consultancy services.
Object or Task	Activities that boundary spanning units are mandated to perform, such as KTT, community service, and consultancy services.

Boundary spanners play an instrumental role in executing the SEU. For example, focusing on academic researchers, Brown et al. (2016) report that academic researchers are a "node" in universities' societal engagement activities. They play a pivotal role in linking the university with the external environment. More specifically, academic researchers play a significant part in obtaining the necessary funding from

different institutions (Donatiello & Gherardini, 2018) and in developing and sustaining the SEPs (Rowe, Hoyt, & Carrier, 2017).

However, studies have also indicated that the boundary-spanning role of academic researchers is partly determined by factors such as individual characteristics (Perkmann et al., 2013), disciplinary areas (Šima et al., 2017), commitment and responsibility (Donatiello & Gherardini, 2018), university type (generalist or specialized university; (Rolfo & Finardi, 2014), and individual situatedness (Kroll, Schricke, & Stahlecker, 2013). The individual characteristics of academic researchers as boundary spanners could be related to their age, sex, seniority, previous experiences, and productivity in research and publications. In addition, previous affiliations in a community or the broader society such as work experience in industry or at other institutions can contribute to the success of universities' societal engagement. Šima et al. (2017) assert that in addition to formal organizational structures like incentives and the overall organizational setting, informal tacit knowledge in the form of epistemological orientations, disciplinary values, and structures fosters universities' regional engagement. The disciplinary affiliation of faculty members may define the scope and form of societal engagement. Just as disciplinary areas differ in their epistemological foundations (Biglan, 1973b), so do the mechanisms used to execute societal engagement activities. Perkmann et al. (2013) note that

> in biomedical and chemical engineering, the most important channels are patents and licensing, scientific output, students' placements, informal contacts and contract research. For researchers in computer science, patents and licenses do not seem a relevant transfer channel, while they are very important for material scientists. Finally, in social sciences, knowledge seems to be transferred through personal contacts and labour mobility. In the medical field, clinical researchers are more likely to partner with industry but the non-clinical researchers are more likely to commercialize (p.428).

The benefits of universities´ societal engagement tends to vary in line with disciplinary differences. As suggested by Perkmann *et al.,* societal engagement in the science disciplines is used to build cooperation with industry and improve students' learning through apprenticeships. Conversely, societal engagement in the social

science disciplines is loosely conceptualized. Benneworth and Jongbloed (2010) assert that stakeholders in the humanities, arts, and social science disciplines are of little salience to universities; hence, they have traditionally paid little attention to valorization of their research and engagement activities. Given this difference the reciprocal benefits that universities claim to generate from societal engagement activities are likely to vary in line with the disciplines within which those activities are housed.

Leaders working in organizational units designated to initiate, implement, and evaluate societal engagement activities may also contribute to the reciprocal benefits of universities' societal engagement. Parts of which is related to their skills in KTT, consultancies, and other engagement activities (Chau, Gilman, & Cristina, 2017). Chau and colleagues claim that "individuals or groups playing boundary spanning roles in universities need to understand fully and have experience of the academic and business environment, as well as skills to overcome barriers and foster relations" (Chau et al., 2017, p. 200). Along the same lines, Adams (2014) argues that "community boundary spanners, most prominently, were communicative, sought and understood multiple perspectives, and possessed a visionary quality" (p. 115).

Moreover, the way boundary-spanning units are configured in the organizational structures of universities may contribute to the reciprocal benefits that universities expect to generate from their societal engagement activities. According to Clark (1998), enterprising universities should not only think about the growth of boundary-spanning units but also about the configuration of those units within the structure of the university. This implies that the differentiation of boundary-spanning units is not sufficient to address external demands and changes. In addition to differentiation, universities need to build an appropriate structure for boundary-spanning units to facilitate internal and external interactions. Although research on the role of structure and configuration of societal engagement boundary spanning is limited, it is reasonable to suggest that the interface and structure of boundary-spanning units could affect the reciprocal benefits of universities' societal engagement.

Organization structure is related to whether the organizational units designed for the implementation of societal engagement activities are institutionalized in a centralized

or decentralized fashion. Considering the literature on the benefits of decentralized organizational governance (Vught & de Boer, 2015) and structure (Bess & Dee, 2008b), one can fairly assert that decentralized organizational structures are more effective for enhancing the implementation of societal engagement activities. Higher education institutions with decentralized structures are likely to possess autonomy to initiate, implement, and evaluate different societal engagement activities on the basis of their unique nature and characteristics. Conversely, universities with centralized structures are managed by the decisions of supervisors, directors, or elected representatives (Bess & Dee, 2008a). Hence, in a centralized governance approach, individuals' involvement in the decision-making process is limited. Conversely, decentralized systems provide ample space for individual involvement; in those arrangements, it is important to act from below (Clark, 1998) and sustain societal engagement activities. The question of a centralized or decentralized configuration relates to the pertinent actors who have the legitimacy to make decisions pertaining to the SEU. As implied by Bess and Dee (2008a),

> centralized decisions can be made by those at the top of the hierarchy or by a representative body such as a faculty senate. Decentralized decisions may be determined by the heads of the decentralized units (e.g., department chairs) or by the members of the units themselves (p.214).

Furthermore, the interface among different boundary-spanning units may determine the reciprocal benefits of universities' societal engagement activities. The boundary interface in this case refers to the alignment between the different boundary-spanning units both within and across institutional spheres (Bess & Dee, 2008b; Chau et al., 2017). Internally, the organizational units designated to execute societal engagement activities need to be arranged so as to foster communication and support among different units. Moreover, the communication presumed to exist among different boundary-spanning units requires organizational interfaces. Šima et al. (2017) claim that a university–regional interface is a prerequisite for successful regional engagement. The interface among boundary-spanning units leads to different actors marshaling common actions and ultimately coordinating their strategies and actions.

Furthermore, the nature and characteristics of the boundary-spanning object or task may also help determine the reciprocal benefits of universities' societal engagement activities. One could assert that those reciprocal benefits are likely to vary in line the different types of societal engagement, such as KTT, consultancies, and community service.

3.3.4. The Sustainability of Universities' Societal Engagement

Extant research on organizational boundaries (Bess & Dee, 2008b) indicates that information processing and external representation enhance the sustainability of organizations and their activities. Through information processing, higher education institutions are likely to generate and refine the demands of stakeholders with regard to their societal engagement activities. Concomitantly, universities can enhance the sustainability of their societal engagement by capitalizing on their representation in the external environment and strengthening their information processing capabilities. The two boundary-spanning roles of information processing and external representation appear to be important to enhancing the sustainability of universities' societal engagement.

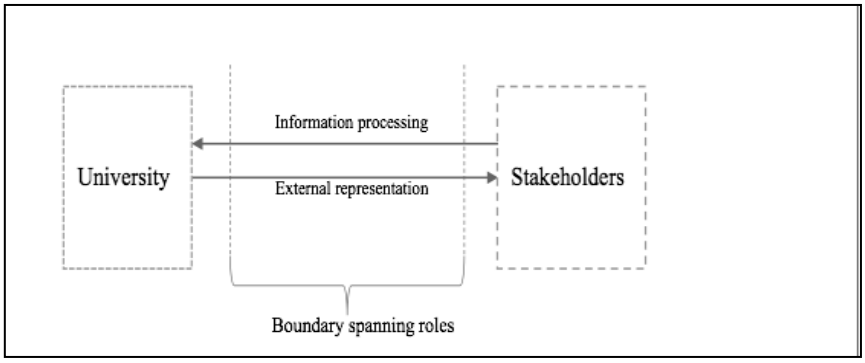

Figure 9 Boundary-Spanning Roles

Information processing is critical for an organization's existence (Aldrich & Herker, 1977) and its boundary-spanning endeavors (Dollinger, 1986). It helps organizations to monitor the demands of other stakeholders in the environment (Bess & Dee,

2008b). Without information processing, organizations cannot understand the demands of their stakeholders; hence, aligning and structuring their internal activities could be challenged. Information processing affects every boundary-spanning activity of organizations (Dollinger, 1986). Information is the lifeblood of organizations, so their existence and sustainability largely depend on their capability to process information.

If the activities of higher education institutions such as societal engagement are required to be sustainable, boundary spanners need to collect, and present information from the environment on a regular basis. They need to filter and process the information that higher education institutions require to react through their societal engagement activities. Information filtering captures the processes of selecting, consolidating, delaying, or storing information (Aldrich & Herker, 1977) which, as a consequence, alleviates information overload. Through information filtering, organizations like higher education institutions can prioritize activities and eventually act in strategic and systematic ways. In addition to information filtering, boundary spanners are also required to facilitate the processes of interaction between an organization and other actors. They define how organizations, including higher education institutions, need to react to emerging environmental demands.

In pursuance of effectuating their various societal engagement activities, universities establish different boundary-spanning units and roles (Schyndel, Pearl, & Purcell, 2019). Boundary-spanning personnel collect and process information through environmental scanning using, for example, a leader's network of contacts, by studying relevant publications and industry reports, by conducting market research, and by studying the decisions and actions of competitors and opponents (Mendelow, 1981). In-depth information processing through boundary spanners is essential for the sustainability of a university´s societal engagement.

The other boundary role that contributes to the sustainability of SEU is related to external representation, through which boundary spanners are expected to build partnerships with other institutions (Aldrich & Herker, 1977). According to Aldrich and Herker (1977), when boundary spanners present information to their organizations, one or more of the following responses are likely: internal structural differentiation to match the demands of the external environment, gaining power

over relevant elements of the environment and manipulating it to conform to the organization's needs; and the compromise position of using boundary personnel in their "normal" boundary-spanning roles. Hence, organizational restructuring and alignment are key strategies that help organizations comply with the demands of different stakeholders.

In external representation, boundary spanners engaged in mediating the linkages between organizations and their environment (Schyndel et al., 2019). In so doing, they devise strategies that foster the autonomy of their organizations from external constraints. One strategy could involve creating and renewing partnerships among institutional spheres with varied organizational boundaries. Partnership as a strategic choice is emphasized in resource dependency theory as co-optation and joint ventures (Pfeffer & Salancik, 2003).Hence, organizations with successful boundary spanners are likely to renew partnerships. In so doing, the continuation of their activities is likely to be enabled. Bess Dee (2008a) assert that:

> many institutions of higher education have established cooperative linkages with government agencies, community organizations, and industries. These boundary-spanning subsystems are subject to dual controls as they are simultaneously part of two separate systems and, in effect, become part of a larger macrosystem (p.214).

Therefore, considering boundary-spanning theory, sustainable organizational activities are developed by strong environmental monitoring (scanning) and appropriate organizational responses such as the creation and renewal of partnerships and making institutional adjustments to conform with external demands. Hawkins (2012, p. 1801) asserts that organizations need to create an environment for co-creation and cooperation through "boundary practice"; that is, boundary partnership.

There are ample examples that confirm the contributions of partnerships to the sustainability of universities' societal engagement. For example, the Archway Partnership between community and university exercised by the University of Georgia in the United States yields tangible benefits to the community like wastewater treatment, the development of industrial parks, and school development

and to faculty and students in the development of community-driven teaching and learning and research endeavors (Garber, Creech, Epps, Bishop, & Chapman, 2010). The possibility of sustaining the participation and cooperation of different actors is likely when the societal engagement of universities is built on durable partnerships.

3.4. Analytical Model

The discussion of stakeholder theory, the triple helix, and boundary spanning has helped capture the pertinent domains related to the benefits of the SEU, the factors that contribute to the reciprocal benefits of the SEU, and the mechanisms that enhance the sustainability of that engagement (see Figure 10). However, given that the literature on the SEU is Western-centric, the domains synthesized from the previous research are likely to involve different aspects related to national and institutional contexts. More specifically, given the influence of context within which higher education institutions operate, it is likely that the different domains captured from the literature would have different features and aspects. This necessitated in-depth explorations to further adapt the identified domains to the context of universities in Ethiopia.

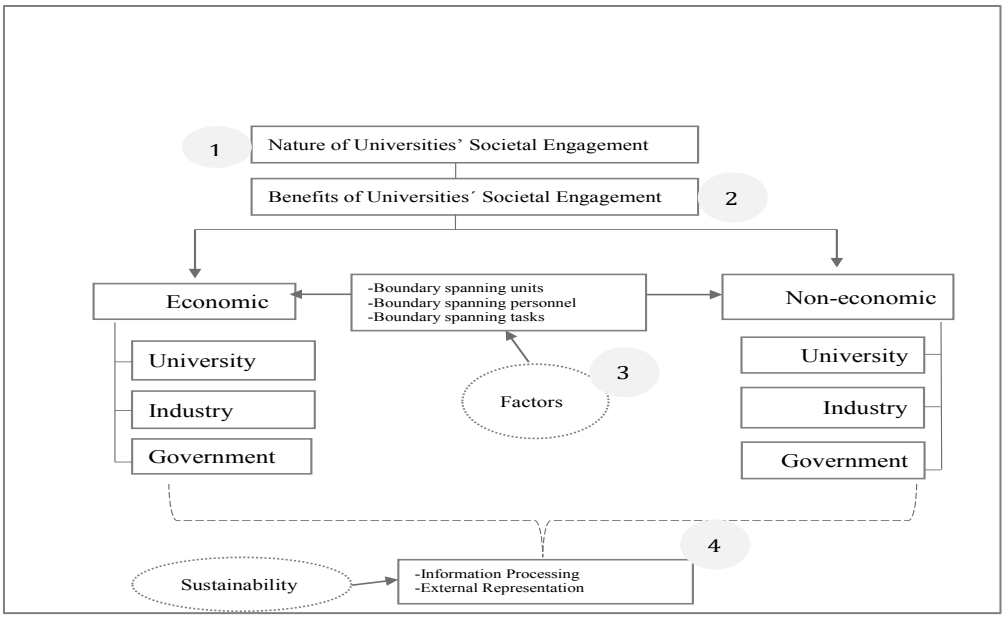

Figure 10 Analytical Model

As indicated in Figure 10, the analytical model is developed to frame the data analysis and interpretation processes of the research. First, the effort to understand the types and dimensions of universities' societal engagement (see RQ1.1) focuses on the nature of that engagement as articulated in the specific organizational setting of a university. Second, the reciprocal benefits of that engagement (RQ1.2.) are divided into economic and non-economic benefits, as discussed in section 3.3.2. Third, the factors that contribute to the reciprocal benefits of universities' societal engagement (RQ1.3) are presented as factors related to boundary-spanning units, boundary-spanning personnel, and boundary-spanning tasks. The distinctions among these different boundary-spanning elements are discussed in section 3.3.3. Fourth, the mechanisms that help universities enhance the sustainability of their societal engagement activities (RQ1.4) are presented as related to information processing and external representation. The roles of information processing and external representation in enhancing and/or determining boundary-spanning activities like the SEU are discussed in section 3.3.4.

4. METHODOLOGY

This chapter is divided into six sections to present the methodological approaches and research design of the study. The first section introduces the research method and explains its justification in relation to the research purpose and questions. The second section explores the necessity and implementation of a mixed research design. The third and fourth sections delve into the methods adopted during the qualitative and quantitative phases of the research, respectively. The fifth section outlines the procedures for integrating the qualitative and quantitative research stages, while the sixth and final section discusses the ethical considerations of the study.

4.1. Research Method

While the factors that drive the choice of research methods are debatable (Cai, 2018), at least to some extent, some (Creswell, 2013) recommend to consider the research purpose and the research questions. Those with an intent to identify factors that influence an outcome, evaluate the effectiveness of a given intervention, or distinguish potential predictors of a given output call for quantitative research methods. By contrast, research questions that seek in-depth exploration and understanding require the application of qualitative research methods. Mixed method research follows a middle ground between qualitative and quantitative research, taking advantage of the strengths of both (Cameron, 2009). Mixed methods are best used when the application of a single approach is less likely to adequately address the research questions (Harrison, Reilly, & Creswell, 2020).

The purpose of the present study is to explore the benefits that the university, industry, and government generate from universities' societal engagement. Although much work has been done to understand the contributions of that engagement to regions and whole societies, the reciprocal benefits that the university, industry, and

government draw from the SEPs remains underexplored. Of particular note is the fact previous research has revealed considerable fragmentation in conceptualizing and theorizing universities' societal engagement (Perkmann et al., 2013). Hence, at least in the Ethiopian context, there is a lack of adequate empirical work to guide the research process. Creswell (2013) claims that "if a concept or a phenomenon needs to be explored and understood because little research has been done on it, then it merits qualitative approach"(p.20).

Furthermore, as indicated in section 1.4, the specific research questions designed to help fill the research gap call for both quantitative and qualitative approaches. RQ1.1 seeks to explore the types and dimensions of universities' societal engagement as practiced in the Ethiopian context. RQ1.2 envisioned exploring the reciprocal benefits that the university, industry, and governments generate from societal engagement activities, while RQ1.3 was crafted to explore the factors that influence the reciprocal benefits of universities' societal engagement, and RQ1.4 seeks to explore the mechanisms that help universities enhance the sustainability of their societal engagement activities. Therefore, while RQ1.1 calls for qualitative methods, RQ1.2, RQ1.3, and RQ1.4 are best suited to the application of mixed methods. There are two main reasons. First, the benefits of universities' societal engagement, the factors that affect the reciprocal benefits, and the mechanisms that enhance the sustainability of universities' societal engagement as reflected in the research questions are underexplored in the Ethiopian context. Yet, but with notable links to the emerging themes, those research questions call for the examination of associations and causal links between the dependent and independent variables at wider levels. Second, given that universities in Ethiopia are obliged to institutionalize societal engagement functions, the demand for a wider-level examination has gained currency. According to Creswell (2013), a mixed methods research is applicable when "the researcher may want to both to generalize the findings to the population as well as develop detailed view of the meaning of a phenomenon or concept for individuals" (p. 20). Against this background, mixed methods approach was found to be best suited to address the research questions.

4.2. Mixed Research Design

The research followed an exploratory sequential mixed design, which involves using qualitative methods initially to develop an instrument and themes. These are then tested on a larger scale with a larger group of research participants (Doyle & Brady, 2016). In this study, the researcher explored the context of universities' societal engagement, focusing on specific research questions. The themes identified during the exploration phase were then tested with a larger sample of participants and in a broader setting. Creswell posited that "an exploratory sequential mixed methods design involves the procedure of first gathering qualitative data to explore a phenomenon, and then collecting quantitative data to explain relationships found in the qualitative data" (Creswell, 2012, p. 543).

Keeping this in mind, the present study involves two stages. The first, qualitative stage explores the types and dimensions of universities' societal engagement as practiced in the Ethiopian context, the benefits that the university, industry, and government generate from the SEU, the factors that influence the reciprocal benefits of universities' societal engagement, and the mechanisms that help universities enhance the sustainability of their societal engagement activities. Therefore, the first stage is used to understand universities' societal engagement in the Ethiopian context and to specify the research variables related to reciprocal benefits, the factors that influence reciprocal benefits, and mechanisms for enhancing the sustainability of universities' societal engagement; at the same time, frame the data collection instrument applied in the quantitative stage of the research. In this case, the phrases participants used during the qualitative stage of the research were used to develop individual items of the survey (Fetters, Curry, & Creswell, 2013).

The second stage involves quantitative research and is used to test the hypotheses generated in the first stage of the research considering a larger sample and context. Although sequential mixed research is a design of its own, it involves sub-designs within both the quantitative and qualitative stages (Cameron, 2009). Therefore, case study and survey research designs were employed for the first and second stages, respectively.

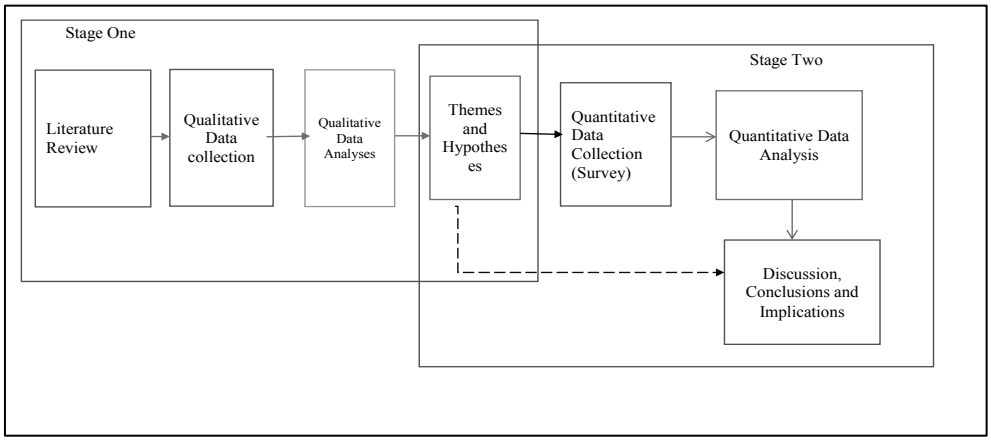

Figure 11 Model for Explorative Sequential Design

Source: Adapted from Cai, 2007, p. 22.

As indicated in Figure 11, the qualitative and quantitative stages are integrated in sequential order. The themes and hypotheses generated in stage one informed the development of the data instrument, data collection, and analytical procedures in the second, quantitative stage. According to Stick et al. (2006), the use of a mixed methods design should also indicate priority, implementation, and integration, which are addressed in the following sections.

4.3. Qualitative Phase

4.3.1. Selection of Case University

Exploratory sequential mixed design begins with systematically selected cases (Cameron, 2009; Creswell, 2013; Doyle & Brady, 2016; Stick et al., 2006) that help understand the research topic. Therefore, Mekelle University (public university in Ethiopia) was selected for the qualitative stage of the research. First, the Mekelle university is one of the first generation of universities in Ethiopia, so the researcher believed that the university and its faculty have ample experience with regard to SEPs implemented in collaboration with industry and government. Second, the researcher has worked at that university for more than 12 years and thus has exposure to the university´s community, including its organizational structures, which reduced some

of the difficulties that can emerge in collecting the primary and secondary data. The historical developments of the Mekelle university, including its current performance, are described in section 5.2.1.

4.3.2. Data Sources

Both primary and secondary sources were used in the qualitative stage of the research. The primary sources of data include interviews with college research and community service chairs, officers from the university's vice president for research and community engagement (VPRCE) office, principal investigators (PIs) for SEPs, and practitioners from government and industry, the two institutional spheres partnered with the university to implement SEPs. In addition, secondary sources collected from national and institutional repositories were reviewed to understand the purposes and components of Mekelle University's societal engagement. The primary and secondary sources of data used in the qualitative stage of the research are presented in Table 5.

Table 5 Primary and Secondary Data Sources

Sources of data	Institutional sphere/ level	Data sources
Primary	University	Top university leaders (i.e., officers from the VPRCE and the planning and budget office of the university College research and community service council heads and chairs PIs of selected SEPs (community service, KTT, and consultancy)
	Government	"Woreda" officers and experts in places where the universities' SEPs have been implemented
	Industry	Firm leaders with proven engagement and collaboration with the university in executing the selected SEPs
Secondary	Institutional level	Mekelle University's guidelines on KTTs o Mekelle University's community services and KTT o Mekelle University's guidelines for evaluating consultancy proposals o Mekelle University website o Mekelle University's vice president's message for research and community services, published in the summary of KTT and community service projects o Mekelle University Senate legislation (2017)
	National level	o Ethiopian Higher Education Proclamation (2009), o STI Policy (2012), o GTPs I & II

4.3.3. Sample and Sampling Procedures

The samples for the qualitative stage of the research were drawn from the university, industry, and government institutional spheres through purposeful sampling (see Table 6). First, three top-level university leaders (two from the VPRCE and one from the university's budget and planning office) were selected. These participants were chosen to obtain information related to the institutional policies, regulations, and practices regarding Mekelle University's societal engagement activities. Experience

and relevance to the topic of interest were considered when selecting research participants from top university management.

Second, 5 out of the 19 colleges' and institutes' (henceforth colleges) research and community service heads[5] were selected through purposeful sampling. When selecting these individuals, the researcher followed Biglan's (1973a, 1973b) classification of academic disciplines; thus, except for colleges that fall into the hard applied, one college was selected from each quadrant: the College of Dryland Agriculture and Natural Resource-CoDANR and the Ethiopian Institute of Technology-Mekelle, EiT-M (hard-applied); the College of Natural and Computational Sciences (hard-pure); the Institute of Pedagogical Sciences (soft-applied), and the College of Social Sciences and Languages (soft-pure) were selected. The nature and organizational structure of the Ethiopian Institute of Technology–Mekelle is different from other colleges; thus, the researcher selected that college directly. A college's experience with and exposure to societal engagement activities was used as the criterion to select one college from each of the four disciplinary quadrants. More specifically, colleges with large numbers of SEPs and better histories of collaboration with industry and government in executing different SEPs were selected.

Third, four PIs (2 PI for consultancy projects (one each from the EiTM and CoDANR), one PI for community service (from the Institute of Pedagogical Sciences) and one PI for knowledge and technology transfer (from CNCS) were selected. The selection of SERs for consultancy services, community service, and KTT was made to demonstrate the varied dimensions of the university's societal engagement activities which, during the study period, comprised three types: KTT, community service, and consultancy services (the distinctions between these three forms of societal engagement are presented in section 5.3.2

[5] College of Business and Economics; College of Dryland Agriculture and Natural Resource Management; College of Health Sciences; College of Law and Governance; College of Natural and Competitional Sciences; College of Social Sciences and Languages and College of Veterinary Sciences; Ethiopian Institute of Technology; Institute of Technology– Mekelle; Institute of Climate and Society; Institute of Environmental, Gender and Development Studies; Institute of Paleoenvironment and Heritage Conservation; Institute of Pedagogical Sciences, Institute of Population Studies; Institute of Water and Environment; Institute of Mountain Research; and Institute of Energy

Fourth, the SEPs considered to select the PIs were screened based on project time frame and budget. Accordingly, the Integrated Seed Sector Development (ISSD[6]) was selected to select additional research participants from the industry and government institutional spheres. Two research participants (one each from the seed producing firm and one Woreda agriculture extension officer, both of whom affiliated with the ISSD project) were selected. The selection of research participants from the seed producing enterprise and Woreda agriculture extension officer—an officer assigned to monitor and support seed producing firm—were undertaken using snowball sampling after consulting the PI of the ISSD project.

Therefore, the qualitative phase of the research involved 14 participants. The numbers and sampling techniques employed to select the research participants are summarized in Table 6.

Table 6 Research Participants in the Qualitative Phase of the Research

Participants	Category	Number	Sampling technique
College research and community service heads	Hard applied disciplines	2	Purposive sampling
	Hard pure disciplines	1	Purposive sampling
	Soft applied disciplines	1	Purposive sampling
	Soft pure disciplines	1	Purposive sampling
PIs	Consultancy projects	2	Purposive sampling
	Community service	1	Purposive sampling
	KTT	1	Purposive sampling
Collaborating institutional spheres	Industry (i.e., Seed producing enterprise)	1	Snowball sampling
	Government (i.e., expert at the woreda level)	1	Snowball sampling
Top management	VPRCE	2	Purposive sampling
	Budget and planning	1	Purposive sampling
Total		14	

[6] The ISSD was a joint societal engagement project implemented by a consortium of four Ethiopian universities (Bahir Dar, Hawassa, Mekelle, and Haramaya), four regional states (Tigray, Amhara, Ormia, and the Southern Nations and Nationalities and Peoples region) and local and national seed producing enterprises. The seed producing enterprises produce and market seeds demanded by local and national markets. Housed in the universities, the ISSD had identified project sites in the four regional states that comprised the seed producing business and enterprises and focal government officials assigned to support and monitor those enterprises (Ayana et al., 2013).

4.3.4. Data Collection Tools and Procedures

Data for the quantitative stage of the research were collected through interview with key informants and document analysis.

4.3.4.1. Interviews

Research endeavors that seek to uncover underexplored issues (Gill, Stewart, Treasure, & Chadwick, 2008) are particularly benefited by the employment of in-depth interviews (Creswell, 2012). The researcher employed a one-on-one semi-structured interview to obtain data from different groups of participants. One-on-one interviews are time-consuming and are less applicable with interviewees who do not articulate and voice issues independently (Creswell, 2012). However, the time constraints of the research participants and the difficulty in gathering participants in one group due to COVID-19 forced the researcher to conduct only one-on-one interviews.

The researcher employed a semi-structured interview, which has a middle ground between structured and unstructured interviews (Vanderstoep & Jonston, 2009), for its relative advantages in coding and organizing data (Bryman, 2008), including the flexibility it offers to guide the interview sessions (Gill et al., 2008). An interview guide was prepared on the basis of the four research questions and issues distilled from the literature discussed in the analytical framework chapter (sections 3.3. and 3.4).

The one-on-interviews focused on three pertinent themes defined in line with the research questions: the types and dimensions of universities' societal engagement, the major benefits that university, industry, and government stakeholders generate from the SEU, the factors that hinder or help universities and other actors to generate reciprocal benefits from universities' societal engagement activities, and the mechanisms that help universities enhance the sustainability of their societal engagement activities.

While the themes in each interview were identical, the form and exact number of interview items differed across participants. More specifically, the interview guides for the top leadership, college research and community service council heads, and

PIs of SEPs comprised 13 items each (see Appendix 1, 2, 3, and 4). In the same vein, the interview guide for practitioners from the industry and government institutional spheres comprised 11 items each (see Appendix 5). The follow-up questions were also posed in line with the nature of each participant's role.

Each one-on-one interview was carried out by the researcher. In order to facilitate the transcription processes, the interviews were tape-recorded with participant consent. Moreover, to minimize the effects of language barriers, the interview with the top university leadership, college research and community service council heads, and societal engagement PIs were carried out in Amharic. However, the interviews with participants from the industry (the seed firm) and government (woreda level) were held in Tigrigna, the official language of the Tigray regional state. The translated interview guides were reviewed by language experts who also had knowledge of universities' societal engagement.

The one-on-one interviews were held from January to June 2020. The researcher had developed the interview guide and discussed it with his two supervisors. The researcher then selected informants for the interviews. Once the interviewees were mapped using the sampling procedures indicated above, the researcher contacted each interviewee to obtain consent to participate. Some of the selected interviewees were contacted through telephone, while others were met in person. The researcher informed the interviewees about the purpose of the research and the nature of the interview. In addition, an informed consent document stating the purpose of the research was handed to selected interviewees (see Appendix 1). Once this was done, the researcher, after confirming participant consent, asked each participant to set a time for the actual interview and 14 on-to-one interviews were carried out accordingly.

4.3.5. Data Analysis Procedures

The qualitative data analysis was carried out following Creswell's (2012) recommendations: prepare and organize the data for analysis, explore and code the data, build descriptions and themes, and visualize, interpret, and validate the findings. In light of this; first, audiotape recordings obtained from one-on -one interviews

were transcribed by the researcher (Creswell, 2012). Second, the researcher read the transcribed data thoroughly; thus pertinent elements were coded using axial, open, and selective coding (Creswell, 2012; Neuman, 2007). In the open coding process, 565 codes were developed from interviewee responses. Open coding involves a process of labeling the transcribed data using shorthand reflecting the interviewees' views (Burnard, Gill, Stewart, Treasure, & Chadwick, 2008). Following this, the researcher proceeds to axial coding, in which codes are related, categorized, and refined based on the pertinent themes developed from the analytical framework. This process reduced the 565 initial codes to 127. At this level, the researcher attempted to sense broad categories that led to pertinent themes derived from the literature: "Axial codes captured the essence of the data in terms that are more abstract than open codes"(Bowen, 2008, p. 144). Finally, in the selective coding, the researcher identified the central codes that required further comparisons and contrasts by categorizing them under the pertinent themes obtained from the extant literature and the analytical framework. At this stage, the 127 codes were reduced to 21 subthemes, after which each subtheme was discussed under the 7 pertinent themes synthesized from the analytical framework: the benefits of universities' societal engagement (13 subthemes, 6 under economic benefits and 7 under non-economic benefits); factors affecting the reciprocal benefits of universities' societal engagement (2 subthemes under boundary-spanning units, 2 under boundary-spanning people, and 1 under boundary-spanning tasks); and mechanisms relevant to enhancing the sustainability of universities' societal engagement (2 under information processing and 1 under external representation). Third, each identified subtheme was described, after which analysis was undertaken thematically, focusing on the major themes and the subthemes.

The processes of coding and developing themes were supported by Atlas.ti, a computer software program used to store, analyze, sort, and visualize qualitative data (Creswell & Clark, 2018).

4.3.6. Trustworthiness

The trustworthiness of the qualitative stage in terms of the five interrelated criteria—credibility, dependability, transferability, confirmability, and authenticity (Connelly, 2016; Guba, 1981)—are discussed in the following sections.

Credibility

Although the techniques used to establish the credibility of qualitative research are varied (Connelly, 2016; Krefting, 1991), the researcher attempted to ensure the credibility of the study using member validation and triangulation (Bryman, 2012; Creswell, 2012; Guba, 1981). In this regard, the researcher asked the interview participants to check the completeness and accuracy of the transcribed interview data (Creswell, 2012; Kornbluh, 2015), and the feedback received from the participants was considered in the final stages of data analysis. Furthermore, the researcher tried to triangulate data collected through different research methods (interviews and document analysis) to find potential convergences. Triangulation, as a means to ensure credibility, entails the employment of different methods and data sources to a develop comprehensive understanding of the social phenomenon being studied (Bryman, 2012; Carter, Bryant-lukosius, Dicenso, & Blythe, 2014; Creswell, 2012).

Transferability

Transferability in qualitative research is different from statistical generalizations (Connelly, 2016). Unlike those quantitative measures, transferability in qualitative research refers to the degree of similarity (fittingness) between two contexts. Therefore, the transferability of the qualitative research was ensured following Bryman's (2012) recommendation of providing thick descriptions of the research process and setting. The provision of reach and a detailed description of the context, location, and people studied enhance the transferability of the research (Connelly, 2016). Accordingly, to ensure the transferability of the present study, the researcher attempted to provide detailed research procedures and thick descriptions of the case university (see section 5.2.1).

Dependability

Dependability in qualitative research refers to the processes of making the variance of the research "trackable," justified, and ascribable to any of the research processes and realities (Guba, 1981);thus the dependability of the present study was ensured following the recommendations of Connelly (2016) through a process logs and peer

de-briefing. The researcher attempted to keep a complete record of the research process so that others could track and understand the appropriateness of decisions made. In process logs, researchers keep a record of all activities that happen during a study and note each decision made. Process logs provide complete and trackable records about the entire research process. In addition, the researcher had extensive discussions with his two supervisors and other fellows and received comments on the research processes and the final draft of the research report was ensured through peer de-briefing, in which peers are invited to act as auditors during and at the end of the research (Bryman, 2012; Connelly, 2016).

Confirmability

Confirmability implies the neutrality or objectivity of research processes (Connelly, 2016). It is analogous to objectivity in quantitative research. However, as qualitative research depends on the reflexivity and experiences of the researcher(s), complete objectivity is difficult in quantitative research. Researchers enhance the confirmability of their research by situating their endeavors in the existing discussions about the issue at hand (Bryman, 2012). In light of this, the researcher ensured the confirmability of the research by aligning the procedures he followed to the larger literature on the SEU. In addition, in an effort to understand potential deviations, the researcher discussed the findings of the research against previous research outputs on universities' societal engagement.

Authenticity

Authenticity is defined as the extent to which researchers fairly and completely show a range of different realities and realistically convey participants' lives (Connelly, 2016). It involves the selection of appropriate participants, research sites and units, and the provision of reach descriptions. Although there is no consensus as to the procedure that should be involved, the researcher made every effort to select appropriate participants and research sites that would help understand the reciprocal benefits and sustainability of universities' societal engagement. In terms of the selection of research participants, the study dwells on the lived experiences of SERs (mainly the PIs in SEPs), top university leaders, and practitioners from the government and industry institutional spheres.

4.4. Quantitative Phase

Five hypotheses emerged from qualitative stage of the research (see section 5.7). Therefore, the quantitative stage of the research is designed to address the research hypotheses that emerged from the qualitative phase of the research at a wider level. The procedures followed to carry out the quantitative stage of the research are thus described in the following sections.

4.4.1. Target Population

The target population (also called a sampling frame) refers to the groups of individuals or organizations from which actual samples are drawn (Creswell, 2012; Koul, 2006); the sampling frame is the (physical or virtual) setting from where actual research participants, whether individuals, organizations, or objects, will be drawn. Unlike population in a general sense, a target population shares common characteristics such as public universities or private businesses. The quantitative stage of the study targeted faculty members working at one of the eight first-generation[7] public universities in Ethiopia who had experience in implementing any of the societal engagement types (community service, KTT, and consultancy services) identified in the qualitative stage of the research. The indicated group of participants were considered because faculty members who had implemented societal engagement activities were more likely to understand the benefits of universities societal engagement to the university and other collaborating actors, the factors that influence the reciprocal benefits that universities and other actors may or may not have obtained from those activities, and the mechanisms that universities need to employ to enhance the sustainability of such activities.

[7] During the study period, public universities in Ethiopia were grouped into four groups: first, second, third, and fourth generation (Cremonini & Adamu, 2021). The first generation is composed of 8 universities established before 2006. The second generation of universities has 14 universities established between 2007 and 2010, the third generation contains 11 universities established between 2011 and 2015, and the fourth generation comprises 12 universities established after 2018.

4.4.2. Sample and Sampling Procedures

Multistage cluster sampling was employed to select a manageable number of faculty members with experience in implementing SEPs. In multistage cluster sampling, "the researcher chooses a sample in two or more stages because either the researchers cannot easily identify the population or the population is extremely large" (Creswell, 2012, p. 145). In this regard, multistage cluster sampling is used in large-scale surveys that encompass wider geographical territories and broader populations (Koul, 2006). Against this backdrop, the following procedures were followed.

First, five of the eight first-generation of public universities (62.5%) in Ethiopia were selected through a purposeful sampling technique: Mekelle University, Addis Ababa University, Jimma University, Bahir Dar University, and Arbaminch University. These universities were selected because the researcher obtained a response from those universities' research and community engagement offices to his online or telephone request to obtain a list of faculty members who had implemented SEPs during or one year before the study period. Besides, unlike other universities, the researcher had individual contacts who supported him in facilitating the data collection processes.

Second, the list of 184 faculty members who had implemented a SEP during or one year before the study period were obtained from the five universities; the email addresses and telephone numbers of the SERs were checked, and the researcher tried to obtain contact information for those SERs whose addresses and numbers were not indicated. Ultimately, the researcher able to obtain a list of 158 SERs (i.e., 85.86 % of the original list) with active email and telephone addresses.

Table 7 Number of Selected SERs from the Five Public Universities

University	No. of SERs (obtained)	No. of SERs contacted
Mekelle University	33	33
Addis Ababa University	42	36
Jimma University	35	30
Bahir-Dar University	51	38
Arbaminch University	23	21
Total	184	158

Sample size determination is a contested issue in research. Some apply a general rule of thumb, while others recommend the application of mathematical formulae to estimate the appropriate sample size of a population. The general rule of thumb operates on the principle that the larger the sample, the lower the sampling error: "the differences between the true score and sample score" (Creswell, 2012, p. 146). Therefore, on the basis of this rule of thumb, the decision about the sample size is left to the researcher(s), which involves time, cost, and the degree of precision needed (Bryman, 2008).

4.4.3. Data Collection Tools and Procedures

The quantitative data were collected through a questionnaire. The procedures followed to develop and administer the questionnaire to the sampled respondents are described below.

Questionnaire

The quantitative stage of the research employed a questionnaire survey to collect data from the SERs. The questionnaire consisted of both open- and closed-ended items (Koul, 2006). The closed-ended items were prepared using five-point Likert-type scales ranging from one to five. The following procedures were followed:

First, the researcher developed an item pool relying on the voices of participants considered in the qualitative stage of the research. This led to drafting 81 items

in the different themes: 39 related to reciprocal benefits, 26 to factors that contribute to reciprocal benefits, and 16 to the mechanisms that enhance the sustainability of universities' societal engagement.

Second, the researcher screened the questionnaire items pooled from the qualitative phase of the research; redundant and vague items were discarded or reworded. Thus, 79 items were finally retained, 63 of which were five-point-likert scale. The 79 items were arranged to measure different constructs (Taber, 2017) such that participants demographic characteristics (8 items), nature of the SEPs (8 items), SERs perception towards the benefits of their SEPs to the university, industry and government(32 items); perception of SERs towards the factors that contribute to the reciprocal benefits of universities' societal engagement (19 items), and perception of SERs towards the mechanism that enhance the sustainability of the universities societal engagement (12 items)- see Appendix 7.

The scales prepared to measure SERs' perception of the reciprocal benefits of their SEPs, factors affecting the reciprocal benefits, and the mechanisms that enhance the sustainability of the SEU were all prepared in the form of five-point Likert-type scales that ranged from one to five. However, the wordings of the scales were adapted to reflect the different categories on the questionnaire. For the reciprocal benefits of universities' societal engagement, the wording was (1) *not at all*, (2) *very little extent*, (3) *little extent*, (4) *great extent*, (5) *very great extent*. The items developed to measure the factors affecting reciprocal benefits were worded with (1) *very low*, (2) *low*, (3) *medium*, (4) *high*, and (5) *very high*, and the scales for items on the mechanisms that enhance the sustainability of universities' societal engagement activities were phrased as (1) *not important*, (2) *slightly important*, (3) *moderately important*, (4) *important*, and (5) *very important*. All items were worded positively to lessen some of the challenges in coding the figures during the data analysis stage.

Validity

Validity in quantitative research refers to whether the indicators of an instrument

measure the purported concept (Bryman, 2008; Creswell, 2012). It evaluates the performance of the instrument used to measure the intended construct. Bryman (2008) proposed five mechanisms to ensure validity: face validity, the extent to which a measure reflects the content or concept in question; concurrent validity, the extent to which the results of existing measures comply with existing indicators judged to be valid; predictive validity, the extent to which the indicators predicts future events related to the construct; construct validity, the extent to which the full content of the concept is represented in the presumed measures; and convergent validity, the extent to which measures converged with measures developed through other methods. Face validity was applied to ensure the validity of the questionnaire by relying on the judgment of experts with experience and expertise in the area of interest (Bryman, 2008; Creswell, 2012; Neuman, 2007). Hence, the researcher received comments from his two supervisors and four other faculty members that work at the Institute of Pedagogical Sciences at Mekelle University, all of whom have relevant educational backgrounds and research experience. The researcher received comments related to the clarity of items (four cases), including the comprehensiveness of the Likert-type scale for reciprocal benefits; thus, items commented by the experts were revised accordingly.

Reliability

Reliability refers to the consistency of results or measures of a concept (Bryman, 2008; Creswell, 2012). The reliability of research instruments can be checked through different techniques, including test-retest, split-half, and inter-rater consistency mechanisms. The test-retest method measures the stability of measures at different testing periods (Bryman, 2012), while the split-half method measures the consistency of responses across the various domains and items of the instrument. Creswell (2012) indicates that the split-half method is applicable for assessing the consistency of responses. The inter-rater test compares the consistency of scores or observations of two or more raters for a given item.

Considering the relative weakness and strengths of the varied reliability methods, the split-half method was applied to check the reliability of the questionnaire. The survey was piloted on 36 faculty members working at the Ethiopian Civil Service University. The results of the pilot study were checked through Cronbach's alpha, a technique "used to calculate the average of all possible split-half reliability coefficients" (Bryman, 2008, p. 151) for attitude and other affective scales (Taber, 2017). The consistency of the items ranged from .70 to .95, as indicated in Tables 8 and 9.

Table 8 Reliability of Items Related to Economic and Non-Economic Benefits

Major Domain (scale)	Sub-domain (scale)	Sub-domain	Number of items	Cronbach's alpha
Perception of SERs of the benefits of societal engagement (32 items; α = .94)	Benefits to the university (17 items; α = .87)	Institutional economic benefits	2	0.84
		Individual economic benefits	3	0.71
		Contributions the quality of teaching and learning	4	0.86
		Contributions to research motivation and curiosity	4	0.91
		Contributions to visibility and legitimacy	4	0.86
	Benefits to industry (7 items; α = .89)	Expanded market chain	2	0.83
		Access to knowledge and technology	2	0.77
		Profit maximization	3	0.70
	Benefits to government (8 items; α = .86)	Contributions to foreign exchange	3	0.78
		Implementation of policies and strategies	3	0.73
		Social acceptance	2	0.92

Table 8 depicts the reliability of the questionnaire at the major scale and subscale levels. It reveals that at the major scale level (i.e., the reciprocal benefits of universities' societal engagement combining 32 items), reliability is .94. The reliability of the responses is somewhat similar across subscales, such as benefits to the university (17 items; α = .87), benefits to industry (7 items; α = .89), and benefits to government (8 items; α = .86). The alpha level for the major and subscales is acceptable as the alpha scores greater than .7 (Cortina, 1993; Taber, 2017).

Table 9 Reliability of Items Related to Factors and Mechanisms

Domain	Sub-domain	No. of Items	Cronbach's Alpha
Factors affecting reciprocal benefits (19 Items; α = .95)	Factors related to leaders	10	0.94
	Factors related to the societal engagement of researchers	3	0.82
	Factors related to societal engagement units	2	0.85
	Factors related to tasks	4	0.80
Mechanisms that enhance the sustainability of universities' societal engagement (12 items; α = .94)	Creating long-lasting partnerships	4	0.90
	Maintaining information and task rigor	4	0.88
	Development of clear exit strategies	4	0.85

Table 9 depicts alpha statistics for the responses of SERs regarding the factors affecting reciprocal benefits (19 items; α = .95) and mechanisms that enhance the sustainability of universities' societal engagement (12 items; α = .94). Relying on the recommendations of previous researchers (Cortina, 1993; Taber, 2017), the items have acceptable levels of reliability (i.e. α > .7).

4.4.4. Data Collection Procedures and Response Rate

After the reliability and validity of the questionnaire survey were assured, it was administered to 158 SERs selected from five public universities in Ethiopia. Given the problems that prevailed during the study period (chiefly, war and COVID-19), the researcher administered the questionnaire online. He developed the questionnaire using Tampere University's license for Microsoft Office Forms; thus, a short text that informs the participant about the purpose of the research and anonymity of the responses, and a link that direct the research participants into the questionnaire were sent to each SER whose email address had been obtained.

The online survey was administered from April to July 2021, and a total of 123 completed questionnaires were received, for a response rate of 77.84 percent. During

the data collection period, 36 participants were not able to access the email link; thus, the questionnaire survey was sent to them as an attachment. This meant that 87 participants completed the survey in Microsoft Forms, and the remaining 36 surveys were completed in Microsoft Word and returned as an email attachment.

4.4.5. Data Analysis

Data collected through the questionnaires were organized and prepared for further analysis**.** The responses of each respondent were fed into SPSS software v. 21, after which both descriptive and parametric inferential statistics were employed to analyze the data.

The data were cleaned and assumptions regarding normality and missing data were examined. The normality of the data was assessed visually through methods such as histograms, revealing that the data followed a bell-shaped distribution across the different variables. Additionally, the skewness and kurtosis of the data were found to be closer to zero, indicating normal distributions. To confirm the absence of missing data, summary statistics were used, and it was determined that no missing values were found. This can be attributed to the design of the online survey, which prevents participants from skipping or leaving items unanswered.

Descriptive statistics such as percentage, mean, and standard deviation were employed to summarize the quantitative data and develop some insights on the possible differences among different respondent categories (Creswell, 2012). In addition, inferential statistics were applied to extend the descriptive statistics. Inferential statistics employ "probability theory to test hypotheses formally, permit inferences from a sample to a population, and test whether descriptive results are likely to be due to random factors or to a real relationship" (Neuman, 2007, p. 269). Hence, one-sample *t*-tests, Pearson correlation coefficients, linear regressions, and chi-square tests were applied to test the mean response differences among SERs. The one-sample *t*-test was used to examine differences between the mean responses of SERs and the testing midpoint ($M = 3$) for the items involving five-point Likert-type scales. The Pearson correlation was used to examine relationships among continuous variables of the research, such as work experience, the total amount of

money allocated to SEPs, and the total amount of money disbursed to SERs and other stakeholders, mostly to industry and government. Furthermore, linear regression was employed to examine the variables that predicted the amount of money that SERs and stakeholders solicited from SEPs. The chi-square test was employed to examine the response distribution differences based on SERs' academic rank, disciplinary area, and work experience as to the factors affecting the reciprocal benefits and the mechanisms that enhance the sustainability of universities' societal engagement.

4.5. Integration of Qualitative and Quantitative Research Stages

Integration refers to "how different approaches and data sets— usually perceived as qualitative and quantitative—are brought together in research settings" (Kerblad, Seppa¨nen-Ja¨rvela, & Haapakoski, 2021, p. 152); this integration can take place at different stages of the research, such as the design level, the methods level, the interpretation level, or the reporting level (Berman, 2017; Fetters et al., 2013). In this case, the integration of the qualitative and quantitative phases began at the design level. More specifically, the results of the qualitative stage were used to build the second, quantitative stage of the research. The qualitative inquiry was used to develop the data instrument (i.e., the questionnaire) and to generate research hypotheses to be addressed using large group of participants from different universities in Ethiopia.

The integration of the qualitative and quantitative phases was also carried out at the methods level following Fetters et al. (2013) four approaches relevant to integrating qualitative and quantitative research: connecting (one database links to the other through sampling), building (one database informs the data collection approach of the other), merging (the two databases are brought together for analysis), and embedding (data collection and data analysis link at multiple points). While some of these approaches such as connecting and merging fit the concurrent and explanatory sequential designs, respectively, building seemed feasible for an exploratory sequential mixed research design. Fetters et al. (2013) state that "integration through building occurs when results from one data collection procedure informs the data

collection approach of the other procedure, the latter is built on the former" (p. 2140). Therefore, the building approach was followed to integrate the quantitative and qualitative data at the methods level.

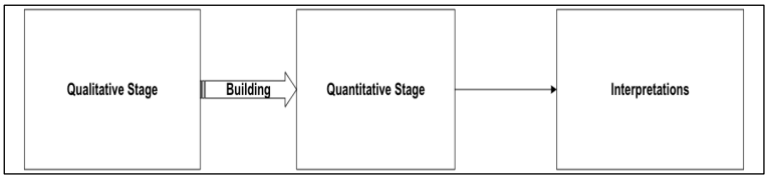

Figure 12 Sequence of Qualitative and Quantitative Approaches

Figure 12 depicts the sequence of qualitative and quantitative research approaches. Quantitative research is built on the results obtained from qualitative research, and the interpretations are obtained from both qualitative and quantitative research.

Integration at the interpretation and reporting levels can be realized through techniques such as data narratives (combining the qualitative and quantitative findings in a single report or series of reports), data transformation (one type of data is converted into the other type and integrated with the data that have not been transformed), and joint displays (integrating qualitative and quantitative data by bringing the data together through visual means) (Fetters et al., 2013). Integration at the interpretation and reporting levels of the present study was the undertaken by presenting the qualitative and quantitative data sequentially and integrating them in the discussion and conclusions section of the research (see chapter 7).

4.6. Ethical Considerations

Ethical considerations involve the processes of maintaining the integrity of research. It typically addresses issues related to keeping research participants from any potential harm or deception and avoiding participation without participants' consent (Bryman, 2012). Therefore, the efforts undertaken to fulfill the ethical consideration of the research are described in the following sections.

4.6.1. Informed Consent

As indicated above, the empirical data in the present research were collected from faculty (SERs, top university management, college research and community service heads) and practitioners from industry (seed producing firm) and government (a local woreda agriculture extension worker).

Israel and Hay (2006) state that the informed decision of participants could be obtained through recording or by asking the presumed participants to sign a letter of consent form. Therefore, the informed consent of the participants who participated in the qualitative phase of the research was ensured through an informed consent letter. The informed consent letter (see Appendix 1) was prepared in advance of the interview to explain the purposes of the research, the data collection processes, and the major domains of the interview; finally, it asks the potential participants to provide consent in writing. Following this, individuals who agreed to participate in the interview process were approached and the interviews were carried out. To ensure the informed consent of participants in the quantitative stage of the study, the researcher attempted to state the purposes, processes, and anticipated outcomes of the research in the survey questionnaire. Survey participants were also informed that participation in the survey was undertaken on voluntary basis.

4.6.2. Confidentiality

Every effort was made to ensure the confidentiality of the research participants. On one hand, the expected (institutional and national) audiences of the research results were indicated in the informed consent letter. In addition, as the provision of informed consent is not sufficient to assure the confidentiality of respondents, the researcher engaged in substantial discussions with the participants when new issues and processes emerged in the processes of data analysis, reporting, and publication. Kaiser (2009) states that "to facilitate ongoing discussions, the researcher should first make the respondent aware of the fact that confidentiality might be further discussed at a later point in time" (p.1638).

The privacy of the study participants was also ensured through anonymization and providing them with the right to decide which information to provide and which information not to share. Anonymity is a common approach ensure participants unidentifiable (Kaiser, 2009). Besides, participants were given full autonomy to make a decision on the kinds of information they provide. Along the way, participants were given the right to cease their participation in the research if they wished.

4.6.3. Objectivity

Objectivity is a dynamic concept that requires consistent and appropriate levels of attention throughout all research processes, from problem identification to the final research report. While there is no exhaustive list of solutions to the problems of research objectivity in qualitative research, reflexivity is a common strategy to improve objectivity. Reflexivity refers to processes in which researchers ask themselves to consider the process and the positionalities of research respondents (Cousin, 2010). In addition, the use of different data sources is important to enhancing the objectivity of qualitative research. Therefore, to improve the objectivity of the present study, the researcher tried to follow the principle of reflexivity and use multiple data sources. The researcher strove to pose questions that reflect his own positions against the positions of the data collected from the different sources and of course to situate the research results with the extant literature on universities' societal engagement.

5. QUALITATIVE STAGE

This chapter details the qualitative stage of the research and is divided into seven sections. The first presents the demographic characteristics of the research participants while the second section discusses the nature of societal engagement at Mekelle University. In the latter emphasis is given to provide an overview of Mekelle University and its societal engagement activities, and organization designs and role strains. The third section describes the activities and dimensions of universities' societal engagement, and the fourth presents the benefits of universities´ societal engagement to the three institutional spheres: university, government, and industry. In this section, the views of participants are summarized under the two key themes (i.e., economic and non-economic benefits) highlighted in chapter three. The fifth section is devoted to the factors that influence the reciprocal benefits of universities' societal engagement. Hence, the view of the participants is summarized under three themes: factors related to boundary spanners, factors related to boundary-spanning units, and types of societal engagement activities. The sixth section highlights the mechanisms that help enhance the sustainability of universities' societal engagement. The views of the participants are narrated under three key themes: task rigor, creating long-lasting partnerships, and developing clear exit strategies. Finally, the seventh section presents a summary of the qualitative stage of the research, highlighting the key research questions that emerged from this exploratory phase.

5.1. Participants´ Demographic Characteristics

The demographic characteristics of the research participants are presented in the table below.

Table 10 Demographic Characteristics of Research Participants

Code	Role	Age	Gender	Qualification
PI-KTT	Principal investigator for Knowledge and Technology transfer project	58	male	PhD
PI-CS	Principal investigator for Community service project	41	male	PhD
PI-CP1	Principal investigator for Consultancy project	55	male	PhD
PI-CP2	Principal investigator for Consultancy project	49	male	PhD
TOPL1	Top Leadership, VPRCE	43	male	PhD
TOPL2	Top leadership, VPRCE	50	male	PhD
TOPL3	Top Leadership, Budget and Planning	50	male	MA
RCsC1	Research and Community Service chair	52	male	PhD
RCsC2	Research and community service chair	45	male	PhD
RCsC3	Research and community service chair	43	male	PhD
RCsC4	Research and community service chair	58	male	MEd
RCsC5	Research and community service chair	53	male	PhD
In-SF	Industry- Seed firm	54	male	Diploma
Gov-WAE	Government-Woreda agriculture extension	36	female	BASc

Table 10 depicts that 14 participants (13 male and 1 female) participated in the qualitative stage of the research. Four of the participants were principal investigators for different societal engagement projects: one each for community service and KTT and two for consultancy service projects. Three participants were from the university's top leadership, involving one from the plan and budgeting office and two from the VPRCE. Five participants were college research and community service chairs while the remaining two were from the industry Seed Firm (In-SF) and government Woreda Agriculture Extension (GOV-WAE) institutional spheres. The age of the research participants ranges between 36 and 58.

5.2. The Nature of Universities' Societal Engagement at Mekelle University

Societal engagement is understood in the institutional context of higher education institutions (Mugabi, 2015; Nkhoma, 2020). Therefore, this section discusses the nature of universities' societal engagement, using Mekelle University as a case study.

5.2.1. Mekelle University and Its Societal Engagement Activities

Mekelle University was established in 2000 by the merger of Mekelle University College and the College of Business and Economics. According to the national university grouping, Mekelle University belongs to the first generation of Ethiopian universities, which comprise eight public institutions that are the oldest in the country. In addition, relying on the recent national university classification, Mekelle University is grouped with research universities, along with Addis Ababa University, Gondar University, Bahir Dar University, Jimma University, Hawassa University, Arbaminch University, and Haromaya University.

Having started with fewer than 200 academic staff and students, the university had grown to 29,317 students and 2,234 academic staff by 2019 (Mekelle University, 2019). Of those students, 23,631 (80.6%) were enrolled in undergraduate programs, of which 16,897 (71.5%) were in regular programs, 1,066 (4.5%) in extension programs, and 5,550 (23.49%) in summer programs; 118 (0.5%) in distance-based programs. In addition, in 2018-2019, the university enrolled 5,009 and 677 students in masters and doctoral programs, respectively. In the same period, the university had 7,484 employees, of whom 2,234 (29.85%) were academic, and the remaining 5,250 (61.15%) were non-academic (Mekelle University, 2019). The academic staff comprised 86 expatriates (3.85%) and 2,148 (96.15%) Ethiopians. In terms of qualifications, 1,344 (62.5%) and 441 (20.48%) of the Ethiopian academic staff had masters and bachelors degrees, respectively. In the same period, the number of academic staff with PhDs were 246 (11.45%), while (5.30%) were medical doctors. In 2019, the university hosted 121 academic programs at the undergraduate level, 192 at the masters level, and 38 at the doctoral level.

According to the university's legislation (Mekelle University, 2017), the university has a president and three vice-presidents: a vice president for academics; a VPRCE, and a vice president for support services. The university's president, who acts as its chief executive officer (Mekelle University, 2017), is accountable to the university's board, which has seven members (FDRE, 2009). The three vice presidents are established inline the core functions of the university. While the vice president for academics is responsible for teaching and learning, the VPRCE is responsible for

research and community engagement activities. The vice president for support services manages the university´s finances and facilities (Mekelle University, 2017). An overview of the university's organizational structure is presented in Appendix 6.

Societal engagement is the responsibility of the VPRCE. To effectuate this, the VPRCE has two directorate offices: the research and postgraduate and university–industry and community linkage (UICL) directorate offices. The UICL directorate office has three key areas of focus: KTT, community engagement, and industry linkages.

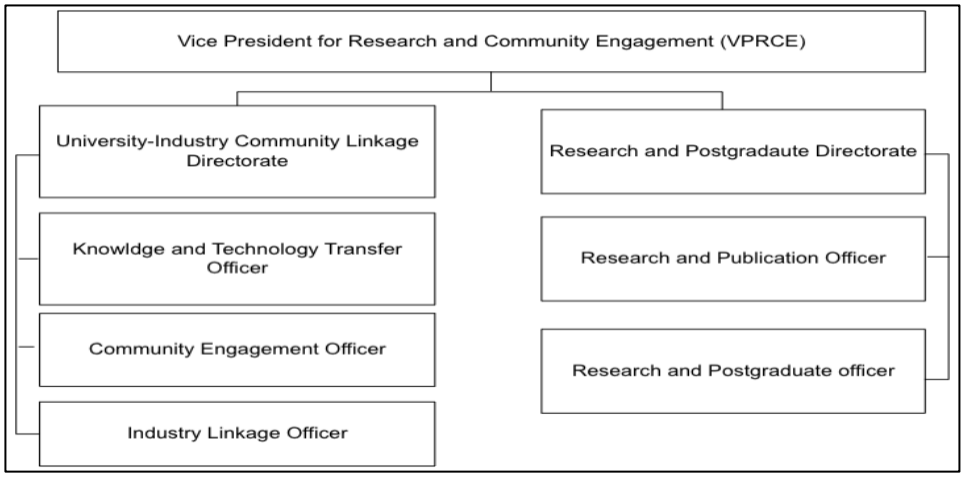

Figure 13 Organizational Structure of the VPRCE

The research and postgraduate directorate oversees the university's research funded at different streams (small, medium and large) scales[8] and involving different groups of researchers (junior researchers, young female researchers),[9] while the UICL

[8] Small-, medium-, and large-scale research differ in terms of the composition of researchers and amount of funds granted. Small-scale research involves academic staff with a rank below assistant professor and has a budget ceiling of 100,000 Ethiopian birr. Medium-scale research projects are supposed to involve at least four researchers from different specializations (two with the rank of assistant professor or above and two with an academic rank below assistant professor). Medium-scale research should also include at least two postgraduate students and one PhD student. The large-scale research is required to comprise at least five team members (three with an academic rank of assistant professor or above and two with an academic rank below assistant professor) from different specializations. The budget ceilings for medium- and large-scale research are 500,000 and one million Ethiopian birr, respectively.

[9] Junior researchers are competent researchers with an academic rank below assistant professor, while the young female research stream involves female researchers with an academic rank below assistant

directorate office manages the university´s engagement with non-academic institutions, mainly industry, the community, and non-governmental organizations (Mekelle University-Reserach Development and Partnership Directorate Office, 2020)

The institutionalization of different offices at the VPRCE demonstrates the university's commitment to and interaction with different groups of stakeholders. An interviewee from the college research and community services suggested that

> the inclusion of such offices, by and large, is essential to reach different stakeholders. It is also important to define its internal activities in line with various dimensions of societal engagement. (RCsC1, February 6, 2020)

Similarly, an interviewee from the top leadership asserted that "the offices under the UICL were designed to channel the university's interaction with different groups in society" (ToPL1, January 15, 2020). These offices have thus been institutionalized to enhance the interactions of the university across different boundaries (Bess & Dee, 2008a).

Societal engagement is also institutionalized at the college[10] levels. According to Mekelle University's organizational structure, each college has a research and community service council headed by a chair who is accountable to the college dean (Mekelle University, 2017). The college research and community service council, among other things, is responsible for managing the college's research and community service activities. However, these councils, despite their roles in the evaluation of project proposals, do not have an exclusive mandate to allocate funds to different research and societal engagement activities. An interviewee from the college research and community service chairs noted that

> the council participates in fulfilling some official formalities, but evaluation of the research and engagement proposals, including the allotment of recurrent

professor. The budget ceiling for the junior and young female research streams is 100,000 Ethiopian birr.

[10] The Mekelle University organizational structure comprises colleges and institutes. Although they have slight differences with regard to the number of departments and students, the two types of unit have equal status.

> budget for research and engagement activities, is decided by the vice president for research and community services. (RCsC1, February 6, 2020)

The management of research and societal engagement activities is thus shared between college-level research and community service councils and the VPRCE. It is clear that institutional units interact to realize the university's mission with regard to research and community engagements.

5.2.2. Organizational Design of Societal Engagement and Role Strains

Organizational design involves the allocation of tasks and responsibilities to individuals and departments within an organization, including formal reporting channels, coordination of groups and tasks, communication, and the integration of efforts (Daft, 2008). Mekelle University has an organizational design that is in line with its core mission areas: teaching, research, and community and consultancy services.

However, role strain is apparent among leaders working at the different units created to execute the university's societal engagement activities. According to Peeke (1980), role strain exists "when expectations are contradicted or actors do not hold expectations in common" (p. 77). Role strain may prevail when officers simultaneously have two or more responsibilities, or when the expectation of different actors of a single individual conflict with one another. Every college has research and community service councils designed to realize their research and societal engagement activities (see Appendix 6). However, the position and expectation of different actors (deans and officers at the VPRCE) and the roles allocated to the college research and community service chairs appear to be in conflict.

First, college research and community service chairs are supposed to spend 50% of their time on office work and the other 50% on teaching and research activities (Mekelle University, 2017). Therefore, although holding dual responsibilities in higher education institutions is unavoidable (Clark, 1983; Waugh, 2003), the responsibilities in this case may conflict with each other. By virtue of holding the

chair role, research and community service chairs are members of college councils. Therefore, they participate in every management meeting held at the college level. They also lead the college's research and community service councils. In parallel, the chairs are required to participate in teaching and research activities, causing role strain. Especially in colleges involving health sciences, technology, and engineering fields—where considerable research and engagement activities existed—six credit hours a week (50% of the academic staff's responsibility is not sufficient. An interviewee who had been a college research and community service head noted the following:

> I spent much of my time in the office. My time from morning to evening was occupied by office tasks. Sometimes, the workload challenged my teaching tasks. Personally, I don't like to miss any scheduled classes. In addition, I need to be adequately prepared for my teaching. So, I found the office not only challenging but also incompatible with my teaching and research responsibilities. It influenced me in many cases. So, I resigned. (RCsC1, February 6, 2020)

This shows that, in the most cases, the role strain between teaching and research and office responsibilities can prompt research and community service chairs to resign from their leadership positions.

Second, the institutionalization of research and community services at the college level does not mirror the offices institutionalized at the VPRCE. Organizational units existing at the top level, such as KTT and community and industry linkages (see Appendix 6), are jumbled together in one office: the research and community service council. Although there are different officers at the university level, the research and engagement activities of colleges are managed by a single unit, having one chair. This has created role strains for some college research and community services chairs. One such interviewee reflected that "managing research and the different aspects of societal engagement activities such as KTT, community service, and consultancy services stretches the research community service chairs into different activities that sometimes oppose one another" (RCsC1, February 6, 2020). This implies that organizational design at the college level lacks differentiation. Consequently, task overload and role strain are likely to exist. According to Bess and Dee (2008a), the

failure to harmonize and balance different tasks is likely to impact the effectiveness of workers.

Third, the expectation of college deans and officers at the VPRCE of college research and community service officers appears to breed conflict. In fact, according to Mekelle University's governing documents, college research and community services are accountable to the college dean (Mekelle University, 2017). However, the informants argued that the college research and community service heads are also diagonally accountable to different offices at the VPRCE (see Appendix 6). An interviewee from the college research and community service heads stated that

> the college research and community service offices are accountable to almost three bosses—the college dean (who is actually the direct boss) and diagonally to the two offices at the vice president for research and community services—i.e., the office for research and postgraduate studies and university–industry and community linkage. (RCsC3, February 6, 2020).

Given the loosely coupled nature of higher education institutions (Clark, 1983), it is obvious that the organizational design pertaining to societal engagement activities may experience considerable role strains. However, it is worth noting that the problems with organizational design may create inefficiencies and excessive workloads at both the individual and university levels.

5.3. Types and Dimensions of Universities' Societal Engagement

The SEU has different dimensions and activities (Nabaho et al., 2022), and previous research (Mugabi, 2015) has shown that the institutionalization of universities' societal engagement requires a deeper understanding of the concept itself, such as what components it entails and what common threads are shared by the components of that engagement. This section outlines the types and definitions of societal engagement in the experiences and practices of Mekelle University. The data suggest that the types of societal engagement can be classified based on two dimensions: the institutional structure dimension and the sources of funds dimension.

5.3.1. Types of Universities' Societal Engagement Based on the Institutional Structure Dimension

Based on Mekelle University's organizational structure, societal engagement comprises three types: *KTT, community service, and consultancy services*. Each type of societal engagement is institutionalized in line with the bureaucratic principles that Bess and Dee (2008a) identified: division of labor, standardization, formalization, impersonal relationships, promotion on technical competence, and a well-defined hierarchy. In terms of division of labor, the officers working in the three types of societal engagement have separate but linked jobs. Similarly, the institutional policies and procedures pertaining to each type are formally written and communicated to the university's lower-level academic units. Notably, as with other units, officers for the three types of societal engagement activities are chosen on the basis of merit in a competitive process and are also required to abide by the appropriate authority: "obedience to formal offices in an organization" (Bess & Dee, 2008a, p. 210).

The three aspects of societal engagement are defined institutionally to reduce confusion related to finance and human resource management. An interviewee from the top leadership claimed that "unless you devise some fine lines between the different tasks, it is difficult to manage the resources that each office requires and for the process expected to be performed" (ToPL1, January 15, 2020).

Table 11 Aspects of Societal Engagement

Aspects	Definition	Key aspects
KTT	Knowledge transfer: "the processes of transferring scientific findings or new knowledge for public use" (Mekelle University, 2018b, p. 2) Technology transfer: the process of transferring technologies supported with knowledge for public use or for commercialization after validating their usefulness through participatory demonstrations and evaluations with users (Mekelle University, 2018b).	-Involves the adaptation and adoption of knowledge and technology by society. -involves knowledge- and technology-driven interventions and support. -Involves expertise knowledge and experience. -Payment is made with the consent of different parties.
Community service	Any unpaid service intended to help and/or serve individuals, communities, and private and public entities in their endeavors to grow and transform. Unlike KTT, researchers entitled to provide community services activities are not allowed to receive professional payments (Mekelle University, 2016, p. 6).	-Unpaid services undertaken to curb problems related to health, the environment, and the humanities. -This is not voluntary or philanthropic service, although it involves the informal efforts of faculty members (Mekelle University, 2018b).
Consultancy services	The provision of any professional service demanded by stakeholders or clients from the university. It can provide a platform for the exchange of both explicit and tacit knowledge on areas of collaboration. Unlike community service, experts engaged in consultancy service activities are eligible to receive professional fees (Mekelle University, 2018b).	- Guided by external demands. - Involves the application of expertise knowledge to guide the course of an organization. -Payment may be made subject to agreement among different parties.

Table 11 presents the institutional definitions of the three aspects of societal engagement at Mekelle University; they reveal the overlap between different types of societal engagement, as discussed in the literature both in the global north (Bolisani & Bartianu, 2018; Smirnova, 2015; Wahab, Rose, & Osman, 2012) and on the African continent (Nabaho et al., 2022): that the university's third mission is an overloaded concept characterized by different dimensions and activities.

Technology transfer is conceptualized as the adaptation and dissemination of new entities (tangible technologies such as computers or intangible technologies such as ideas) for public or institutional use. Technology, after being tested and validated, can be commercialized to the wider public. Similarly, knowledge transfer is defined

as the dissemination of explicit knowledge resulting from scientific research. In fact, the distinction between implicit and explicit knowledge, as Smirnova (2015) argues, is debatable. Explicit knowledge is coded in the form of formulae, publications, or other means that are easy to understand and interpret. Therefore, KTT is defined as the transfer of know-how and tangible or intangible technology to potential users. In other words, KTT embrace the essence of technology transfer (such as artifacts and objects) and the necessary skill (know how) relevant to exploit the technology. The institutional definition of KTT acknowledges the interdependence between knowledge and technology, as Carayannis et al. (2017) have noted—*technology is the tangible form of knowledge.*

Compared to KTT, community service activities are undertaken on a voluntary basis by individuals or group of experts to address social problems. Faculty members who participate in activities labeled as community services are not entitled to professional fees, so community service tends to reflect the work that faculty members carry out to solve societal problems. However, as for the other types of societal engagement, community service projects are structured in terms of time (i.e., project beginnings and endings) and human resources (i.e., in terms of defined groups of researchers). Community service activities are different from the campaign activities that the university undertakes to address urgent problems such as the campaign to clear the desert grasshopper or supporting farmers in collecting crops at harvest time.

Consultancy service involves the exploitation of faculty's expertise as identified by other stakeholders, mainly industry and government offices. It embodies the application of expertise and skills to solve societal problems. Unlike community service and KTT, consultancy services are initiated by external stakeholders who seek the cooperation of the university to help solve their problems.

However, the distinction between the three types of societal engagement is at some levels theoretical. In practice, it is difficult to distinguish community service projects from KTT and/or consultancy services. In fact, most community service activities focus on the provision of training to nearby communities or workers at various companies or institutions. However, even with community service, knowledge and technology can be transferred; thus, there is an undeniable overlap between KTT

and community service. Likewise, one may provide community services while delivering KTT or consultancy service to the university´s stakeholders.

Therefore, the three types of societal engagement are intractably related to each other. An interviewee from the college research and community service chairs confirmed that "you can't differentiate one from the other. The distinction between the varied types of university´s societal engagement is designed mainly to serve administrative purposes" (RCsC1, February 6, 2020). Despite nominal differences, the purpose of KTT, community service, and consultancy services is to support the society beyond the university campus. An interviewee from the college research and community service chairs noted that "whatever the labels, the different types of societal engagement activities have similar purposes—i.e., to support the community" (RCsC1, February 6, 2020). In this regard, the term "community" involves various stakeholders such as industry, small and micro finance firms, governmental offices, and non-government organizations (Mekelle University, 2018a, 2018b).

The arrangement of societal engagement in different aspects may also foster an opportunity for faculty members to work on societal engagement activities. For example, an interviewee from top leadership asserted that:

> These classifications created an opportunity for faculty members to develop proposals for one stream and, in case their submission is not successful in either of their target streams, they may switch to an appropriate stream. Therefore, the institutionalization of these different streams of engagement fosters faculty engagement in societal affairs (ToPL1, January 15, 2020).

However, as calls for the three types of societal engagement activities are released at about the same time, faculty members actually have only a limited opportunity to switch their proposals from one stream to another. An interviewee from the college research and community service chairs commented that "the calls for research and other engagement activities are released at about the same time. So, that creates pressure on research and community service officers. In addition, even researchers are confused. That is why they jumble their tasks hastily" (RCsC1, February 6, 2020). Part of the problem is related to the use of government budgets for research and

community service. The recurrent budget for research and community services is expected to be used in line with government rules and regulations. For other activities, the calls for different types of societal engagement are announced at the beginning of the budget year. A community service PI summarized the problem as follows:

> Summer is an ideal season for agricultural research and engagement activities. However, the financial system in Ethiopia follows a different approach. If you take a grant for whatever research and engagement type, you are required to abide by the fiscal year, which ends in June. So, it is difficult to adapt to all research endeavors. On one hand, it is released late [sometime in December], and on the other hand, it has to be settled early [before the rainy season]. So, it is a task in itself. (PI-CS, January 31, 2020)

Thus, the budget rules constrained the ideal implementation of different types of societal engagement. Engagement activities funded by the university are likely to experience problems related to bureaucracies pertaining to disbursement and settlement.

5.3.2. Types of Societal Engagement Based on the Sources of Funds Dimension

Considering sources of funds, two forms of societal engagement activities were identified: externally and internally funded societal engagement activities. Externally funded activities are initiated and financed by organizations outside the university. Conversely, internally funded societal engagement activities are initiated and financed by the university itself, using its recurring budget or other pools of funds for research and community service. Hence, while the funding and scope of externally driven societal engagement activities are determined by external organizations, internally funded societal engagement activities are determined by Mekelle University.

Unless clear indications and invitations are made, grants for internally and externally funded societal engagement activities are awarded through a competition. For internally funded societal engagement activities, the university announces a call based

on the annual budget allotted to different aspects of societal engagement. Consequently, the budget for small-scale societal engagement activities (including small-scale research) is distributed to each college through a quota system. Faculty members compete for research and community service funds allotted to each college through a quota system. However, as illustrated in section 5.2.1, the calls and budgets for medium- and large-scale societal engagement activities (including research) are carried out by the VPRCE, and evaluations of those proposals begin by classifying them into one of three areas: biological sciences, natural sciences, and social sciences.

Even competitions for externally funded societal engagement activities are managed by the university in cooperation with the funding organizations. The university and those organizations collaborate in selecting the most promising SEPs. In addition, joint technical teams are established to oversee the progress of societal engagement activities that have received funding.

The initiation and implementation of internally funded societal engagement activities are managed by the university, which outlines key thematic areas developed through inductive or deductive approaches. In the inductive approach, each college undertakes consultations with its faculty members and develops thematic areas. While refining the thematic areas, colleges are expected to consider national policies and strategies. Finally, the VPRCE, after refining the thematic areas of the colleges, published the pertinent thematic areas to be pursued in its strategic efforts. However, this incremental approach is not always binding. An interviewee from the college research and community service chairs remarked that:

> in some cases, especially in the biotechnology and agricultural sectors, the thematic areas are developed by federal ministries such as the Ministry of Health, the Ministry of Agriculture, and the Ministry of Technology and Innovation and then diffused into the respective colleges and institutes of the university (RCsC3, January 31, 2020).

The deductive approach is important for mobilizing resources that address urgent national problems. Unlike the inductive approach, the deductive approach is imposed by high-level authorities without considering the contexts of different universities. The thematic areas, whether developed through inductive or deductive

approaches, are supposed to guide the societal engagement activities of universities for five years, or one strategic period. However, when necessary, the university can revise the thematic areas before the end of the strategic period.

5.3.3. Summary

Based on the organizational structure, the societal engagement of universities comprised three types: KTT, community service and consultancy services. These activities are further classified as internally or externally funded SEPs. The Mekelle University devised different organizational units at both the leadership and operating levels to discharge its societal engagement activities. The organizational units are designed to foster interactions with internal and external units and organizations. More specifically, it was found that societal engagement activities and units prompt the university to interact across its internal and external boundaries. In addition, consistent with previous literature on the third mission of universities (Nabaho et al., 2022), the distinctions between community service, KTT, and consultancy services are nominally made to reduce the complexities related to the governance and administration of university's societal engagement activities. There appears to be a potential convergence among the different types of societal engagement activities. Therefore, the application of the organizational structure and sources of funds to characterize Mekelle University's societal engagement may help reduce some of the conceptual and practical confusions and complexities in those activities.

5.4. The Benefits of Universities' Societal Engagement

This section presents the reciprocal benefits of Mekelle University's societal engagement to the university, government, and industry. The benefits are discussed focusing on the economic and noneconomic benefits synthesized outlined in chapter three.

5.4.1. Benefits to the university

Data collected from interviews with PIs in different SEPs, college research and community services chairs, top leaders, and practitioners from collaborating institutions revealed that Mekelle University generates economic and non-economic benefits from its social engagement activities. Based on the views of the participants, those two kinds of benefits have different aspects, as the following sections detail.

Economic Benefits

Economic benefits refer to monetary gains that the university generates from its societal engagement activities; two aspects of economic benefits—institutional and individual—were identified. The features of institutional and individual economic benefits are discussed in the following sections.

Institutional Economic Benefits: These are the financial benefits from societal engagement activities that accrue to the university's central revenue accumulation units. An interviewee from the top leadership reported that the university "draws money to its central account from different societal engagement activities which are eventually important to cover part of its expenses for infrastructure, day laborers, and other fringe activities" (TOPL1, January 25, 2020). An interviewee from the college research and community service chairs expounded on some earlier views by noting that "the university draws money in the form of overhead costs from different projects which, in fact, are channeled into the university's revenue generation hubs" (RCsC2, January 30, 2020). Our observations of and discussions with informants from the university's planning office revealed that all externally funded research and engagement projects are supposed to pay between 5% and 10% of their total budgets to the university in the form of overhead costs. These funds are supposed to be collected from the externally funded SEP, depending on the agreement between the university and other actors. An interviewee from the university's planning office reflected that:

> there is no hard and fast rule with regard to the overhead costs that the university is supposed to generate from externally funded societal engagement projects. The amount of overhead costs to be generated is decided through the common will and interest of the external funders. (TOPL2, June 21, 2020).

The university's annual performance reports reveal that the monetary benefits generated from SEPs have shown considerable improvement since 2016/2017(Mekelle University, 2019). For example, in 2018/2019, Mekelle University earned 291,814,662.53 Ethiopian birr-i.e.,USD $999,0231 (109,467,720.32-i.e., USD $3747611 from engagement activities other than research and consultancy, and 182,346,942.21- i.e.,USD $6242620 for research and consultancy projects; (Mekelle University, 2019). These figures imply that the university has the ability to earn significant benefits from its societal engagement activities. Indeed, the income generated from research and consultancies in 2018/2019 exceeded the target for the budget year by 179.1 million birr (Mekelle University, 2019).

The FDRE higher education proclamation states that "public institutions shall be funded by the federal government or state through block-grant system based on strategic plan agreement" (FDRE, 2009, p. 5023). Consequently, the expenses of public universities are covered by the federal government (Feleke, 2016; Mamo, 2015). However, given the country's growing budget deficits, the sustainability of the federal budget is questionable. An interviewee from the university's budget and planning office shared his view on budget deficits:

> although the government specifies the amount of budget that the university is to receive over five years, the budget is actually released monthly. Therefore, it is difficult to manage the university's core activities all in all through the budget released by the federal government. (TOPL2, June 21, 2020).

This implies that the funds received from the federal government are not sufficient to cover the university's core activities. Thus, the generation of income through activities such as consultancy projects is essential to addressing the university's financial challenges. A PI for KTT, for example, shared his suspicion as:

> The government will not cover all costs of universities as it has been doing for years. With the increase in public demand, the government will not provide funds for public universities. One day, the government will adopt serious austerity measures. Therefore, universities should develop and adapt different revenue generation mechanisms such as making contracts with industry and other institutions. (PI-KTT, May 25, 2020).

The participants' views appear to support some of the government mandate that expects public universities to generate incomes that addresses part of their budget deficits through the establishment of enterprise centers (FDRE, 2019). Against this background, Mekelle University has established an enterprise center to solicit revenue from different activities which, according to the participant from the budget and planning office, is tasked to "hunt for potential markets for the university´s capacity" (TOPL1, January 25, 2020).

The interviewees described considerable challenges in obtaining institutional economic benefits from SEPs. Part of the issue is related to government directives regarding the financial management of research and engagement projects. The interviewees agreed that although both research and engagement activities are distinctive, financial management tools tailored to the nature of either are lacking. For instance, a PI for a community service project, explained his grievance as follows:

> Researchers spend much of their time thinking about financial settlements. It is also difficult to make the research and engagement project activities compatible with the financial techniques and jargon used in other sectors. Consequently, some potential funders are uncomfortable with the procedures used to manage the financial aspects of research and engagement projects. (PI-CS, January 31, 2020).

The absence of tailored national and institutional directives to manage the funds allotted to Mekelle University's societal engagement makes the process of institutional income generation somewhat uneven. Indeed, the tools and procedures used to govern the budget for research and societal engagement activities are almost identical as those used in other revenue streams. A PI for community service evinced

sadness as he explained that "research and engagement activities are managed using similar regulations with other activities such as road construction or apartment construction" (PI-CS, January 31, 2020). This implies that the financial management of research and engagement activities should be adapted to the nature and characteristics of those tasks.

Individual Economic Benefits: Individual economic benefits refer to the financial benefits that the principal[11] and associate[12] researchers generate from SEPs. Unlike institutional economic benefits, individual benefits are channeled to the specific researchers. The interviewees believed that individual economic benefits were generated in three ways. First, principal and associate researchers are entitled to daily allowances that cover part of their costs when doing fieldwork in SEPs. One of the college research and community service heads stated that "academic staff involved in any SEPs are entitled to a per diem that covers the money they spend in fieldwork" (RCsC4, January 31, 2020).

The amount of daily allowance given to researchers is determined by three factors: location, salary scale, and type of the societal engagement activity. Ethiopia has a national guideline on the amount of daily allowances reimbursed for each locality and salary scale (FDRE-Civil Service Commission, 2020). Internally funded societal engagement activities pay a daily allowance ranging between 120 and 300 Birr (circa US$4 and US$10).[13] Generally, the daily allowance is higher in larger cities than in smaller ones. In addition, although the daily allowance for externally funded societal engagement activities are largely determined by agreements between the university and funding institutions, the participants agreed that externally funded societal engagement activities pay a higher daily allowance than internally funded SEPs.

Second, beyond the daily allowance, principal and associate researchers generate benefits from societal engagement activities in the form of professional fees; that is, payments to recognize their expert contributions to designing and implementing

[11] Researchers who take the lead in the development and implementations of societal engagement projects.

[12] Researchers who support the development and implementation of societal engagement projects directed by other people.

[13] The daily allowance is calculated as 10% for breakfast, 25% for lunch, 25% for dinner, and 40% for accommodation.

SEPs. Unlike daily allowances, professional fees do not vary by place or salary scale. Although concrete guidelines on the amounts of professional fees are lacking, most SEPs pay between 500 and 2000 birr (circa $13 to $40) per day, and not all engagement projects are eligible for professional fee payments. The institutional guidelines (Mekelle University, 2018b) revealed that community service is not eligible for professional fees. An interviewee from the top UICL explained that "community service is about giving back to society. Faculty members are required to be altruistic to support a community that needs support" (TOPL1, January 15, 2020).

The daily allowances and professional fees generated from SEPs are important sources of relief to the financial challenges faced by faculty members. An interviewee from the college research and community service chairs explained the importance of the supplementary role of payments that SERs may receive:

> The salaries of faculty members are too low. Sometimes, it is difficult to manage your personal expenses using the monthly salary.… The money that individual researchers get in the form of professional fees and daily allowances are important to cover some of the limitations in the salary scale. (RCsC1, February 6, 2020).

However, this approach has certain drawbacks. Money is becoming a driving factor in faculty decisions to engage in societal engagement activities. A PI for community service noted that:

> The system unfortunately encourages or drives people to focus on the economic benefits or to give due weight to the economic benefits they generate from the societal engagement activities. It pushes you to become money-oriented. In other words, the system is not conducive to going beyond the financial benefits. You write a societal engagement proposal, then you defend it, then you get the money in January, then you settle the financial issues in June.… You see? It is more of a linear process that pays little attention to the impact on society (PI-CS, January 31, 2020).

This account supports some of the arguments in earlier research, such as Mamo (2015, p. 143) who reported that "even when academic staff are loyal to the

organization, many teachers supplement their income by providing services to other organizations, which may negatively influence the implementation of organizational goals" (p. 143). The salary scale for academic staff working in the Ethiopian higher education is low (Ayalew, 2012). Hence, faculty members consider societal engagement activities as an opportunity to generate income to supplement their salary. However, this emphasis on financial benefits may make researchers myopic about the impact of their societal engagement activities.

Third, participation in societal engagement contributes to the academic promotion of faculty members, which eventually translates into a salary increase. A community service PI interviewee felt that "although making generalizations is difficult, a considerable number of faculty members conduct societal engagement activities because they believe that one day it will help them with their academic promotions" (PI-CS, January 31, 2020). Participation in some forms of societal engagement is a requirement for academic promotion at almost all public universities in Ethiopia. For instance, Mekelle University's governing documents state that academic promotion is largely be evaluated on teaching and research (80%: 30% for teaching effectiveness and 50% for research effectiveness), with the remaining 20% occupied by two domains: participation in university affairs (10%) and community service (10%) (Mekelle University, 2017).

The inclusion of community services as a requirement for academic promotion reinforces faculty members' engagement in SEPs. However, the interviewees agreed that the community service requirement is a piece of low-hanging fruit that anyone can achieve without considerable effort. The weight given to community service does not challenge faculty members to expend maximum effort on community services activities the way they do when fulfilling teaching and research requirements.

There seems to be an incongruity between the requirement for academic promotion and the benefit that higher education institutions are supposed to provide to society. The KTT PI described this disconnect as follows: "at a time when higher education institutions are pressured to enhance their relevance to the society, the academic promotion for faculty members unfortunately inclines to teaching and research activities" (PI-KTT, May 25, 2020). This implies that the criteria for academic promotion are not in line with the demand that Ethiopian higher education

institutions are supposed to benefit societal development. Academic promotion is dominated by teaching and research performance, with any impact that faculty members have on addressing societal problems largely overlooked. This confirms the findings of previous researchers (Rowe et al., 2017; Smitha, Elsea, & Patrick., 2014) who overwhelmingly found that engagement activities were not rewarded on an equal basis with teaching and research functions. Paying less attention to societal engagement activities in the promotion of faculty members despite the clear demand for a strong linkage between universities and society may actually foster universities' *dis*engagement from societal affairs and problems. Reducing or discounting faculty's societal engagement in promotion and tenure decision is likely to negatively influence their efforts to solve societal problems (Rowe et al., 2017).

Non-Economic Benefits

Mekelle University also generates non-economic benefits from its societal engagement activities. According to the interviewees, three pertinent non-economic benefits can be identified: benefits to teaching, research, and the university's visibility and legitimacy.

Benefits to Teaching: The informants agreed that societal engagement contributes to the quality of teaching and learning. A consultancy project PI, for example, asserted that "involvement in societal engagement activities enhances the practicality and quality of one's teaching" (PI-CP2, June 25, 2020). This interviewee explained that issues of practicality and quality in terms exemplifying the theoretical aspect of teaching with concrete and relevant aspects of knowledge generated from SEPs.

Societal engagement activities contribute to the quality of teaching in two ways. First, they create an opportunity for practice-based teaching and learning; as described by Sheehan and Higgs (2013), that involves situated learning, experiential learning, and workplace learning. Involvement in SEPs helps bridge the gap between theoretical and practice-based learning. An interviewee from the community service PIs

confirmed that "in principle, the engagement activities are required to provide practical support to the teaching and learning activities that faculty members are teaching. However, whether such fusion exists or not is dubious" (PI-CS, January 31, 2020). Faculty members involved in societal engagement activities have broader possibilities to extract raw data or resources that support their teaching. One PI for consultancy projects said that "if you have limited experiences in fieldwork, your teaching floats on air. You face difficulties to narrate things in their practical senses" (PI-CP1, March 3, 2020). Therefore, data generated from societal engagement activities help faculty members improve the quality of teaching and learning processes. A similar assertion was made by the PI for community service:

> In principle, societal engagement activities should be linked with teaching and research endeavors. For example, if one has undertaken an engagement activity in irrigation or the conservation of national resources or the rehabilitation of degraded lands and brings the data and experience generated from the projects to one's teaching, that may help students strengthen their learning. It may make teaching and learning activities more practical. (PI-CS, January 31, 2020)

In addition, societal engagement activities equipped SERs to understand the applications of the knowledge they teach. An interviewee from the consultancy project shared his experience as follows:

> My involvement in a societal engagement activity equipped me with [knowledge of] existing social problems. It also showed me the incompatibility between the knowledge I teach here at the university and the knowledge required on the ground. I have therefore strived to create connections between the knowledge I deliver to my students and existing demands at the level of practice. I brought considerable data and cases from fieldwork in societal engagement activities and let my students complete their exercises using those data. Doing so helps to foster the exposure of my students to existing social phenomena. (PI-CP1, March 3, 2020)

As indicated by the interviewees, involvement in societal engagement activities helps faculty members develop a broader and deeper appreciation related to the

application of the knowledge they teach in the classroom. Engagement in any form of societal engagement activities reduces so-called free-rider teaching; that is, teaching a course or subject for the sake of transferring knowledge. The experience obtained from societal engagement activities helps faculty members consciously make teaching practical and relevant to the society.

Second, the interviewees argued that the SEU serves as a platform for students' practical involvement. One interviewee from consultancy projects insisted that "the societal engagement project sites are used as demonstration sites for students at different levels" (PI-CP2, June 25, 2020). Furthermore, PI-CP1 reflected that "we push our MA and PhD students to develop a practical involvement in the societal engagement project sites run by the college" (March 3, 2020). Hence, the existence of societal engagement reduces the challenges that both students and faculty grappled with in finding relevant demonstration sites. Practical involvement will eventually enhance students' understanding of the application of knowledge learned in the classroom; thus, increases the practicality of teaching. One interviewee from consultancy projects asserted that "students taught through practical involvement have better experiences of learning than students taught through direct teaching" (PI-CP2, June 25, 2020).

Moreover, the existence of SEPs enhances access to research sites for students. PI-CP1 indicated that "the research work of MA and PhD students is mainstreamed with societal engagement activities. This saved some of the burdens that students faced in finding research sites and data for the completion of their graduation theses" (March 3,2020). Similar reflections that a number of students graduated using the data obtained from SEPs were also observed from RCsC2 and the PI-KTT interviewees.

Third, the interviewees agreed that societal engagement contributes to curriculum development. The PI for community services felt that

> In fact, the benefits of societal engagement are not fully exploited. However, the teaching module we teach, the curriculum we designed for different programs should be revised frequently, considering the outputs of the societal engagement activities undertaken by different colleges. However, much of our

> teaching modules, including the contents of different programs, seems to be static: once developed, they remain for eternity (PI-CS, January 31, 2020).

This makes it clear that the outputs of societal engagement activities should serve as inputs for module development and curriculum content. Similar reflections were posited by PI-KTT:

> Societal engagement is an essential ingredient for the development of course modules and curricula because, on one hand, faculty members involved in societal engagement projects get instrumental insights into the application of the knowledge they teach. Thus, they can develop their teaching modules using the experiences obtained in societal engagement projects. In addition, the overall outputs of societal engagement could be used to design new programs. (May 25, 2020).

However, with a few exceptions, the exploitation of SEPs for the purposes of module and curriculum development is not common, according to PI-CP1:

> One of our professors has included the outputs of our societal engagement as a course reader. The outputs were included as a course reader because they fit the course and because the professor believed that it offered some home-grown knowledge applicable to students' future careers. (March 3, 2020).

The outputs of societal engagement are essential to constructing course modules and readers. Doing so enhances the practicality of teaching because the modules and readers are shaped by a context that students already know. In addition, the inclusion of societal engagement outputs in course curricula helps disseminate knowledge and technology to wider audiences.

At the same time, the interviewees reflected a tension between their engagement activities and teaching responsibilities. Faculty members are required to balance their teaching and engagement loads, and the interviewees asserted that faculty face difficulties in balancing the tradeoff between their involvement in SEPs and their teaching and research responsibilities. One of the college research and community service chairs felt that "faculty members with high engagement possibilities do not

have sufficient time for teaching" (RCsC1, February 6, 2020). Similarly, RCsC4 stated that:

> Most societal engagement projects are operated by experienced faculty members. Thus, those experienced staff involved in the societal engagement projects do not have sufficient time to have teaching responsibilities. As a result, teaching will be left to less experienced staff. (January 31, 2020)

This implies that although involvement in societal engagement activities is considered an essential element for the development of teaching, faculty members may not have enough time to carry out both tasks. Indeed, the tension between involvement in teaching and engagement activities has been noted by university management. One of the college research and community service heads stated that:

> At the least, colleges need to push their faculty members to have a balanced involvement in the different functions of the university: teaching, research, and community service. However, balanced doesn't mean equal. In addition, to enhance experience sharing among different groups of faculty members, the composition of faculty members in engagement activities is presumed to include different academic ranks, from senior to junior and novice. (RCsC2, January 30, 2020).

Teaching and engagement activities are complementary, and thus involvement in engagement activities has considerable implications for the development of teaching. Previous research on the relationship between teaching and research (Allen, 1996; Hattie & Marsh, 1996) has also revealed that teaching quality is positively related with research effectiveness. However, the relationship between teaching and research is not straightforward. By the same token, it should be noted that teaching and engagement activities compete for faculty members' time. Therefore, an effort to balance the faculty's load is essential for managing the conflict between teaching and engagement activities.

Benefits to Research: Societal engagement benefits the research processes of the university. An interviewee from the consultancy project asserted that involvement "in societal engagement projects strengthens faculty's scientific inquiry and

commitment." (PI-CP1, March 3, 2020). Similarly, PI-CP2 noted that "although our engagement activities are oriented toward development, we undertake a wide range of research activities; one is an input for the other" (June 25, 2020).

The interviewees agreed that societal engagement activities help the university's research endeavors in two ways. First, societal engagement fosters the faculty's exposure to existing societal problems. Consequently, involvement in societal engagement activities helps researchers frame new research inquiries. One interviewee from college research and community services chairs said that "involvement in societal engagement gives you insights into the knowledge gap at the practical level" (RCsC4, January 31, 2020). Faculty members who implemented societal engagement activities are likely to develop a better understanding of existing research gaps. Second, involvement in societal engagement activities fosters cooperation among different researchers. The KTT interviewee explained the likelihood of creating multidisciplinary partnerships as follows:

> Societal problems are complex. They don't require the expertise of just a single discipline. As problems are interwoven, interdisciplinary cooperation is needed to solve problems. Therefore, the university needs multidisciplinary research and societal engagement activities. The multidisciplinary cooperation among different researchers is also essential for the capacity development of the researchers themselves. (TOPL1, January 15, 2020)

Because societal problems are complex and interconnected, the cooperation of experts from different disciplines and institutional spheres is essential. The KTT PI confirmed this point:

> The cooperation created among different researchers is not expected to vanish soon after the end of a project. Although there are bumpy processes to draw solid conclusions, some researchers extend the cooperation that began in societal engagement projects into higher levels such as research teams. (PI-KTT, May 25, 2020)

Thus, the cooperation built through SEPs may foster interdisciplinary research (Miller et al., 2008) in the university.

Institutional Legitimacy and Trust: Public universities in Ethiopia are expected to carry out three major functions: teaching, research, and community and consultancy services. Therefore, although the depths of institutional involvement are not identical, universities are expected to frame their activities in line with all three functions. A college research and community service head supported the higher education proclamation, by virtue of which, "universities are legitimated to provide community service and consultancies in addition to their teaching and research activities" (RCsC2, January 30, 2020). RCsC1 also confirmed that "doing societal engagement helps the university meet the institutional objectives mandated by the federal government" (February 6, 2020). The overall legal framework for higher education as stipulated in the FDRE higher education proclamation prompts engagement in community service and consultancy. The core tasks of universities in Ethiopia are not limited to only teaching and research but also to supporting society in the forms of community service, consultancy, and KTT (FDRE, 2009).

Moreover, through societal engagement, universities enhance their trust among the public. RCsC4 remarked that "the university is part of the larger community. It is surrounded by the community. Therefore, it has to support the community through its capabilities. The university, after all, is not an island" (January 31, 2020). Hence, the university is considered as a potential instrument to help solve societal problems, which enhances its level of trust among the wider public. The KTT PI's view of the role of societal engagement in boosting trust in the university was as follows: "when we use the university's capability to solve problems… when we are near social problems, public trust in the university is likely to grow" (PI-KTT, May 25, 2020).

Previous researchers (Rugambwa, 2019) have reported that although higher education institutions in Africa are growing in number and kind, appropriate coordination policies that foster interactions between the university and nearby communities remains lacking. As a result, many universities in Africa are virtually ignorant of the societal problems that require their intervention. Part of this problem is evident among universities in Ethiopia. For example, an interviewee from the college research and community services states that

> our universities are still acting within their territories. They lack adequate strategies on how to avert societal problems such as water sanitation,

> environmental rehabilitation, and education that require activities beyond ordinary teaching and research. Doing research now and then cannot bring solutions to our problems. Our immediate problems may not need such sophisticated research and technology. They only need concerted effort or organizing what is already known and adapting it to the context where the problems are clear (RCsC5, June 20, 2020).

This reveals that universities in Ethiopia need to take on more assignments to help solve persistent societal problems not only through the production of a trained labor force and research but also through direct intervention in the problems at hand. The effort to intervene on societal problems should not begin from scratch but should take advantage of and adapt existing knowledge and technology.

Institutional Visibility: The interviewees argued that societal engagement benefits universities in terms of developing institutional visibility. PI-CP2 argued that when implementing SEPs, "we tell people where we come from and, by doing so, we are advocating for the name of the university and its work to the larger society. We make the university visible" (June 25, 2020). RCsC2 shared a similar reflection:

> These days, it has become common to see universities in daily media outlets. This is not only state media but also mainstream media. There is an ardent desire among universities to disseminate what they have done to the community. If you ask why they do that, it is simply because they need to nurture their visibility. (January 30, 2020).

Although the value of visibility is not adequately understood universities in Ethiopia are entering a virtual competition focusing on their societal engagement activities. Some interviewees noted the existing practice of conducting societal engagement for visibility purposes, including this interviewee from the college research and community service chairs heads:

> I studied abroad, and I understand how the university works to solve societal problems. In our case, most universities seemingly do societal engagement for public media consumption.… Universities rush to air what they have done to the community even before examining the effects of their intervention on persistent societal problems (RCsC5, June 20, 2020).

The views of the interviewees indicate that additional effort is needed to match the activities that universities carry out in their societal engagement and what appears in the media. It appears that engagement activities that are profiled in the media are somewhat exaggerated for the sake of gaining visibility among the wider public.

5.4.2. Benefits to Industry

As indicated in section 3.2.1, industry generally includes institutions (private or government) engaged in the production of goods and services. The presents study considered seed producing firm as examples of industry. The selection procedures for seed producing firm are highlighted in section 4.2.1, while the economic and non-economic benefits to those organizations are discussed below.

Economic Benefits

Expanded Market Chain: The seed producing firm partnered with university benefited in terms of expanding their market chain prospects and thus their profit margins. One of the consultancy project PIs shared his experience on the market chain of the seed firm:

> The union is established in the form of share companies where the seed producing cooperatives at the woreda level are members of the major seed producing associations. The seed producing cooperatives at the woreda level contribute to the major seed producing firms at the zone[14]´or higher levels from the profits they earn. At the zone level or higher, they received the seed produced by the cooperatives at the woreda level and then the union, after

[14] A zone is an administrative unit under a region; it is comprised of different woredas.

> processing the seeds, sells the seed to cooperatives and other farmers. (PI-CP2, June 25, 2020)

As the interviewee suggests, the SEU includes networking with different seed firms to boost their market chain. The enhancement of the market chain through universities' societal engagement may be due to two key factors. First, SERs in universities have a wider understanding of the market gap and the resources that could reduce or eliminate such gaps. An interviewee from the seed producing firm reflected as follows:

> I have been engaged in the production of crops. I never thought about seed production before. Fortunately, the university and other officers came and led me toward producing seeds. Had there been no university support, it would have been difficult for me to make a seed production investment. I might end up producing crops for my consumption. The university staff have a better understanding of the marketability of the seed I produce. (IN-SF, February 25, 2020)

The research endeavors carried out in universities, coupled with the capacity of government officers, help expose the market demand for different products. The cooperation of experts from these two institutional spheres is essential to understanding existing policy directions. For example, one of the interviewees asserted that "the GTPs are always front of mind, and we shape our activity to be aligned with the general directions stated in the grand policies and strategies" (PI-CP2, June 25, 2020). Consequently, firms networked with the university's societal engagement activities may obtain information related to the marketability of their products, including national policy directions. In addition, because university researchers and government officials create synergy, firms obtain information about market sustainability that it can help fill. A consultancy project PI elaborated as follows:

> Government officials are right next door. Some were even our colleagues here at the university. So, despite some bureaucratic hurdles, we frequently talk about how to create synergy on matters related to our societal interventions.

> We have discussions to enhance the effectiveness and efficiency of our projects." (PI-CP1, March 3, 2020)

Second, universities mediate interactions between industry and government, which affects consumers:

> We work to integrate different actors. We talk with different government bodies to solve problems. We coordinate the interaction among different actors. We work to minimize the gaps among different actors. We pool support from different actors. If the need is about capacity, we provide training to seed firms and cooperatives. However, if the case is related to a policy issue, we talk with government bodies. (PI-CP2, June 25, 2020).

The university thus takes on a mediator role in ensuring sound interactions between government and industry. In addition, the university creates linkages between consumers and producers, as PI-CP1 noted:

> Following the production of papaya seeds, the papaya fruit became extremely abundant in the catchment area near the project sites. So, what we did was to group unemployed graduates of our university to form an association and then let them bring the papaya fruit from areas of abundant production to the area where there is a market for them. The unemployed graduates received credits for these startups. That has worked very well! On one hand, the papaya growers found a market; on the other, the unemployed graduates obtained a source of income, and some grew into independent wholesalers. Ultimately, the need for papaya and other seeds also increased (March 3, 2020).

Here, societal engagement created an opportunity for startup firms to join the market chain and generate ongoing economic benefits. Moreover, the university used its mediation role to influence the government to give special attention to a particular sector. PI-CP1 reflected that "we have a task force comprised of individuals from the government agricultural bureaus and government research institutes. We frequently discuss the existing challenges and progress encountered in implementing the societal engagement project" (March 3, 2020). Thus, the platform is important to pinpoint the major challenges that industries are facing and to discuss solutions.

This helps alleviate some of the problems that firms are facing. An interviewee from the seed firms, for example, asserted that

> I don't go directly to the government office when I need something. Rather, I talk with the university people to share my concerns with the government and they, in collaboration with the government, try to solve my problems. So, in most cases, I reach government officials indirectly through the university. (IN-SF, February 25, 2020).

The interactions of the university with different funders may also contribute to strengthening the linkage between the government and industry. PI-CP1 also noted that "we use our network of donors to address some of the weakness of the government in fulfilling the seed producers' demands" (March 3, 2020). The university's partnerships with specific funders has created an opportunity to influence the government and address industry needs.

The market chain created through the university's societal engagement has benefited firms in various ways. On one hand, as firms are drawn to produce goods that have market demand, their skepticism about market failure can be reduced. Furthermore, through the market chain the efficiency of those firms is likely to grow. The interviewee from the seed firms stated that "we don't feel skepticism about the market now. We produce what we are told to produce, and then we sell it" (IN-SF, February 25, 2020). The market chain helped seed producing firms develop the marketability of their products in a sustainable manner.

Profit Maximization: The interviewees argued that the seed firms that partnered with the university in the course of its societal engagement activities have a greater possibility of maximizing their profits. An interviewee from the seed firms said that "I usually think about how to grow economically, how to expand the business. I was engaged in seed production, and I am now asking the government to give me a license in the dairy sector" (IN-SF, February 25, 2020). Profit maximization results from the market chain created through the cooperation of the university with firm. A consultancy project interviewee supported IN-SF's opinion as follows:

> The seed firms bought the seed from the cooperatives or farmers by adding 15% to 20% to the market price. Then the union processes the seed and certifies them and finally sells to farmers. There is profit in between that is distributed to the members of the cooperatives. (PI-CP2, June 25, 2020).

Three pertinent explanations were offered for why seed firms partnered with the university and government maximize their profits. First, the university, in collaboration with the government and other funders, worked to mitigate some of the challenges that the seed firms face, as the interviewee from the seed firms confirmed:

> Some years ago, the government was buying selected seeds, and I asked it to buy my produce. In the beginning, they gave me an affirmative answer. However, they were not able to act according to their promises. Through consultation with the university, the problem was solved. The university and the government reached an agreement to buy my seeds. (IN-SF, February 25, 2020)

Second, cooperation among the university, firms, and the government created a specific advantage in terms of creating long-term consumers. A consultancy project interviewee agreed with this view: "although the essence of competition and competitiveness is there, finding long-term and well-established consumers is the defining element in the course of profit maximization" (PI-CP1, March 3, 2020). Therefore, the university's societal engagement has helped firms create a linkage with long-term customers. The establishment of an extended market chain is essential to developing long-term consumers of products.

Third, the SEU is crucial for enhancing the production capacity of industry. The interviewee from the seed firms asserted that "through the university's engagement, we are entitled to get tangible and intangible benefits from experts pooled in universities and different government offices. As result, our production capacity has increased" (IN-SF, February 25, 2020). This implies that science and technology drawn from the university and other institutional spheres enhance the productivity of seed firms.

Non-Economic Benefits

Along with economic benefits, the seed firms drew considerable non-economic benefits from the university's societal engagement, as discussed below.

Access to Knowledge and Technology: Firms partnered with governments and universities are likely to accumulate knowledge and technology. The interviewee from the seed firm reflected the following account:

> I knew the hardship of the 1984 drought in Tigray. I knew the starving faces of many people in Tigray. I know the bitter wars waged against the dictator [the Derg regime]. So, what were the sources of all these quagmires? It was a lack of knowledge and technology that made the people starve. The land was there, and we the people were there too. Remember that there was not a single university then [in Tigray]. Thus, there was no access to science and technology as happens these days. (IN-SF, February 25, 2020).

This implies that an abundance of resources is no guarantee of development. Knowledge and technology play important roles in the development of countries, and the existence of universities is vital. The role of universities' societal engagement in improving access to science and technology results from different mechanisms. On one hand, those activities foster the development of Indigenous knowledge on a scientific basis. They create room for the moving Indigenous practices to a higher level. A consultancy project interviewee shared his experience: "when we develop an intervention to enhance the productivity of firms, we don't start out of the blue. Rather, we consider the Indigenous practices and then test them scientifically" (PI-CP1, March 3, 2020). Hence, firms benefited in terms of obtaining the knowledge and technology that contributes to better productivity.

Moreover, access to new knowledge and technology is enhanced through the adaptation of technologies from other contexts. Societal engagement can be used as a mechanism to adapt technology and knowledge that emerged elsewhere, as a consultancy project interviewee made clear:

> Technology identification is undertaken through three mechanisms: first, expert knowledge; second, research disseminated from inside and outside; and third, from the farmers themselves. Therefore, once we collected the technology from these sources, we picked one and tested it—testing and validation was undertaken with a few farmers. We also undertake testing and validation in Farmers Training Centers. Testing and validation are carried out in different localities. If validation and testing were only undertaken in one locality, we might fail to capture diversity. Validation and testing are carried out for about two years (PI-CP1, March 3, 2020).

Thus, the science and technology delivered to the seed firms evolved from both external scientific research and the people's Indigenous knowledge. However, validation and testing are key to the processes of adapting knowledge and technology. In addition, the engagement of universities in capacity building enhances access to knowledge and technology. A consultancy project interviewee noted that

> The university provides training to farmers and other seed firms using experts from the university or other sectors. In most cases, the societal engagement project provides capacity building on issues related to bookkeeping and cost-benefit analyses to farmers and cooperatives. Hence, the societal engagement projects create access to knowledge and technology. (PI-CP2, June 25, 2020).

This suggests that capacity building is a means to enhance access to knowledge and technology and is important to maintaining the sustainability of the university's societal engagement activities.

5.4.3. Benefits to Government

The government is another institutional sphere that plays an important role in implementing the university's societal engagement activities. The economic and non-economic benefits that the government obtains from those activities are detailed below.

Economic Benefits

Contribution to Foreign Exchange: The interviewees reported that the SEU contributes to foreign exchange that helped government would have to spend to buy different products from foreign countries. A consultancy project PI explained:

> Many investors bring seed at an expensive rate from Israel. The seeds are too small and light. Someone told me that he [referring to an investor] is selling tomato seeds at a high price to other regions and countries. Although, the seed sector it still underdeveloped, it saves considerable hard currency that the government would have had to spend to buy different seeds. The seeds produced here would have been bought using costly foreign exchange. (PI-CP2, June 25, 2020)

This indicates that the government saves foreign exchange costs that would have been used to buy items like seeds that are now produced as a result of the SEU. Ethiopia´s imports are higher than its exports (FDRE-PDC, 2020; Oqubay, 2015), which places the country under a constant foreign exchange strain. Buying dollars or Euros to import commodities is difficult, and one has to pass through multiple bureaucratic hurdles to obtain foreign currency. The government has been strategically acting to manage this problem by strengthening internal capacity in the production of goods and services that replace items previously imported from abroad (FDRE, 2016). In this way, the seeds produced in the collaboration between the university and firms are vital to replacing some of the commodities that were previously imported. An interviewee from the consultancy project confirmed this point:

> If we were to calculate the price of a single seed using foreign exchange, it would be extremely difficult to cover through the government budget. Let alone the regional government; the federal government can't afford the prices. But now, we are able to produce seeds in collaboration with donors and farmers. That is a big relief for the government in terms of its foreign exchange load. (PI-CP1, March 3, 2020)

The practice is also important to support the government's import substitution policy. Although variation is evident across sectors, the Ethiopian government has paid substantial attention to an import substitution policy since 2000 (Oqubay, 2015), as GTP I made clear:

> In the plan period the industry sector will receive utmost emphasis by way of encouraging export-based and import-replacing industries. Vertical and horizontal linkages between the agricultural and industrial sectors will be promoted. The government's program will also further focus on strengthening small-scale manufacturing firms, as they are the foundation for the establishment and intensification of medium- and large-scale industries; in addition to creating employment opportunities and accelerating urbanization, it will play a supportive role in the development of the agricultural sector. (FDRE, 2010, p. 9)

Similar assertions were also emphasized in GTP II, so the endeavors made to support industry through societal engagement activities is part of a larger policy landscape that the federal government sought to implement. The different policies call for the collaboration of industry and other relevant institutions to produce goods and services that can replace items produced in foreign countries.

Non-Economic Benefits

Implementation of policies and strategies: The involvement of government in societal engagement activities creates a wide range of opportunities for the implementation of its policies and strategies. This could result from the government´s greater influence on universities, industry, and funding agencies to shape their practices in line government policies. An interviewee from the consultancy project confirmed that "the societal engagement projects of the universities should support the government policies and strategies" (PI-CP1, March 3, 2020). The government has influenced universities to direct their research and engagement activities toward the nation's policies and strategies. Similarly, the woreda agriculture extension worker confirmed that "increasing the introduction and adaptation of new seeds is given due attention by the government's policy. So, the involvement of the university in

this regard is important to realize the government's policy directions" (Gov-WAE, April 6, 2020).

Similarly, the interventions of funders are required to support government policies and strategies. PI-CP1 noted that "the government doesn't allow NGOs to reach the community directly, because it needs to mainstream the support delivered by the NGOs in line with its policies and strategies" (March 3, 2020). The federal government has insisted that universities tailor their research and engagement activities to accord with its policies and strategies. Consequently, those activities are thematically based. One interviewee from the college research and community service heads indicated that not only "government-owned universities but every research institution, including non-governmental organizations, operating in the country is required to be a frontrunner in the implementation of government policy" (RCsC1, February 6, 2020). In the same vein, while supporting the implementation of government policies and strategies, societal engagement activities may also reveal avenues to amend existing or develop new policies and strategies, as PI-CP1 suggested:

> For example, we undertook a case study on the characterization of soil of the southern zone [of Tigray]. We are also working the characterization of soil for Kafta Humera [in its western zone]. This is a huge investment. No one can do it. If you don't know your soil, you cannot think about agriculture. So, we characterize the soil and develop it in the form of maps. We hand it over to the policymakers at the government as well (PI-CP1, March 6, 2020).

This implies that the societal engagement activities of universities have become essential for presenting policy options to the government.

Social acceptance: It was understood that the SEU strengthens the public's acceptance of the government. An interviewee from the PI for consultancy services reflected that a "considerable project undertaken by the university in collaboration with other partners appears to be successful. The government uses these outputs to show the effectiveness of its policies and strategies. Ultimately, it boosts its acceptance by the public" (PI-CP1, March 6, /2020). The government also

enhances its acceptance by developing the self-reliance of seed firms and the consumers that use those seeds. PI-CP2 asserted that

> in previous times, the agriculture bureau suffered a lot in getting seeds from different regions. Sometimes, they got seed from distant regions like Oromia[15]. But now they have gotten relief, because there are now many seed producers in the region. There are many firms that produce and sell seeds. The role of the government is now limited to regulation and support. It is not engaged in the distribution of seeds as it was before. In addition, obtaining standardized seeds producers is a big relief to the government. They are realizing the government´s objective. They are the right hand of the government in realizing the policies and strategies. In the long term, the seed producers may become competent seed business companies. There is now substantial support from the government in the form of credit with lower or no interest rates and the likes (PI-CP2, June 25, 2020).

The woreda agriculture extension worker claimed that the "engagement of the university in such projects bridges our relationship with society" (Gov-WAE, April 6, 2020). The support provided to seed firms both from the government and universities has fostered self-reliance in the region in terms of seeds. Consequently, the wider public develops trust in and acceptance on the government. The successes obtained through the SEU are used as supportive testimony for the government's policies and strategies.

5.4.4. Summary

All three types of stakeholders draw a combination of economic and non-economic benefits from the SEPs. However, the features of those benefits are not identical. At the institutional level, the university receives monetary benefits from its societal engagement activities that could be collected, for instance, in the form of overhead costs from externally driven efforts. Similarly, it was found that faculty members who implemented SEPs gained monetary benefits in the form of daily allowances

[15] One of the ten regional states of the FDRE

and professional fees. In addition, participation in societal engagement activities helped faculty members meet some of the criteria for academic promotion, which leads to higher incomes. The findings also indicate that universities' societal engagement benefits the teaching and research activities of the university, including its visibility, institutional legitimacy, and trust.

The SEPs also delivered economic and non-economic benefits to the collaborating actors, mainly firms and government. More specifically, the SEPs help firms expand the market chain of products and, as a result, enhance profits. In addition, the firms collaborated with the university and government to implement the university's societal engagement activities received non-economic benefits such as access to knowledge and technology and helping to alleviate foreign exchange expenses. The SEP also benefited the government to implement its policies and strategies and build social acceptance of its efforts.

5.5. Factors Affecting the Reciprocal Benefits

The views of the interviewees regarding the factors that influence the reciprocal benefits that universities and other actors generate from societal engagement activities can be divided into three categories: people-related, organization related, and task-related factors. Each domain has different aspects; thus, this section describes the factors affecting the reciprocal benefits of universities´ societal engagement.

5.5.1. People-Related Factors (Boundary-Spanning Personnel)

People-related factors refer to the behavior and characteristics of SERs , leaders and officers working in the university's societal engagement units. SERs are faculty members who undertake different types of societal engagement activities, while leaders and officers are faculty members who work in the different leadership positions related to the research and community services of the university. The levels

range from college, such as the research and community service council chairs, to the university itself, such as the VPRCE. This section discusses the factors related to SERs and leaders.

Factors Related to SERs

The interviewees agreed that the SERs play a considerable part in enhancing or limiting the reciprocal benefits of the SEU. RCsC3 stated that "SERs have considerable roles in determining the kind and amounts of reciprocal benefits that universities, community, and the government can draw from societal engagement activities" (January 31, 2020). The academic rank, experience, and disciplinary area of the SERs were identified as key attributes affecting those reciprocal benefits.

According to the interviewees, SERs' academic rank contributes to the depth and scope of the reciprocal benefits that the university, industry, and government generate from the university's SEPs. RCsC3 confirmed this point: "senior academic staff have a wider possibility to tap institutional and individual benefits from the societal engagement projects" (January 31, 2020). This could be due to several reasons. First, the experience of those researchers, coupled with their academic rank, opens broader possibilities to maintain partnerships with external institutions such as industry and government. PI-CS felt that "long-serving faculty members have better attachments to industry and government offices. Thus, they help the university maintain relationships with different actors in the course of executing various societal engagement activities" (January 31, 2020). Second, academic staff with higher rank appear to be better at generating reciprocal benefits for teaching and learning processes. The interviewee from the university's budget and planning office argued that

> experienced researchers understand the gaps in teaching modules more than novice faculty members. Thus, the possibility to fill some of the gaps using experiences obtained from societal engagement activities is more likely in the case of experienced faculty members (TOP1, January 15, 2020).

Keeping other things constant, academic staff with higher academic rank understand teaching and research problems better than academic staff with lower academic ranks. In addition, higher-ranked faculty have more opportunities to understand societal problems than novice faculty members. This gave them a better opportunity to design SEPs that fit the country's social problems.

The interviewees identified an additional distinction in relation to the benefits of societal engagement activities vis-à-vis academic rank. The benefits generated by researchers with higher academic rank are more institutional, while the benefits for researchers with lower academic rank are related to professional growth. An interviewee from the community service project suggested that

> experienced researchers have a wider possibility to benefit the institution in terms of getting research grants, maintaining relationships and, by and large, helping institutional capacity development through mentorship in different societal engagement activities. Conversely, less experienced researchers draw benefits that contribute to their personal growth. They benefit in terms of how to write engagement project proposals, how to write research articles, and how to interact with other researchers. (PI-CS, January 31, 2020).

Moreover, the reciprocal benefits that universities appear to generate from societal engagement activities are related to researchers' disciplinary areas, which Clark (1983) has identified as dominant forces in the working life of academics. It appears that the benefits drawn from societal engagement activities varied in line with the disciplinary area of the researchers.

The interviewees agreed that engagement projects housed in the natural and physical sciences have a wider possibility to draw reciprocal benefits than engagement projects in the social sciences and humanities. The PI for KTT asserted that "in the natural and physical sciences, a considerable number of MA students, for example, use data drawn from the societal engagement activities to prepare their MA theses. However, such cases are scarcely observed in the social sciences and humanities" (May 25, 2020). Therefore, the effort to create nexuses between societal engagement activities and teaching and learning processes is more likely to succeed in the natural and physical sciences than in the social sciences and humanities. Mainstreaming

societal engagement activities in line with teaching and learning processes are low in the social sciences and humanities. Consequently, researchers in those fields draw lower reciprocal benefits from societal engagement activities than their natural sciences and engineering peers. Moreover, disciplinary area contributes to differences in the types of benefits derived from societal engagement activities, as RCsC3 noted:

> Societal engagement activities in the natural and biological science disciplines have considerable benefits…generating research grants for the university and …development of infrastructure such as laboratories. Conversely, the societal engagement activities housed in the social sciences are more or less limited to the provision of services to the community. The benefits drawn from engagement activities in the social sciences and humanities are implicit (January 31, 2020).

Every discipline generates at least some reciprocal benefits from societal engagement activities. However, the reciprocal benefits from engagement activities in the natural and biological sciences are more explicit, tangible, and auditable. Conversely, the reciprocal benefits in the societal engagement activities of social sciences and humanities researchers are less explicit.

Factors Related to Leaders

The interviewees argued that leaders play a key part in limiting or enhancing the reciprocal benefits of societal engagement. An interviewee from the college research and community service council chairs asserted that "the research and community service councils and chairs, including the officers at the Vice president for Research and Community Engagement, could play essential roles in enhancing the reciprocal benefits of societal engagement" (RCsC1, February 6, 2020). Leaders in this case includes officers working in research and community service across different levels. The interviewees reported that the commitment, accountability, transparency, and autonomy of leaders in the research and community service offices played a key role in limiting or enhancing reciprocal benefits.

In terms of commitment, the interviewees argued that the dedication of the leaders in tracing the progress and final achievements of SEPs was essential for determining the reciprocal benefits of the SEU. An interviewee from the college research and community service chairs claimed that "successful leadership is not only about saying what others need to do. Successful leaders support their authority by dedication" (RCsC1, February 6, 2020). Similar reflections were provided by RCsC2: 'the research and community service officers should be committed in devising necessary policies and guidelines that help tap into the benefits of societal engagement activities" (January 30, 2020). Therefore, the commitment of research and community service officers has significant implications for reciprocal benefits.

Research and community service officers are responsible for auditing the benefits of societal engagement activities. In addition, leaders are required to institutionalize appropriate instruments that help monitor the progress of SEPs. An interviewee from the UICL stated that "the research and community service offices are designed to tap every potential with regard to teaching and research. However, this can be realized when the officers are committed enough to discharge their roles and responsibilities" (TOPL1, January 15, 2020). This implies that leaders need to consider their office to be an instrument to ensure institutional and individual benefits from the university's societal engagement mission. One interviewee from the college research and community service chairs claimed that "an officer should act as an officer. He or she should conduct tracer studies on the engagement activities of the university or college, including the benefits drawn" (RCsC4, January 31, 2020). Through tracer studies, the research and community service officers understand the extent to which societal engagement activities meet their targets in terms of benefiting society and the university. However, the interviewees agreed that the commitment of the research and community service officers in discharging their roles and responsibilities at Mekelle University appeared to be weak. The PI for KTT asserted that

> the officers are active during the research grant competition. Once the winning research proposals are identified, they focus on the settlement of the money taken to implement the research and engagement activities. You don't see them conducting serious follow-up on the implementation of societal engagement activities. (January 15, 2020)

Moreover, the accountability and transparency of leaders in research and community service offices should play a pivotal role in determining the reciprocal benefits that the university derives from its societal engagement activities. The interviewee from the community service project shared his opinion that

> when transparency and accountability are lacking, the academic staff are discouraged and thus they may not use their maximum potential to tap the necessary benefits from societal engagement projects. After all, when these things are absent, faculty members lose their courage to write research and engagement projects. (CS2, January 31, 2020).

Thus, when transparency and accountability are insufficient, the benefits that the university and, possibly, other actors might gain from its societal engagement activities are likely to decline.

5.5.2. Factors Related to Boundary-Spanning Units

Boundary-spanning units are the offices established to run societal engagement activities; they are the niche within which societal engagement officers work to effectuate different societal engagement activities. Two pertinent factors were identified regarding the role of societal engagement units in determining the reciprocal benefits from SEPs. First, the interviewees argued that the arrangement of societal engagement units within the university's organizational structure contributes to those benefits. In this regard, the decentralized arrangement of organizational units appears to be an asset for the generation of reciprocal benefits from SEPs. An interviewee from the college research and community service heads, for example, asserted that the "decentralized arrangement of societal engagement units fosters institutional autonomy and hence paves the way for determining the benefits that universities or a college generate from societal engagement activities" (RCsC5, June 20, 2020). Decentralization is related to the autonomy that colleges are given in terms of their societal engagement activities. Autonomy is literally defined as the freedom to make decisions within a given legal framework; it refers to the space in which people can exercise their roles and responsibilities without unjustifiable interference from other authorities. An interviewee from the college

research and community service chairs noted that "giving autonomy to colleges fosters the reciprocal benefits that the university or a college generates from societal engagement activities" (RCsC1, February 6, 2020). However, colleges have limited autonomy to manage their own societal engagement activities. RCsC2 claimed that "the college research and community service council is responsible for small-scale research and engagement activities. Every other engagement type is managed by the university's research and community service vice president" (RCsC2, January 30, 2020). Against this background, colleges and institutes may have failed to generate the reciprocal benefits from the societal engagement activities.

Second, the interface among organizational units designed to execute societal engagement activities also appears to be vital in determining reciprocal benefits. Interface refers to the synergy among organizational units established at different levels. An interviewee from the college research and community service chairs stated that "the different units established at the top, middle, and lower levels must read one another. There should be similar units in each organizational unit established for this purpose" (RCsC1, February 6, 2020). This implies that congruence among the units established at the VPRCE and the college levels must match in terms of key work activities. At times when different organizational units lack such congruence, it is difficult to ensure an appropriate boundary interface among organizational units; as a consequence, the reciprocal benefits to be generated will be reduced. An interviewee from the college research and community service chairs shared this experience:

> The institutional arrangement with regard to societal engagement activities has differences at the college and top management levels. For example, at the top levels, each aspect of societal engagement activities is organized as a separate unit. However, this simply doesn't happen when it comes to the college levels. Almost all activities are jumbled within one unit. Consequently, it is difficult to understand and direct the activities to bring reciprocal benefits to the university (RCsC2, January 30, 2020).

5.5.3. Task-Related Factors

As indicated in section 5.3, societal engagement activities are classified by their sources of funds and institutional structures. The interviewees agreed that the reciprocal benefits that universities including other actors strive to generate from the SEU vary in line with the type of societal engagement activity. This may result from the differences related to scope, the cooperation of actors, financial incentives, and the engagement of the researchers.

The benefits derived from internally and externally funded societal engagement activities differ in scope. Externally funded activities have a wider scope than university-driven activities. An interviewee from the college research and community service heads, for example, asserted that "when the societal engagement activity is externally driven, it touches considerable areas. It, for instance, considers societal and environmental wellbeing. By and large, it may also consider KTT among institutions and communities" (RCsC1, February 6, 2020). Hence, the presumed benefits that different actors generate are likely to vary. In particular, considerable benefits could be drawn from the wider scope of a demand-driven, externally funded SEP.

Focusing on internally funded societal engagement, an interviewee from the college research and community service chairs claimed that "internally funded SEPs are limited in terms of scope compared to demand-driven societal engagement activities" (RCsC3, January 31, 2020). Internally funded societal engagement activities are required to comply with university´s thematic areas, meaning that researchers have only a limited ability to develop engagement projects outside those areas. Of even greater concern, some of the thematic areas are sterile. The interviewee from the community service project noted that "the research and engagement practices in the university are tied up by this thing called thematic areas, some of which are difficult to bring into the context of your discipline" (PI-CS, January 31, 2020). This implies that internally funded SEPs are more narrowly defined than the externally funded SEPs. Perhaps most internally funded activities are skewed to the provision of community service. An interviewee from the college research and community service chairs argued that "in the case of societal engagement activities funded by the university, you need to assume yourself to be a

philanthropist" (RCsC2, January 30, 2020). Of course, it is difficult to undertake an engagement activity without some reciprocal benefit. However, the general observations of the interviewees appear to confirm that the benefits of university-driven societal engagement activities are much less substantial than those externally funded SEPs.

In addition, the financial incentives between internally and externally funded societal engagement activities are different. The former is operated in line the stringent government rules and regulations, some of which are difficult in the context of universities. By contrast, most externally funded SEPs are financed by non-governmental organizations or industry and offer greater incentives than those offered by the university. An interviewee from the KTT suggested that

> the benefits that we draw from societal engagement activities are directly related with the funds awarded to the project. Externally funded societal engagement projects provide better funding than university-sponsored societal engagement projects. Thus, the benefits are directly related with the amount of funds solicited. Researchers are likely to generate greater reciprocal benefits from the societal engagement projects with more funding. (PI-KTT, January 25, 2020)

The influence of external actors is also likely to vary among different societal engagement activities; actors involved in demand-driven societal engagement activities have wider experiences and knowledge bases than those in university-driven societal engagement. Consequently, researchers have more options to learn about best practices from other institutional spheres. An interviewee from the college research and community service chairs reflected that "demand-driven societal engagement activity is a school by itself. You gain considerable knowledge and skill from partner institutions" (RCsC1, February 6, 2020). Conversely, cooperation with different institutional spheres is limited in the case of the university-driven societal engagement, making it less likely to learn lessons from other institutional spheres. The interviewee from the community service project felt that "the chance to learn from different worlds, such as industry, is limited in the case of university-driven societal engagement activities" (PI-CS, January 31, 2020).

5.5.4. Summary

The analysis of the factors that contribute to the reciprocal benefits of the SEU revealed that factors related to people (the behavior and characteristics of SERs and the leaders of the various different societal engagement units), the autonomy and alignment of societal engagement units, and type of societal engagement units influence the reciprocal benefits that the university and other collaborating actors generate from SEPs.

Regarding the SERs, academic rank, experience and disciplinary area were identified as influencing the reciprocal benefits that collaborating actors and the university itself may derive from a university's societal engagement activities. In addition, the commitment, accountability, transparency, and autonomy of leaders in research and community service offices played a considerable role in limiting or enhancing those reciprocal benefits. The findings also revealed that the alignment and autonomy of the societal engagement units contributed to the reciprocal benefits that the collaborating actors could generate from a university's SEPs. It was found that the alignment of the societal engagement units within the university, the autonomy given to the societal engagement units, including the decentralization of the organizational units, were likely to influence the reciprocal benefits that different collaborating actors could generate from the SEU.

With regard to SEP type, internally funded SEPs and externally driven SEPs are likely to differ in the reciprocal benefits that the university, industry, and government generate. The findings revealed that internally funded SEPs are initiated and managed by the university itself. As a result, they have a limited scope and resource base compared to externally driven societal engagement activities. The latter group of activities are initiated and funded by external institutions such as non-governmental organizations and industry.

5.6. The Sustainability of Universities' Societal Engagement

The SEU are required to be sustainable to bring long term impact. Sustainability, in this regard, refers the continuity of SEPs through the effort of the university and other actors. Therefore, this section narrates the view of the research participants on the mechanisms through which universities enhance the sustainability of their SEPs. Two perspectives- the information processing and external representation (see section 3.3.4) – are used to synthesize the view of the research participants.

5.6.1. External Representation

External representation, as discussed in section 3.3.4, refers to inter-organizational relationships (Huang, Luo, Liu, & Yang, 2016) that foster communication across boundaries. Under this theme, creating long-lasting partnerships was identified as a mechanism to enhance the sustainability of universities' societal engagement.

Creating Long-Lasting Partnerships

Regarding partnerships across the three institutional spheres, a consultancy project interviewee noted that "when the partnerships are one-shot and myopic, the sustainability of societal engagement activities is challenged" (PI-CP1, March 6, 2020). Long-lasting partnerships foster the integration of resources among different parties and thus a better possibility of successfully addressing societal problems. In addition, a long-lasting partnership offers opportunities to understand the nature and complexity of societal problems more fully than a short-term partnership. A consultancy project interviewee shared his experience as follows: "our long-term partnership with the government, industry, and non-governmental organizations gave us a broader possibility to renew relationships and thereby understand societal problems" (PI-CP1, March 6, 2020). If relationships created among different institutional spheres stall, the sustainability of societal engagement activities is challenged. PI-CS asserted that "in some cases, the societal engagement activities

stopped once the honeymoon periods of the partnerships ended" (January 31, 2020). On the top of that, the alignment of intentions and work processes among the different institutional spheres partnered with the university may contribute to the sustainability of its societal engagement, but in reality, the institutional spheres to be partnered with often have incompatible organizational rules and regulations (Chau et al., 2017). In line with this, an interviewee from the top leadership shared this experience:

> One of the major areas under which stakeholders, particularly industry, hesitate to interact with universities is related to finance issues. Universities are comprised of considerable hierarchies and are by and large accountable to the federal legislative [body]. Conversely, businesses have more freedom in terms of financial management. Hence, interactions with universities can be fraught for industry. (TOPL1, May 15, 2020)

Burton Clark (1983) asserts that "a university type organization is one in which there are many cells of specialization side by side connected at the operating level, together with only small number of higher levels of coordination" (p.17). Especially at government institutions such as Mekelle University, different work units exist to enhance accountability and transparency. Conversely, the organizational structure and work units in other institutional spheres (especially those in industry) enjoy a relatively clear chain of command. While industry, government, and the university inhabit different worlds, their collaboration is essential to address social problems. A consultancy project interviewee confirmed that "patience and courage are essential to bring the different bodies together and ultimately address certain aspects of societal problems" (PI-CP1, March 6, 2020). Hence, although the various institutional spheres have differences, conducting a critical examination of areas that create alignment or misalignment is essential.

Furthermore, research on different models of partnerships, such as the triple helix (Etzkowitz, 2008) and the quadruple helix (Leydesdorff, 2012; Lindberg et al., 2014), has found that partnerships among actors of different types are expected to evolve over time to curb societal problems. For example, considering the triple helix model, partnership evolves from triple helix I (where the government takes the leading role) to triple helix II (where industry takes the leading role) to triple helix III (where all

the various actors have pivotal roles in generating knowledge and innovation). The evolution of interactions among different institutional spheres is important for solving societal problems in substantial and sustainable ways. Although creating partnerships among different types of actors is common, the effort to nurture those partnerships to increasingly higher levels appears to be low. A consultancy project interviewee reflected that

> The partnerships are so dwarfed; in many cases, you may see universities partnered with industry or non-governmental organizations to solve problems. However, those partnerships do not last long. In addition, you do not see the efforts in which the different institutional spheres bothered to consider how to take the partnership to a higher level. (PI-CP2, June 25, 2020).

According to the triple helix model (Dzisah & Etzkowitz, 2008), partnerships among different institutional spheres are supposed to change in form and complexity in order to confront societal problems in sustainable ways. However, the evolution of partnerships in the case of Mekelle University appears to be weak.

The question here is why partnerships became less sustainable. Two pertinent explanations were detected from the interview data. First, much of these partnerships are guided by economic rather than long-term societal benefits. PI-CS felt that "the projects follow the wagging tails of the funders" (January 31, 2020). In other words, a lack of balance between economic and non-economic benefits reduces the sustainability of partnerships, and much societal engagement appears to be driven by economic rather than non-economic benefits.

Societal engagement is indeed important for income generation; however, that is not an end in itself. In addition to income generation, higher education institutions are required to consolidate and ensure the sustainability of the impacts created through their societal engagement activities. Second, a lack of clear role division among participating actors can challenge the sustainability of partnerships. An interviewee from the college research and community service heads confirmed that "in some cases, the partner institutions flock together without defining their roles" (RCsC4, January 31, 2020). Each institutional sphere is supposed to play its role in executing

societal engagement activities, but those roles need to be defined and shared among all the relevant actors.

5.6.2. Information Processing

Information processing involves the collection, and refinement of data pertaining to the external environment with which an organization is linked. Hence, maintaining task rigor and developing clear exit strategies enhance the sustainability of universities societal engagement. The features of each domain and their contributions to the sustainability of universities' societal engagement are detailed in the following sections.

Maintaining Task Rigor

Just like long-lasting partnerships, the initiation, implementation, and closure of SEPs contributes to the overall sustainability of the SEU. The interviewees agreed that societal engagement activities based on critically examined problems are likely to endure. A consultancy project interviewee asserted that "you have to establish the societal engagement project on systematically examined problems that reflect the demands of society" (PI-CP1, March 3, 2020). The challenges and opportunities, including the promised benefits, should be explored in depth before the intervention stage begins. PI-KTT noted that "before taking an action to curb the problem, you need to explore the challenges and opportunities in depth" (May 25, 2020). The fundamental problem should be identified and relevant strategies to addressed it assessed thoroughly before being implemented. When researchers fail to conduct critical examinations of problems before launching SEPs, the relevance and sustainability of those activities are endangered. PI-CS, for example, asserted that

> The way societal engagements activities are implemented is not in the way they should be. First, societal engagement should begin from critical examinations. They should not begin from mere personal opinions and needs.…

> Surprisingly, there are researchers who develop societal engagement with little or no field exposure. (January 31, 2020).

The mismatch between the demand for and supply of societal engagement activities as reported by the interviewees strengthens the evaluation of the Ethiopian government on the synergy between research activities and societal demands. In its assessment for the development of an STI, the federal government identified a gap between the focus of research endeavors undertaken in universities and the needs of the country's major social and economic sectors (FDRE-PDC, 2020; FDRE, 2012)

Parallel to project initiation, interviewees agreed that societal engagement activities that are not mainstreamed into the daily activities of the institutional spheres are less sustainable. Mainstreaming implies processes of integrating the implementation of societal engagement activities into the daily activities of the institutions. It is the process through which the implementation, monitoring, and evaluation aspects of societal engagement activities are integrated into the core tasks of the collaborating actors or institutional spheres. These may include the integration of project activities into the annual or quarterly plans of relevant institutions. PI-CP1 felt that "whatever technology you produce, it will be meaningless if the people on the frontline don't take it up or mainstream it into their actual tasks or work" (March 3, 2020). Mainstreaming refers to the state in which the people own the outputs of societal engagement activities.

Moreover, monitoring and evaluation affect the sustainability of the SEU. Through those processes, ongoing challenges are identified and addressed in a timely fashion. The number of problems that hinder the effective implementation of societal engagement could be reduced. RCsC2 insisted that "effective societal engagement projects are supported by strong monitoring and evaluation" (January 30, 2020). Ongoing assessment is important to identify emerging problems in the implementation of the societal engagement activities. However, actual assessments of the progress of societal engagement activities appears to be limited. PI-CS reported that "the monitoring and evaluation of university-driven societal engagement activities are limited. If anything, they focused on the financial settlement" (January 31, 2020). This implies that societal engagement activities

initiated by the university are characterized by insufficient monitoring and evaluation processes.

Creating a Clear Exit Strategy

The closure of SEPs plays a crucial role in maintaining the sustainability of societal engagement. A PI for KTT interviewee noted that "clear exit strategies are essential to sustaining societal engagement activities" (January 25, 2020). SEPs are implemented over defined time frames. Therefore, each SEP is expected to stipulate an exit strategy. A consultancy project interviewee confirmed as "at least at the policy level, societal engagement proposals are expected to declare their exit strategies. However, much more weight is given to the content of the project rather than its exit strategy" (PI-CP1, March 3, 2020). Low attention to exit strategies may ultimately hamper the sustainability of societal engagement activities. In the same vein, the interviewee from the KTT shared his experience on the lack of an exit strategy:

> I have the privilege to observe some biogases created in different rural areas by non-governmental organizations. In almost every household in Tigray, biogases are created using animal dung. Surprisingly, however, there are problems because the biogases were built by the non-governmental organizations. As they left, the biogases started to stop. The non-governmental organizations could have installed two things before leaving. First, they didn't deal with maintenance issues. Second, on the basis of the examples built under the auspices of non-governmental organizations, the farmers needed to build their own. (PI-KTT, January 25, 2020).

In fact, there are a number of closure mechanisms. Handing over a project to the community institutions that could sustain it and nurture it to a higher level is among the options. Hence, the recipient institutions can work on sustainability. In this case, the adaptation and integration of local elements is the responsibility of community institutions. In actuality, although considerable efforts were expended to ensure the sustainability of societal engagement activities, the recipient institutions that are

supposed to sustain those activities have experienced significant failures. An interviewee from the community service project reflected on the issue as "projects quit following the footsteps of the donors" (PI-CS, January 30, 2020).

As part of project closure, dissemination of success stories is essential for the sustainability of societal engagement activities. The success stories obtained from societal engagement should be disseminated for others to learn from them: "writing success stories should be a requirement in any societal engagement activity" (PI-CP1, March 3, 2020). However, writing is not the only requirement. In addition, success stories should be disseminated through all appropriate communication channels, as PI-CP1 noted:

> We wrote a success story (about papaya) and then disseminated it online. Then at some point some people accessed what we had disseminated and wrote me an email. The email stated their interest to work on the issue.… Their idea was that they would process the papaya to make it to last longer. They need to process the papaya fruit into a dry form, and that will keep it for a year or so. The dry form will be integrated with other minerals to make it nutritionally fortified. Their final target is to work with UN and make their product available to refugees. (March 3, 2020)

Furthermore, beneficiaries can play an instrumental role in the sustainability of societal engagement activities. In this regard, capacity development and participation were identified from the interviews. Capacity development refers to the effort drawn to enable beneficiaries through societal engagement activities. In addition, participation involves the inclusion of beneficiaries in the overall processes of a given societal engagement activity. Therefore, as capacity development comprises the knowledge and skill built up in the beneficiaries, their participation entails the extent to which all the processes of the societal engagement activities were clear to beneficiaries.

5.6.3. Summary

Most societal engagement activities of the Mekelle university are less sustainable than desired and creating long-lasting partnerships, maintaining task rigor, and developing clear exit strategies enhance the sustainability of the societal engagement activities. These elements are discussed under the information processing and external representation themes.

With regard to the creation of long-lasting partnerships, it was found that creating an alignment of intent and work processes among the different institutional spheres partnered to implement SEPs plays a paramount role in enhancing sustainability. However, long-lasting partnerships appear to be obstructed by the following factors. First, it was understood that the tendency to favor economic benefits at the expense of non-economic benefits hinders the sustainability of universities' societal engagement activities. Second, the lack of clear role divisions among participating actors challenges the sustainability of partnerships.

Furthermore, the findings showed that maintaining the rigor of SEPs from beginning to end will enhance their sustainability. In this regard, dwelling on critically examined societal problems and the execution of timely monitoring and evaluation to understand the progress and challenges that SERs face while implementing the SEPs may enhance the sustainability of a university's SEPs.

The development of clear exit strategies is essential for sustaining societal engagement activities in their various forms. It was found that paying due attention to the handover of SEPS once they are completed can enhance the impact of the SEPs. In this regard, the dissemination of success stories and investing in the capacity of the recipient organizations can contribute to a smooth exit and enhance the long-term sustainability of the SEPs.

5.7. Summary of the Qualitative Stage

The qualitative stage of the research attempts to address the following research questions:

1. **How do actors from the university, industry, and government perceive the benefits of universities' societal engagement?**

    1.1. What are the types and dimensions of universities' societal engagement in Ethiopia?
    1.2. What are the benefits of universities' societal engagement to the university, industry, and government?
    1.3. What are the factors that influence the benefits of universities' societal engagement for universities, government, and industry?
    1.4. How do universities enhance the sustainability of their societal engagement activities?

In addressing RQ1.1, organizational structure and sources of funds were the most pertinent dimensions of university's societal engagement activities. Based on the organizational structure, three types of university societal engagement were identified: KTT, consultancy services, and community service. Although the boundaries between the three types are blurred to a certain extent, the university has crafted institutional definitions for each type of societal engagement activity. Accordingly, KTT implies the dissemination of knowledge and technology to the university's stakeholders. KTT can be generated from the SERs' research endeavors or other professional communities. On the other hand, community service is defined as any unpaid contribution of faculty members to the community. Unlike KTT, participation in community service is not always fused with the faculty's professional areas of focus. Community service may involve participating in activities such as city sanitation campaigns or assisting with the collection of farmers' crops during the harvest season. Finally, consultancy services encompass the professional and expertise advice and interventions that faculty members provide and undertake in response to specific demands. Often, consultancy services are initiated by external organizations that need professional and expertise support from members of the university community. However, the difference between the types of universities' societal engagement is subtle. Consultancy services sometimes involve KTT and/or community service, and vice versa. Academic engagement refers to a wide array of activities (Perkmann et al., 2013), some of which are open to different classifications. In light of this, the university's societal engagements have been classified using the sources of funds into internally and externally funded activities. However, the classification of societal engagement activities using sources of funds and organizational structures are likely to overlap. Societal

engagement activities identified by the organizational structure could be either internally or externally funded.

To address RQ1.2, the qualitative stage of the study identified various aspects of economic and non-economic benefits (see Figure 14), and the benefits accruing to the three institutional spheres are neither identical nor symmetrical. The benefits exhibit differences in line with the nature and characteristics of each institutional spheres.

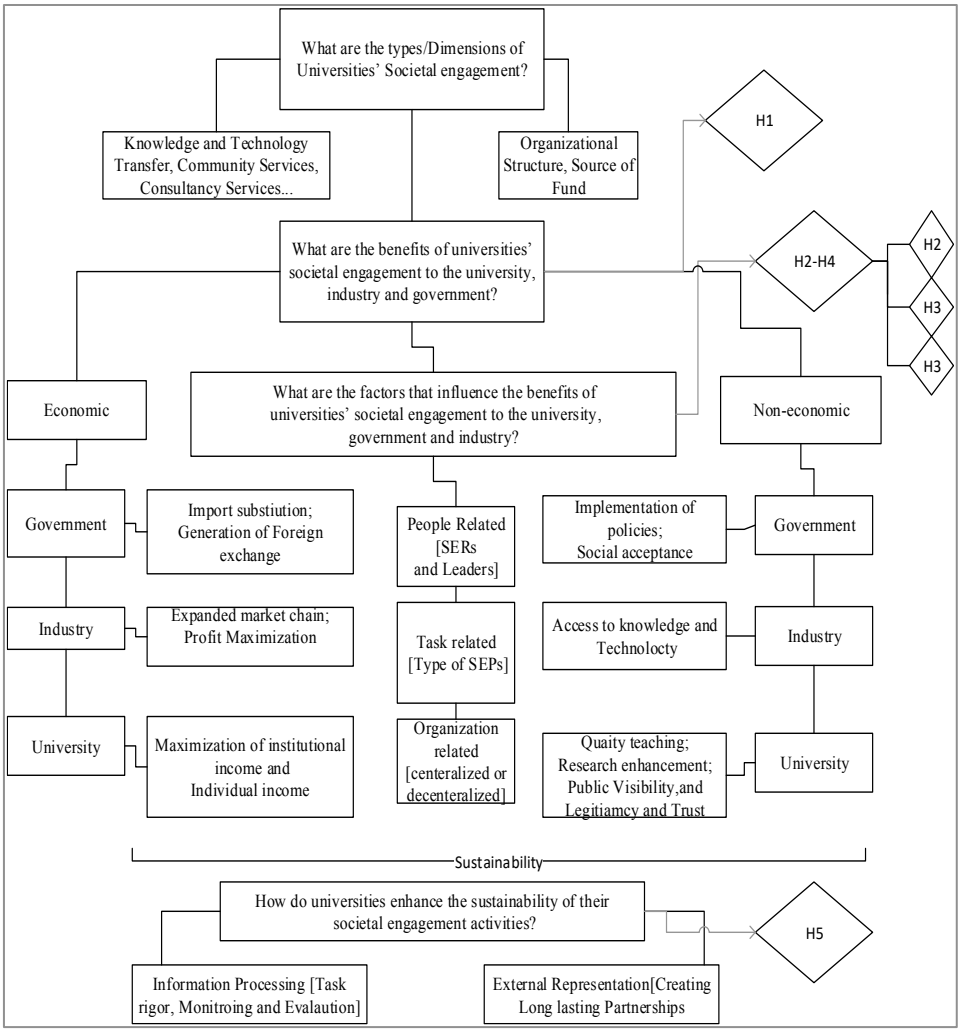

Figure 14 Summary of Qualitative Findings and Hypotheses

Figure 14 presents the summary of findings related to the reciprocal benefits, the factors that influence those benefits, and the mechanisms relevant to enhancing the sustainability of universities' societal engagement. The economic benefits that the university generates from the societal engagement activities are conceptualized as institutional or individual. The former refers to the monetary benefits received by the university (e.g., overhead costs), while the latter encompass the monetary benefits disbursed to SERs in the forms of daily allowances, professional fees, or increases in salary due to promotion to a higher academic rank. As to the non-economic aspects, a university's societal engagement activities help it enhance the quality of its teaching and research, including their cross-fertilization. Notably, it was also found that the university's societal engagement activities help it discharge its duty to serve the people and boost its visibility and legitimacy among the public. However, the qualitative findings revealed that the economic rationale appears to be dominant in driving faculty members and the university itself to conduct SEPs.

Furthermore, firms that partner with universities to implement the SEPs generate economic and non-economic benefits. As to the former, SEPs helped initiate and develop a new market-chain for its products and improve its profit margins. Firms that cooperate with universities and government on the implementation of SEPs are especially able to enhance their networks of potential consumers. Consequently, the economic losses they were facing due to over- or under-production were reduced. In addition, firms that linked with universities to implement SEPs were able to capture the knowledge and technology capability of the SERs and the broader universities.

In the same vein, the government generates economic benefits that have implications for its foreign currency reserves. It was found that the Ethiopian government had been importing some of the seeds that were later produced by local firms. Therefore, the local production of those seeds helped the government save some of the hard currency that it needs to buy products from foreign countries. In addition to these economic benefits, the university's SEPs helped the government implement its policies and thus enhanced its public acceptance. The government urged industry and university to cooperate on issues relevant to the country's economic and social policies and strategies for the future. When entering into collaborations, universities, industry, and government can enhance one another's performance (Cai & Amaral, 2021), even as each institutional sphere maintain its internal dynamics and core role

(Etzkowitz, 2008). Hence, the magnitudes of economic and non-economic benefits are likely to differ in light of the nature and characteristics of each institutional sphere, as the following hypothesis indicates:

> *H1: SERs perceived that the economic and non-economic benefits of their SEPs exhibit inter- and intra-institutional differences across the three institutional spheres.*

H1 supplements some of the concerns that emerged from RQ1.1. On one hand, H1 addresses the institutional spheres that generate higher economic and non-economic benefits; on the other, H1 examines whether each institutional sphere demonstrates variations in generating economic and non-economic benefits.

In the examination of RQ1.3, factors related to SERs and university leaders, SEP type, and the alignment and configuration of societal engagement units affect the scope and depth of benefits sought from SEPs. As to the influence of the university leaders, their commitment, accountability, transparency, and autonomy are all likely to affect the reciprocal benefits. In the same vein, attributes related to the SERs, such as work experience, academic rank, and disciplinary area play pivotal roles in determining the magnitude of benefits sought by universities, government, and industry. SERs with more experience and higher academic ranks appear to have a greater possibility to generate better reciprocal benefits than their novice counterparts. Furthermore, SERs from the natural and biological sciences appear to be better situated to generate reciprocal benefits from societal engagement activities than researchers from the social sciences and humanities. Notably, SEPs financed by external organizations are likely to entail greater monetary benefits than SEPs financed by universities. Along the same lines, KTT and consultancy services lead to higher economic benefits for the university than community services.

Organizational units (college research and community services) configured through decentralized approaches foster a greater likelihood of generating reciprocal benefits than centralized societal engagement units, which are burdened with a range of tasks related to the varied aspects of societal engagement activities. As a result, efforts to derive reciprocal benefits from SEPs become difficult. Previous research (Karlsdottir, Torfason, Edvardsson, & Heijstra, 2023) found that personal and

organizational characteristics are linked with the university's third mission. Perkmann et al (2013) also revealed that individual characteristics and the amount of grants predict faculty´s engagement and collaboration with the industry. Therefore, the attributes of SERs, the nature of SEPs, and the amounts of funds allotted to the SEPs affect the benefits that different actors can accrue from SEPs, as the following hypotheses indicate:

> *H2*: *SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to industry and government affect the amount of money disbursed to SERs.*

> *H3: SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to SERs all affect the amount of money disbursed to industry and government.*

H2 and H3 address some of the concerns that emerged from RQ1.3. More specifically, the qualitative stage suggested that there appeared to be differences in the amounts of benefits that SERs, industry, and government generate from jointly implemented SEPs. Therefore, H2 and H3 attempted to test the effect size of seven key variables in determining the amount of money disbursed to SERs, and industry and government from jointly implemented SEPs.

Furthermore, faculty's understanding and practice of research, knowledge, and the curriculum are likely to vary in line with the nature of academic disciplines (Becher, 1994). As such, the perceptions of SERs regarding the factors related to the people (SERs and leaders), tasks (SEP types), and organizational arrangement of societal engagement units varied in line with their own attributes, such as academic discipline, work experience, and academic rank, leading to the following hypothesis:

> *H4: SERs with differences in academic rank, disciplinary area, and work experience exhibit differences in their perceptions of the factors that affect the reciprocal benefits of universities' SEPs.*

Based on the qualitative stage of the study, we have seen that the benefits of universities' societal engagement are likely to differ with the SERs' demographic

characteristics. Therefore, H4 was designed to test the differences in SERs' perception of the factors influencing the reciprocal benefits that universities, industry, and government may generate from SEPs.

As to RQ1.4, the university's societal engagement activities were found to be less sustainable; thus, establishing long-lasting partnerships, maintaining task rigor, and developing clear exit strategies are essential to enhancing the sustainability of universities' societal engagement. However, which strategy is most important was different among research participants. Given the SERs' differences in academic discipline, academic rank, and work experience, their perceptions of the strategies relevant to enhancing the sustainability of universities' societal engagement are likely to vary. Hence, the following hypothesis was formulated:

> *H5:* SERs *with differences in academic discipline, academic rank, and work experience vary in their perceptions of the mechanisms that enhance the sustainability of universities' societal engagement.*

H5 supplements RQ1.4 by examining the existing differences in the perceptions of SERs of the mechanisms that enhance the sustainability of universities' societal engagement

6. QUANTITATIVE STAGE

This chapter presents the quantitative stage of the research. The first section describes the operationalization and measurement of the key variables, and the second section presents the quantitative results. In the latter, the quantitative data collected through the survey are presented, analyzed, and interpreted.

6.1 Operationalization and Measurement

This section illustrates the operationalization and measurement of variables and is divided into two subsections. While the first deals with the unit of analysis, the second presents the operationalization and measurement of the key variables.

6.1.1 Unit of Analysis

A unit of analysis is "a social object to which the properties investigated appertain" (Corbetta, 2003, p. 66). It can be an individual, a family, a school, or any other social form from which data are collected and about which conclusions are ultimately drawn (Creswell, 2012; Sedgwick, 2014). The present study uses the SER as the unit of analysis, faculty members who implemented one or more types of SEPs discussed in section 5.3. SERs play pivotal roles in universities' societal engagement (Sandmann et al., 2014), in terms of designing and implementing different forms of societal engagement (Perkmann et al., 2013).

6.1.2 Operationalization and Measurement of Variables

Operationalization entails three interrelated stages (Corbetta, 2003; DeCarlo, 2018): the identification of dependent and independent variables, the development of

indicators suitable for measuring both dependent and independent variables, and the specification of rules of interpretation. The operationalization and measurement of the variables are discussed in the following sections.

Identification Variables

The research hypotheses in section 5.7 involve the variables detailed in Table 12.

Table 12 Research Variables

Hypothesis	Independent variable(s)	Dependent variable
H1: SERs perceived that the economic and non-economic benefits of their SEPs exhibit inter- and intra-institutional differences across the three institutional spheres.	Perceptions of SERs	Economic and non-economic benefits
H2: SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to industry and government affect the amount of money disbursed to SERs.	Academic rank, Work experience, Type of SEPs, Disciplinary area , Sources of funds, Total grants, Money disbursed to industry and government	Money disbursed to SERs
H3: SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to SERs all affect the amount of money disbursed to industry and government.	Academic rank, Work experience, Type of SEPs, Disciplinary area, Sources of funds , Amount of grants, Money disbursed to SERs	Money disbursed to industry and government
H4: SERs with differences in academic rank, disciplinary area, and work experience exhibit differences in their perceptions of factors that affect the reciprocal benefits of universities' SEPs.	Academic rank , Disciplinary area, Work experience ,	Factors affecting reciprocal benefits
H5: SERs with differences in academic discipline, academic rank, and work experience vary in their perceptions of the mechanisms that enhance the sustainability of universities' societal engagement.	Academic discipline Academic rank Work experience	Mechanisms that enhance universities' societal engagement

Indicators and Measurement of Variables

A variable is a characteristic or attribute (Creswell, 2012) that varies across categories (Corbetta, 2003). Variables are reduced forms of concepts and are applied to convert concepts, which are by definition, into measurable forms (DeCarlo, 2018). The indicators and measurement of the variables listed in Table 12 are discussed in the following table.

Table 13 Indicators and Measurement of Different Variables

Concept	Variable	Indicator	Measurement
Perception	Economic and non-economic benefits	The degree to which SERs feel that their SEPs benefited the university, industry. and government in terms of, e.g., overhead costs and allowances for researchers	1 = Not at all; 2 = Very little ; 3 = Little extent; 4 = Great extent; 5 = Very great extent
	Factors affecting reciprocal benefits	The degree to which SERs perceive that the benefits that the university and other actors (industry and government) generate from the university's societal engagement are affected by, e.g., type of SEP; accountability of leaders.	1 = Very low; 2 = Low, 3 = Medium, 4 = High, 5 = Very high
	Mechanisms that enhance universities' societal engagement	The degree to which SERs perceive that the sustainability of their SEPs could be enhanced by, e.g., a critical examination of societal problems, identification of evidence-driven interventions.	1 = Not important; 2 = Slightly important; 3 = Moderately Important; 4 = Important; 5 = Very important
SER attributes	Academic rank	The rank held by the SER.	1 = Assistant lecturer; 2 = Lecturer; 3 = Assistant professor; 4 = Associate Professor; 5 = Professor
	Academic discipline	The disciplinary area of the SER.	1 = Health sciences, 2 = Agricultural sciences; 3 = Engineering sciences; 4 = Computational and natural sciences;5 = Social sciences, law, and governance; 6 = Business and economics; 7 = Educational and behavioral sciences
	Experience	The work experience of the SER.	Number of years that the SER has worked in higher education.
Type of societal engagement	Type of societal engagement activities by organizational structure	The classification of societal engagement activities into KTT, community service, and consultancy service projects.	1 = KTT; 2 = Community service, outreach education, community-based education; 3 = Consultancy services (all as reported by the SERs).
	Sources of funds	Whether the funds used to implement the societal engagement activity were solicited from external or internal sources.	1 = From external organizations; 2 = From the university (both as reported by the SERs).
Budget	Total grants	Total grant allocated to implement the SEP.	Total amount of money granted to the SEP as reported by the SERs.
Benefits to external stakeholders	Money disbursed to industry and government	Estimated amount of money disbursed to non-university institutions.	Total amount of money disbursed to government or industry for capacity development, training of staff, and refurbishing resources, all as reported by the SERs.
Benefits to the university	Money disbursed to SERs	Estimated amount of money disbursed to SERs.	Total amount of money disbursed to SERs in the form of professional fees and daily allowances, as reported by the SERs.

6.2 Quantitative Results

This section presents the quantitative findings of the study. The data collected through the survey are presented, analyzed and interpreted.

6.2.1 Demographic Characteristics of Survey Participants

This section presents the demographic characteristics of the research participants: home university, gender, work experience, disciplinary area, age, academic qualifications, and academic rank.

Table 14 Demographic Characteristics of Participants

N = 123

Item	Category	n	%
University	Addis Ababa University	30	24.4
	Arbaminch University	19	15.4
	Bahir Dar University	20	16.3
	Jimma University	24	19.5
	Mekelle University	30	24.4
Gender	Male	82	66.7
	Female	41	33.3
Work experience (in years; M = 16.64; SD = 5.7)	< 10	23	18.7
	10–20	63	51.2
	≥ 20	37	30.1
Academic disciplines	Health Sciences	23	18.7
	Agricultural Sciences	16	13.0
	Engineering Sciences	26	21.1
	Computational and Natural Sciences	13	10.6
	Social Sciences, Law and Governance	18	14.6
	Business and Economics	15	12.2
	Education and Behavioral Sciences	12	9.8
Age (in years; M = 50.04; SD = 9.85)	< 40	27	22.0
	40–49	33	26.8
	50–59	35	28.5
	≥ 60	28	22.8
Academic Qualification	Bachelors	0	0
	Masters (MSc, MEd, MA)	60	48.8
	PhD (MD, DVEM)	63	51.2
Academic Rank	Lecturer	36	29.3
	Assistant Professor	52	42.3
	Associate Professor	35	28.5

Table 14 presents the demographic characteristics of the research participants. Notably, 41 (33.3%) of research participants were female; the remaining 82 (66.6%) were male. The number of female faculty members participating in university leadership (Tassew et al., 2021) and teaching and research activities (Yigeremu, Zenebe, Abebe, & Sisay, 2021) in Ethiopia is lower than males. Therefore, as expected, the numbers of female faculty members who have participated in SEPs is lower than their male counterparts.

The mean work experience of the research participants was 16.64 years (SD = 5.7). The standard deviation reveals considerable variation among SERs in terms of work experience. The participants were affiliated with a wide range of disciplines. The specific distribution can be partly attributed to national economic policies that favor manufacturing and industrialization (FDRE-PDC, 2020); nearly 70% of higher education students in Ethiopia enrolled in science and engineering fields. In light of this, the large numbers of research participants from engineering and health sciences were expected.

The mean age of the participants was 50.04 years (SD = 9.85), and well over half were 40 years old or above. Because of the recent rapid expansion of higher education, a majority of faculty members in Ethiopian public universities are expected to fall into younger age cohorts. However, a substantial majority of the participants in the present study were 40 or older. This may be because older faculty members may have a better opportunity to receive research and societal engagement grants because of their greater experience and academic preparation. Anecdotal observation revealed that younger faculty members participate as co-investigators rather than as PIs in the university's research and societal engagement activities.

In 2020, the percentages of Ethiopian faculty members with bachelors, masters, and PhDs were 21, 65, and 14, respectively (Ministry of Science and Higher Education-MoSHE, 2020b). However, the research participants in the present study had much higher levels of education, on average. Not only did just over half (63; 51.2%) possess doctoral or equivalent degrees, there was not a single participant with only an undergraduate degree. Although most SEPs require at least a masters degree to apply, the results of the present study were not affected in this regard, because all participants had at least that level of education.

Furthermore, slightly more than two fifths (52; 42%) of the research participants had the rank of assistant professor, which was more than either lecturer or associate professor. Promotion to different academic ranks is guided by a weighted value that each academic staff member is assigned for in effective teaching, publications and patents, participation in university affairs, and engagement in community service.

6.2.2 The Nature of SEPs

This section presents the numbers and percentages of SEPs implemented and reported by the SERs. Table 15 depicts the types of SEPs and their sources of funds as reported by the SERs. The distinction between the different types of societal engagement is detailed in section 5.2.

Table 15 Nature of the SEPs

Item	Category	n	Percent
Type of SEP	KTT	37	30.1
	Community service (including community-based education, and outreach education)	42	34.1
	Consultancy services	44	35.8
Sources of Funds	From the university	66	53.7
	From external organizations	57	46.3

Table 15 reveals that majority of the SERs (44; 35.8%) reported that they carried out consultancy services followed by community services (42;34.1%). The distinction between the different types of societal engagement is described in section 5.3.

With regard to sources of funds, just over half of SERs (66; 53.7%) reported that their SEPs were funded by the universities themselves, despite the Ethiopian government directive to public universities to solicit funds relevant to conduct societal engagement activities from external funders (MoSHE, 2020b).

6.2.3 Description of Continuous Variables

The study involves four continuous variables relevant to addressing the hypotheses posited in section 5.7. These are the work experience of the SERs, total grants allocated to the SEPs, total money disbursed to industry and government, and total money disbursed to SERs. Participants were also asked to report the amount of money disbursed to the university in the form of overhead costs; none of the participants reported such a sum. They may be because the university exempted their SEPs from overhead cost charges. As indicated in the qualitative stage of the research, the university collects overhead costs from externally funded SEP based on case-by-case negotiations.

Table 16 Descriptive Statistics of Continuous Variables

	Variable	Min	Max	M	SD	1	2	3	4
1	Work experience (n years)	4	30	16.64	5.67	1			
2	TG	39,000	112,000	71,299.47	18,967.67	.02	1		
3	TMDIG	2000	56,100	16,677.80	13,259.46	.05	.49**	1	
4	TMDSERs	7000	95,000	31,836.50	24,815.22	.02	.51**	.08	1

***p < .01*

Key: TG = Total grants; TMDIN = Total money disbursed to industry and government; TMDSER = Total money disbursed to SERs; all values are in Ethiopian birr.

Table 16 presents the descriptive statistics of the continuous variables. The work experience of the research participants ranged between 4 and 30 years (M = 16.64; SD = 5.67), while the total grants allocated to SEPs ranges between 39,000 and 112,000 Ethiopian birr (M = 71,299.47; SD = 18,967.67), of which between 2000 and 56,100 birr (M = 16,677.80; SD = 13,259.46) was disbursed to industry and government. This indicates that between 5% and 50% of the grants allocated to SEPs were disbursed to industry and government. The total money disbursed to SERs ranged between 7000 and 95,000 birr (M = 31,836.50; SD = 24,815.22), meant that between 17.94% and 84.82% of total grants were disbursed to the SERs in the form of daily allowances and/or professional fees. As indicated in the qualitative stage of the research, the SERs benefits from SEPs in the form of per-diems and professional fees. The total money disbursed to SERs is higher than the money disbursed to industry and government, which is likely due to the nature of the SEPs. As indicated

in Table 15, a majority of SEPs reported by the SERs— consultancy services, involved per-diems and professional fees. In addition, in delivering consultancy services, SERs are required to undertake field visits to the project sites; thus, a substantial part of total grants might be allocated to per-diems and professional fees.

Furthermore, Table 16 shows that total grants allocated to SEPs have a significant and positive relationship with the total money disbursed to SERs ($r = .51$, $p < .01$) and total money disbursed to industry and government ($r = .49$, $p < .01$). This implies that the total money disbursed to industry and government and SERs is likely to increase with an increase in the total money granted to SEPs.

The work experience of SERs had weak positive relationships with total grants allocated to SEPs ($r = .02$, $p > 0.01$) and total money disbursed to SERs ($r = .02$, $p > .001$). Similarly, total money disbursed to SERs had positive but weak relationships with the total money disbursed to industry and government ($r = .08$, $p > .01$). This implies that SEPs that provided greater benefits to SERs were also likely to benefit industry and government.

6.2.4 Perception of SERs of the Economic and Non-Economic Benefits of SEPs

The economic and non-economic benefits of universities' societal engagement are not evenly distributed across the three institutional spheres. This section examines H1, which is presented below:

> *H1: SERs perceived that the economic and non-economic benefits of their SEPs exhibit inter- and intra-institutional differences across the three institutional spheres.*

Table 17 Perceptions of SERs about the Benefits of their SEPs

Institutional sphere	Dimensions	Example item	M	SD	t	p	Cohen's d
University (17 items)			3.14	.72	2.19	.30	.19
	Economic (5 items)	[My SEP] generated an income for the university.	2.61	.64	-12.85	.00	-.61
	Non-economic (12 items)	[My SEP] contributed to the development of a demand-based curriculum at the university or college.	3.45	.76	6.79	.00	.59
Industry (7 items)			2.92	.91	-.87	.38	-.09
	Economic (5 items)	[My SEP] facilitated the marketability of goods and services produced by industries or organizations such as schools, households, hospitals, manufacturing firm, and cooperatives.	2.76	1.04	-2.51	.01	-.23
	Non-economic (2 items)	[My SEP] adapted Indigenous knowledge relevant for industries or organizations such as schools, households, hospitals, manufacturing firm, cooperatives, etc.	3.14	.86	1.90	.06	.16
Government (8 items)			2.90	.91	-3.54	.22	-.11
	Economic (3 items)	[My SEP] produced a product (e.g., seeds, chemicals, crops, services) that could generate foreign currency for the government.	2.65	1.06	-10.04	.00	-.33
	Non-economic (5 items)	[My SEP] generated policy briefs relevant for policy development.	3.05	.96	2.30	.50	.05

Note: N = 123; Five-point Likert-type scale: 1 = Not at all [< 1.5]; 2 = Very little [≤ 1.5 < 2.5]; 3 = Little extent [≤ 2.5 < 3.5]; 4 = Great extent [≤ 3.5 < 4.5]; 5 = Very great extent [≤ 4.5]. p < .05; t-test value = 3

Table 17 reveals the perceptions of SERs of the benefits of their SEPs to the three institutional spheres. They felt that their SEPs benefited the three institutional spheres to nearly the same amount. The mean perceptions of SERs ranged between 2.90 and 3.14. The SERs believed that their SEPs provided higher benefits to the university than to the other two institutional spheres. The standard deviations show that the observed scores are close to the mean.

However, there existed inter- and intra-institutional variation pertaining to the economic and non-economic benefits of SEPs. The SERs believed that their SEPs led to slightly higher non-economic than economic benefits in the three institutional spheres, and this was highest for the university (M = 3.45; SD = .86), followed by industry (M = 3.14; SD = .86) and government (M = 3.05, SD = .96). The perceptions of SERs regarding the economic benefits of their SEPs to the three institutional spheres was somewhat similar. A look at the standard deviations of the economic and non-economic dimensions also revealed scores close to the mean.

The t-test results showed that the perceptions of SERs for the economic (M = 2.61; SD = .64) and non-economic (M = 3.45; SD = .76) dimension for the university with statistically significant difference from the midpoint (t-test value = 3). While the perceptions of SERs of the economic benefits was lower than the midpoint (i.e., little extent), their perceptions of the non-economic benefits for the university were higher than the midpoint. This implies that SEPs provide higher noneconomic than economic benefits to the university.

The mean perceptions of SERs was found to be statistically significantly different from the midpoint only in the economic dimension of industry and government. The mean perceptions of SERs of the economic benefits of their SEPs to industry and government appeared to be below average (i.e., little extent). The mean perceptions of SERs of the non-economic benefits of their SEPs to government and industry were above the midpoint, but those differences were not statistically significant.

In sum, the analysis supports H1 in which SERs perceived that their societal engagement projects exhibit inter-and intra- institutional differences across the three institutional spheres.

6.2.5 Factors Affecting Monetary Benefits Disbursed to the Different Actors

This section examines the effect of different variables on the amounts of monetary benefits that the SERs and the industry and government derived from SEPs. It has two subsections designed to test H2 and H3. The first deals with variables that affect the amount of money disbursed to SERs, while the second examines the effect of

different variables on the amount of money disbursed to the industry and government institutional spheres.

Variables that Affect the Amount of Money Disbursed to SERs from SEPs

This section examines the effects of seven variables (SERs' academic rank, work experience, and disciplinary area, SEP type, sources of funds, amounts of grants, total money disbursed to industry) on the amount of money disbursed to SERs. The descriptive statistics for the seven variables are presented in Table 14, Table 15, and Table 16. This section addresses H2 of the quantitative research:

> *H2: SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to industry and government affect the amount of money disbursed to SERs*

Table 18 Predictors of Money Disbursed to SERs from SEPs

	Unstandardized coefficients		Standardized coefficient	t	R	R^2	R^2adjusted	F
	b	Std. Error	Beta					
(Constant)	27,827.30	11,615.39		-2.396	.62	.39	.31	4.92**
Sources of Funds								
From the university (reference)								
From external institutions	9730.24	4681.11	.19	2.07*				
Type of SEP								
Consultancy services (reference)								
KTT	925.31	4870.48	.02	.19				
Community Service	4666.96	5067.63	.09	.92				
Academic Rank of SERs								
Assistant professor (reference)								
Lecturer	2744.13	5028.21	.05	.55				
Associate professor	-7572.50	4918.67	-.14	-1.54				
Disciplinary area of SERs								
Engineering Sciences (reference)								
Health sciences	5886.22	6194.33	.09	.95				
Agricultural sciences	9613.10	6933.51	.13	1.38				
Natural and computational science	6887.61	7178.76	.09	.96				
Social science, law, governance	-857.61	6655.01	-.01	-.13				
Business and economics	-693.72	7288.59	-.01	-.09				
Education and behavioral sciences	-5464.16	8361.97	-.07	-.65				
TG	.714	.11	.55	5.5**				
Work experience (in years)	450.77	370.94	.10	1.21				
TMDIG	-.36	.18	-.19	-2.05*				

Note: TG = Total grants; TMDIN = Total money disbursed to industry and government; both reported in Ethiopian birr.

Table 18 presents the variables that predict the total money disbursed to SERs from the SEPs. The regression model is statistically significant in predicting the amount of money disbursed to SERs from the SEPs. The model predicted that about 39% of the variance of money disbursed to SERs is determined by the sources of funds,

SEP type, academic rank, SER disciplinary area, total grants, SER work experience, and total money disbursed to industry and government.

The t-test statistics show that sources of funds and total money disbursed to industry and government were statistically significant predictors of money disbursed to SERs. The *t*-test statistics for external sources of funds compared to its baseline reference (internal sources of funds) was found to be statistically significant; implying that the amount of money disbursed to SERs from externally funded SEPs differs relative to the mean of money disbursed from internally funded SEPs. Specifically, the amount of money disbursed to SERs in externally funded SEPs was 19% higher than the disbursements received in internally funded SEPs.

The beta coefficients for associate professor, education and behavioral sciences; social sciences, law, and governance, and business and economics demonstrated negative relationships with their reference variables. SERs with an academic rank of associate professor received smaller disbursements than SERs at the assistant professor level. Similarly, SERs in education and behavioral sciences, social sciences, law, and governance, and business and economics receive lower disbursements than SERs in the engineering sciences. Conversely, SERs in the health sciences, agricultural sciences, and natural and computational sciences earn higher monetary disbursements than SERs in the engineering sciences, but the differences are not statistically significant. Furthermore, the beta coefficients revealed that the total grants allocated to SEPs had the largest effect in determining the variance of money disbursed to SERs. More specifically, the total grant allocated to SEPs contribute about 28.05% of the variance in money disbursed to SERs. Therefore, the amount of budget allocated to the SEPs plays a pivotal role in defining the amount of money disbursed to SERs.

The total money disbursed to industry and government is inversely related to the total money disbursed to SERs. An increase in one standard deviation from the mean of money disbursed to industry and government is likely to decrease the amount of money disbursed to SERs by 14%.

Variables That Affect the Amount of Money Disbursed to Industry and Government from SEPs

This section examines the effect of seven variables (SERs' academic rank, work experience, disciplinary area, Type of SEPs, sources of funds, total grants, and total money disbursed to SERs) to the amount of money disbursed to government and industry from the universities' SEPs. The descriptive statistics for the seven variables are presented in Table 14, Table 15, and Table 16. This section is designed to test H_3 of the quantitative research:

> *H3: SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to SERs all affect the amount of money disbursed to industry and government.*

Table 19 Predictors of Money Disbursed to Industry and Government

	Unstandardized coefficients		Standardized coefficients	t-test	R	R^2	R^2adjusted	F
	b	Std. Error	Beta					
Constant	-15,663.64	6155.67		-2.55	.63	.39	.32	5.01**
Sources of funds								
From the university (reference)								
From external institutions	-2697.55	2524.78	-.10	-1.07				
Type of SEP								
Consultancy services (reference)								
KTT	2829.54	2575.56	.09	1.09				
Community service	4193.85	2674.59	.15	1.57				
Academic rank of SERs								
Assistant professor (reference)								
Lecturer	4011.31	2649.05	.13	1.51				
Associate professor	5806.53	2583.92	.19	2.25*				
Disciplinary area of SERs								
Engineering sciences (reference)								
Health sciences	4140.4	3282.98	.12	1.26				
Agricultural sciences	3013.05	3707.67	.08	.81				
Natural and computational sciences	1713.53	3829.40	.04	.45				
Social science, law, governance	-1626.54	3535.07	-.04	-.46				
Business and economics	-2750.34	3866.23	-.07	-.71				
Education and behavioral sciences	1037.68	4453.46	.02	.23				
Total grants	.45	.07	.65	7.01**				
Work experience (in years)	-82.88	198.40	-.04	-.42				
TGDSER	-.10		.05-.19	-2.05*				

Note: TG = Total grants; TMDSERs = Total money disbursed to SERs; both reported in Ethiopian birr.

Table 19 indicates that the regression model is statistically significant in predicting the amount of money disbursed to industry and government, $F(14,108) = 5.01$, $p < .001$). The model predicts that about 39% of the variance in money disbursed to industry and government is attributed to the sources of fund for SEPs, type of SEP, SER disciplinary area, amount of money granted to run the SEP, and total money disbursed to SERs.

A look at the *t*-test statistics revealed that associate professor, total grants allocated to SEPs, and total money disbursed to SERs remained statistically significant

predictors of the amount of money disbursed to industry and government. Meanwhile, the beta coefficients for sources of funds from universities (compared to external sources of funds), social sciences, law, and governance, and business and economics (both compared to engineering sciences) are inversely related. With regard to sources of funds, the total amount of money disbursed to industry and government was likely to decline by 0.1 units when societal engagement changes from being funded by external institutions to being funded by universities. However, those changes were not statistically significant. Externally funded SEPs benefit industry and government less than SEPs funded by universities.

Similarly, compared to engineering sciences, the amount of money disbursed to industry and government from SEPs in the social sciences, law, and governance and business and economics decreased by 4% and 7%, respectively. This reveals that SEPs whose PIs were from engineering sciences delivered more monetary benefits to industry and government than SEPs whose PIs were from social sciences, law, and governance. In addition, the work experience of SERs and total money disbursed to SERs are inversely related to the total money disbursed to industry and government.

6.2.6 Perceptions of SERs of the Factors That Influence Reciprocal Benefits

This section presents the perceptions of SERs of the varied dimensions of factors that influence the reciprocal benefits that different actors may gain from the university's SEPs.

Table 20 The Perceptions of SERs towards the Factors Affecting the Reciprocal Benefits

Domain of factors (19 items)	Example (item) To what extent do the following factors affect the reciprocal benefits of your SEPs?	M	SD	t	p	Cohen's d
SERs (3 items)	SERs' academic rank (lecturer, assistant professor, associate professor, or professor)	3.29	.71	4.56	.00	.41
Autonomy and alignment of societal engagement units (2 items)	Alignment of societal engagement offices at the university (whether similar offices are institutionalized across the institution)	3.11	.80	1.56	.13	0.14
Type of SEP (4 items)	Type of SEP (community service, KTT, outreach, community based-education, or consultancy)	3.27	.77	3.93	.00	0.35
Institutional leaders (10 items)	Ability of institutional leaders (e.g., college or institute research and community service heads) to take risks	3.18	.70	2.79	.00	0.26

Note: A five-point Likert-type scale was used: 1 = Very low [< 1.5]; 2 = Low [≥ 1.5 < 2.5]; 3 = Medium [≥ 2.5 < 3.5]; 4 = High [≥ 3.5 < 4.5]; 5 = Very high [≥ 4.5]; p < .05; t-test value = 3.

Table 20 shows the perceptions of SERs of the factors that influence the reciprocal benefits of universities' societal engagement. The factors are related to SERs, institutional leaders, type of SEP, and the autonomy and alignment of societal engagement units. The SERs perceived that factors related to themselves, the autonomy and alignment of societal engagement units, SEP type, and institutional leaders influenced the reciprocal benefits of SEPs to a medium level.

The mean responses of SERs revealed that factors related to SERs themselves–their academic rank, experience, commitment, and disciplinary area—followed by type of societal engagement were higher than the other factors. The mean responses of SERs revealed that the autonomy and alignment of the societal engagement units within universities influenced the reciprocal benefits less than factors related to SERs and SEP type. Hence, the people- and task-related factors exerted a greater influence on reciprocal benefits that the various institutional spheres might generate from SEPs. The differences between the people- and task- related factors are described in section 5.5.

Moreover, except for factors related to the autonomy and alignment of societal engagement units, the mean responses of the SERs in the remaining three dimensions were higher than the midpoint (testing value= 3), and those differences were statistically significant. These are factors related to SERs, factors related to SEP type, and factors related to institutional leaders. The SERs believed that the benefits that their SEPs provided to collaborating actors were likely to be affected by SEP type, the nature and characteristics of the SERs, and the behavior of institutional leaders at close to a medium level.

Differences in SERs' Perceptions of the Factors that Influence Reciprocal Benefits

This section presents the SERs' perceptions of the varied factors that influence the reciprocal benefits of universities' societal engagement; it thus addresses the following hypothesis:

> H4: *SERs with differences in academic rank, disciplinary area, and work experience exhibit differences in their perceptions of the factors that affect the reciprocal benefits of universities' SEPs.*

Table 21 SERs' Perceptions Differences towards Factors Influencing Reciprocal Benefits

Group of respondents	Category	Response category	Factors related to			
			SERs (3 items)	Societal engagement units (2 items)	Institutional leaders (10 items)	Nature of SEP (4 items)
Work experience	< 10 years	Above Medium	11	10	11	13
		Below Medium	12	13	12	10
	10–20 years	Above Medium	30	25	23	27
		Below Medium	33	38	40	36
	≥ 20 years	Above Medium	15	12	15	15
		Below Medium	22	25	22	22
	Test of significance		X2 = .53; df = 2; p = .76; phi =.06	X2 = .81; df = 2; p = .65; phi = .08	X2 = .91; df = 2; p = .63; phi = .086	X2 = 1.65; df = 2; p = .44; phi = .12
Academic rank	Lecturer	Above Medium	17	18	17	19
		Below Medium	19	18	19	17
	Assistant professor	Above Medium	21	16	20	26
		Below Medium	31	36	32	26
	Associate professor	Above Medium	18	13	12	10
		Below Medium	17	22	33	25
	Test of significance		X2 = 1.08; df = 2; p = .58; phi = .09	X2 = 3.35; df = 2; p = .18; phi = .16	X2 = 1.31 ; df = 2; p = .52; phi = .10	X2 = 5.22; df = 2; p = .07 phi = .20
Academic discipline	Health sciences	Above Medium	10	5	7	8
		Below Medium	13	18	16	15
	Agricultural sciences	Above Medium	9	10	10	10
		Below Medium	7	6	6	6
	Engineering sciences	Above Medium	8	6	5	7
		Below Medium	18	20	21	19
	Computational and natural sciences	Above Medium	7	7	6	6
		Below Medium	6	6	7	7
	Social sciences, law, and governance	Above Medium	9	6	7	8
		Below Medium	9	12	11	10
	Business and economics	Above Medium	9	9	10	12
		Below Medium	6	6	5	3
	Education and behavioral sciences	Above Medium	4	4	4	4
		Below Medium	8	8	8	8
	Test of significance		X2 = 5.55; df = 6; p = .47; phi = .27	X2 = 13.82; df = 6; p = .03; phi = .33	X2 = 13.82; df = 6; p = .03; phi = .33	X2 = 14.48; df = 6; p = .02; phi = .34

Table 21 tests the distribution of SERs' responses regarding the factors related to SERs, societal engagement units, institutional leaders, SEP type and their influence on reciprocal benefits. The SERs' responses are presented as above medium and below medium for each respondent category.

As to SERs' work experience, a majority of participants rated the factors related to the SERs, factors related to societal engagement leaders, and factors related to societal engagement units below medium. However, a slightly different distribution was observed in the factors related to SEP type as a function of the work experience of the SERs. More specifically, a majority of the SERs with less than 10 years' experience rated the factors related to SERs above the medium level. By contrast, a majority of SERs with more than 10 years' experience rated SEP-related factors below medium. In line with this outcome, the test of significance for the distribution of responses based on of SERs' work experience was not statistically significant. In addition, work experience had a weak effect size in determining the SERs' perceptions of different sets of factors.

The responses of the SERs from different academic ranks provided mixed insights. For instance, a majority of respondents with the rank of lecturer or assistant professor rated the factors related to SERs below medium. Conversely, the number of SERs of associate professor rank who rated SER-related factors above the medium was higher than those who rated them below medium. A very similar trend in responses was observed in the case of factors related to societal engagement units; a majority of the respondents rated them below the medium level. Furthermore, a majority of SERs with different academic ranks rated the factors related to institutional leaders below the medium level. Moreover, the number of SERs who responded below medium for SEP-related factors was somewhat higher than SERs who rated them above medium. Except for SERs at the lecturer rank, the number of SERs who rated SEP-related factors below medium was higher than those respondents that rated them above medium. The test of significance for the distribution of responses across the two response categories and different sets of factors all found that they were not statistically significant. This implies that the response differences of the SERs with varied academic rank towards the different sets of factors that influence the reciprocal benefits were low.

SERs who belonged to different academic disciplines demonstrated considerable differences in their responses to factors influencing the reciprocal benefits of universities' societal engagement. The number of SERs who rated SER-related factors below medium was higher among respondents in health sciences, engineering sciences, and educational and behavioral sciences. Conversely, the number of SERs who rated those factors above medium was higher among respondents from the agricultural sciences and business and economics. However, the observed differences were not statistically significant. A very similar trend in responses was observed in the cases of factors related to societal engagement units. More specifically, the number of SERs who rated societal engagement unit-related factors above medium was higher among SERs in the agricultural sciences and natural and computational sciences. Conversely, the number of SERs who rated those factors below medium was higher among SERs in the health sciences, engineering sciences, and social sciences, law, and governance. The differences in the number of responses between above medium and below medium for societal engagement units-related factors were statistically significant (X^2=13.82; *df* =6; sig<0.05; Phi =0.33).

As to factors related to institutional leaders, a higher number of SERs from the health sciences, engineering sciences, natural and computational sciences, social sciences, law, and governance, and educational and behavioral sciences rated them below medium. A majority of SERs in the agricultural sciences and business and economics rated them above the medium level. The distribution in the number of responses across the two response categories for each disciplinary area was statistically significant *(X^2=13.82; df=6; sig< 0.05; Phi=0.33)*. The effect size revealed that about 33% of the variance in the responses of SERs about institutional leadership factors was attributed to their academic discipline.

A majority of SERs in the agricultural sciences and business and economics rated the SEP-related factors above medium. Conversely, a large majority of SERs in the health sciences, engineering sciences, social sciences, law, and governance, and educational and behavioral sciences rated SEP-related factors below medium. The test of significance for the distribution of responses across the two categories was statistically significant *(X^2=14.48; df=6; sig< 0.05; Phi=0.34*). Of particular importance, 34% of the variance in the responses of SERs' about SEP-related factors was attributed to their disciplinary area.

6.2.7 Mechanisms that Enhance the Sustainability of Universities' Societal Engagement

This section examines the perceptions of SERs of the different mechanisms that enhance the sustainability of universities' societal engagement.

SERs' Perceptions of Sustainability Mechanisms

Table 22 SERs' Perceptions of Sustainability Mechanisms

Dimension	Example items	M	SD	t	p	Cohen's d
Maintaining information and task rigor (4 items)	Critical examination of societal problems	3.80	.66	13.42	.00	1.21
Creating long-lasting partnerships (4 items)	Examination of needs among institutions	4.22	.68	19.83	.00	1.79
Development of clear exit strategies (4 items)	Preparation of clear handover strategies	4.17	.72	18.09	.00	1.63

Note: N = 123; A five-point Likert-type scale was used: 1 = Not important [< 1.5]; 2 = Slightly important [≤ 1.5 < 2.5]; 3 = Moderately important [≤ 2.5 < 3.5]; 4 = Important [≤ 3.5 < 4.5]; 5 = Very important [≥ 4.5]; p < .05; t-test value = 3.

Table 22 presents the perceptions of SERs towards the different strategies that enhance the sustainability of universities' societal engagement. Their mean responses revealed that maintaining information and task rigor, creating long-lasting partnerships, and developing clear exit strategies were rated between moderately important and very important in terms of enhancing the sustainability of universities' societal engagement activities; that is, all values were above average. SERs believed that focusing on all three dimensions is important to enhancing the sustainability of universities' societal engagement.

However, maintaining information and task rigor, followed by creating long-lasting partnerships were viewed as more important than the development of clear exit

strategies. The SERs perceived that maintaining information and task rigor through critical examination of societal problems, identification of evidence-driven interventions, the development of clear strategies related to SEPs, and the identification of clear societal problems were more important than the remaining dimensions.

In addition, plotting the observed means against the midpoint of the Likert-type scale (*t*-test value = 3) revealed that the difference between the two was statistically significant for all dimensions. The observed means were all found to be higher than the Likert-type scale midpoint; that is, they were all above average.

Differences in SERs' Perceptions of Sustainability Mechanisms

This section presents the distribution of SERs' responses on the mechanisms that enhance the sustainability of universities' societal engagement, in order to test the following hypothesis.

H5: SERs with differences in academic discipline, academic rank, and work experience vary in their perceptions of the mechanisms that enhance the sustainability of universities' societal engagement.

Table 23 SERs' Perceptions of Differences in Sustainability Strategies

Group of respondents	Category	Response category	MTRIP(4 items)	DLLP (4 items)	DCEXS(4 items)
Academic disciplines	Health sciences	Above M. Important	14	20	21
		Below M. Important	9	3	2
	Agricultural sciences	Above M. Important	10	13	11
		Below M. Important	6	3	5
	Engineering sciences	Above M. Important	13	23	25
		Below M. Important	13	3	1
	Computational and natural sciences	Above M. Important	8	11	12
		Below M. Important	5	2	1
	Social sciences, law, and governance	Above M. Important	11	14	14
		Below M. Important	7	4	4
	Business and economics	Above M. Important	9	11	9
		Below M. Important	6	4	6
	Education and behavioral sciences	Above M. Important	9	8	8
		Below M. Important	3	4	4
	Test of significance		X2 = 2.28;df = 6; p = 89; phi =.14	X2 = 3.91;df = 6; p =.68; phi =.17	X2 = 14.29; df = 6; p = .02; phi = .34
Work experience	< 10 years	Above M. Important	17	19	17
		Below M. Important	6	4	6
	10–20 years	Above M. Important	34	48	49
		Below M. Important	29	15	14
	>20 years	Above M. Important	23	3	34
		Below M. Important	14	4	3
	Test of significance		X2 = 2.88; df = 2; p =.23; phi = .15	X2 = 2.63; df = 2; p = .26; phi =.14	X2 = 4.07; df = 2; p = .13; phi = .18
Academic rank	Lecturer	Above M. Important	29	29	20
		Below M. Important	7	7	16
	Assistant professor	Above M. Important	39	45	45
		Below M. Important	13	7	7
	Associate professor	Above M. Important	6	26	35
		Below M. Important	29	9	0
	Test of significance		X2 = 30.04; df = 2; p. = .00; phi = .55	X2 = 2.08; df = 2; p =.35; phi = .13	X2 = 24.68; df = 2; p = .00; phi = .44

MTRIP = Maintaining task rigor and information processing; DLLP = Developing long-lasting partnerships; DCEXS = Developing clear closure and exit strategies;

Table 23 depicts SERs' perceptions of the different strategies that enhance the sustainability of universities' societal engagement based on their academic discipline, work experience, and academic rank. A majority of SERs in different academic disciplines rated the three strategies above moderately important. However, the number of SERs who chose above moderately important relative to those who chose below moderately important was found to be statically significant in only one strategy area: the development of clear exit strategies (*X^2=14.29;df=6;sig<0.05; Phi=0.34*). This implies that the SERs' response only differed by academic discipline in the case of the development of clear exit strategy as a mechanism of enhancing the sustainability of universities' societal engagement.

Similar trends were observed among SERs with different levels of work experience. More specifically, a majority of SERs with different work experience rated the three strategies above moderately important. However, the difference between the number of SERs who rated the strategies above moderately important and those who rated them below moderately important was not statistically significant. This implies that SERs' work experience had a limited influence on the their perceptions towards the three strategic areas.

As to SERs' academic rank, majority respondents rated the three strategic areas above moderately important. However, the difference between the numbers of SERs who rated above moderately important and below moderately important in the case of task rigor and information processing, and development of long-lasting partnerships was not statistically significant. This implies that academic rank had a limited impact on SERs' preferences regarding task rigor and information processing and the development of long-lasting partnerships. Conversely, the number of SERs who rated the third strategy—the development of clear exit strategies—above moderately important and below moderately important was statistically significant *(X^2=24.68; df=2; sig<0.00; phi=0.44)*. The differences in SERs' academic rank explained about 44% of the variance in their responses about the development of a clear exit strategy.

6.3 Summary of the Quantitative Stage

The quantitative stage of the study tested five hypotheses distilled from its earlier qualitative phase. This section summarizes the pertinent findings in line with the hypothesis. First, the SERs believed that their SEPs provided greater non-economic than economic benefits to industry, government, and universities and that their SEPs benefitted universities more than industry or government. There also appeared to be inter- and intra-institutional differences with regard to the economic and non-economic benefits of universities' SEPs across universities, industry, and government. More specifically, the SERs believed that their SEPs delivered greater noneconomic than economic benefits; this was found to be most pronounced in the university institutional sphere, followed by industry and government. Nonetheless, the perceptions of the SERs regarding to the economic benefits of their SEPs to all three institutional spheres was fairly similar. In all cases, the mean response of the SERs regarding the economic benefits of their SEPs was lower than the midpoint. The mean responses of SERs regarding the economic benefits of their SEPs to the university and government were lower than average, and those differences were statistically significant.

Second, 39% of the variance in the amount of money disbursed to SERs was determined by SEPs' sources of funds, SERs academic rank, SEP type, SER disciplinary areas, total grants allocated to SEPs, SER work experience, and total money disbursed to industry and government. Sources of funds, total grants allocated to SEPs, and the amount of money disbursed to industry and government were significant predictors of the total money disbursed to the SERs. The total grants allocated to SEPs had the largest effect in determining the variance of money disbursed to SERs. More specifically, the total grants allocated to SEPs contributed about 28.05% of the variance in the money disbursed to SERs. However, there were differences between the SERs of different academic ranks and the monetary benefits they received from SEPs. Faculty members at the lecturer rank received higher monetary benefits than the other two academic ranks. SERs at the associate professor level received the lowest disbursements. In addition, SERs in education and behavioral sciences, social science, law, and governance, and business and economics received lower monetary benefits than those in the engineering sciences. Conversely, SERs in the health sciences, agricultural sciences, and natural and

computational sciences earned higher disbursement than those in the engineering sciences.

Third, sources of funds for SEPs, SEP type, SER disciplinary area, total grants allocated to SEPs, SERs academic rank, SER work experience, and total money disbursed to SERs predicted the amount of money disbursed to industry and government. In a similar way to the total money disbursed to SERs, 39% of the variance in the money disbursed to industry and government was attributed to the sources of funds for SEPs, SEP type, SER disciplinary area, amount of money granted to SEPs, and money disbursed to SERs. The total grants allocated to SEPs predicted 65% of the variance in the money disbursed to industry and government.

Fourth, the SERs believed that factors related to themselves—their academic rank, experience, commitment, and disciplinary area—followed by type of societal engagement appeared to affect the reciprocal benefits more than factors related to university leadership and the autonomy and alignment of societal engagement units within the university. Compounding this, the perceptions SERs in different academic disciplines, with different levels of work experience, and of different academic rank appeared to be similar across the factors related to SERs, institutional leadership, and societal engagement and to SEP-related factors. SERs in different academic disciplines exhibited differences in their perceptions regarding factors related to SEPs, societal engagement units, and institutional leadership and their influence on reciprocal benefits. The SERs believed that the SERs' disciplinary areas were important factor that influenced SERs' perceptions of the different factors affecting the reciprocal benefits of universities' societal engagement.

Fifth, the mean responses of the SERs about the different mechanisms that enhance the sustainability of universities' societal engagement, such as maintaining information and task rigor, creating long-lasting partnerships, and developing clear exit strategies were between the moderately important and very important levels. Maintaining information and task rigor, followed by creating long-lasting partnerships, had a stronger influence in terms of enhancing the sustainability of universities' societal engagement than the development of clear exit strategies. However, although SER work experience and academic rank played important roles, the responses of SERs tended to exhibit differences based on their academic

discipline and academic rank in the factors related to the development of clear exit strategies. The perceptions of SERs who belong to different academic disciplines, had different rank, and varied work experience about two strategies—maintaining information and task rigor and developing long-lasting partnerships—were somewhat similar.

7. DISCUSSION AND CONCLUSIONS

This chapter discusses the findings presented in chapters five and six; it integrates the research questions presented in section 1.4 with the hypotheses posited in section 5.7. The chapter comprises five sections. The first presents the summary of key findings. The second section discusses the findings of the research in relation to previous studies on the topic of universities' societal engagement. The second sections is divided into four subsections framed in line with the key research questions. The third section presents the conclusions of the research, while the fourth and Fifth sections present the implications and limitations of the research, respectively.

7.1. Summary of Key Findings

The study was intended to explore the reciprocal benefits of universities' societal engagement to the university, industry, and government. It followed an exploratory mixed sequential design that involves qualitative and quantitative stages. The qualitative stage was guided by four specific research questions that led to the development of five research hypotheses (see table 24).

Table 24 List of Research Questions and Hypotheses

Overall research question	Specific research question that guided the qualitative stage	Specific research hypotheses that guided the quantitative stage
How do actors in university, industry, and government understand the benefits of universities' societal engagement?	RQ1: What are the types and dimensions of universities' societal engagements in Ethiopia?	……
	RQ2: What are the reciprocal benefits of universities' societal engagement to the university, industry, and government?	H1: SERs perceived that the economic and non-economic benefits of their SEPs exhibit inter- and intra-institutional differences across the three institutional spheres.
	RQ3: What are the factors that influence the benefits of universities' societal engagement for the university, government, and industry?	H2: SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to industry and government affect the amount of money disbursed to SERs. H3: SERs' academic rank, work experience, and disciplinary area, the type of SEP, sources of funds, amounts of grants, and money disbursed to SERs all affect the amount of money disbursed to industry and government. H4: SERs with differences in academic rank, disciplinary area, and work experience exhibit differences in their perceptions of the factors that affect the reciprocal benefits of universities' SEPs.
	RQ4: How do universities enhance the sustainability of their societal engagement activities?	H5: SERs with differences in academic discipline, academic rank, and experience vary in their perceptions of the mechanisms that enhance the sustainability of universities' societal engagement

The synthesis of the qualitative and quantitative research findings revealed several key findings. First, the types of universities' societal engagement can be classified using two broad dimensions: institutional structure and sources of funds. Based on the organizational structure, three types of university societal engagement were identified: KTT, community service, and consultancy services. With this in mind, universities' societal engagements are again classified using the sources of funds into internally and externally funded societal engagement activities. However, there is no clear boundary between the indicated types of universities' societal engagement.

Second, joint SEPs—projects executed through the concerted effort of the industry, university, and government—are likely to provide economic and non-economic benefits to the interacting institutional spheres. However, the benefits demonstrate wide diversity and characteristics that are somewhat distinctive in each institutional sphere. The university generates economic benefits at both the institutional and individual levels. As to institutional economic benefits, universities generate monetary benefits from their SEPs in the form of overhead costs and other grants that strengthen their internal income revenue. In addition, universities' societal engagement appeared to benefit faculty in terms of professional fees and per diems, which are essential to make up for some of the financial challenges they face. Compounding these benefits, societal engagement activities contributed non-economic benefits to the university, such as an improvement in the quality of teaching and research and an enhancement of trust in the university and its sense of legitimacy. Furthermore, collaboration with the university and government enabled firms to develop linkages with potential buyers. The university and government played instrumental roles in creating market possibilities for goods and services produced in the SEPs. Hand-in-hand with economic benefits, the SEPs benefited firms in terms of creating access to knowledge and technology. That access helped firms enhance the quality and quantity of their products. Universities' societal engagement is important to the government to capitalize on certain economic and non-economic benefits that lead to the development of new products (e.g., the development of hybrid seedlings that curb food insecurity in Tigray) that would otherwise have been purchased through hard currencies. Universities' societal engagement also provided leverage for the implementation of the government's policies and strategies, which enhance trust in and acceptance of the government by the public.

However, the economic and non-economic benefits of universities' societal engagement are interdependent with each other; thus, they could be placed along a continuum where economic benefits at one end and non-economic benefits at the other. Despite this fact, the extent to which SERs perceive their SEPs as providing economic and non-economic benefits to the three actors was found to be important. Hence, in examining H1, the SERs believed that their SEPs rendered higher benefits to the university than to industry or government. In addition, they perceived that their SEPs rendered greater non-economic than economic benefits to the university, industry, and government. This suggests that the spillover effect of universities' societal engagement on teaching and research, access to knowledge and technology, and implementation of policies and strategies and enhancing public acceptance were found to be higher than the monetary benefits gained by industry, universities, or the government.

Third, a combination of factors related to the people, organizational units, and types of societal engagement influence the scope and depth of benefits that the government, industry, and university generate from the SEU. The people-related factors are the experience, academic rank, and disciplinary area of SERs, along with the accountability and transparency of societal engagement leaders. In addition, the decentralized arrangement of organizational units fostered reciprocal benefits that the university, firms, and government generate from the SEU. Nonetheless, the extent to which these groups of factors determine reciprocal benefits and the perceptions of SERs of the factors affecting reciprocal benefits emerged as points of inquiry. In this regard, it was found that 39% of the variance in the amount of money disbursed to SERs from SEPs was determined by the SEPs' sources of funds, SEP type, SER disciplinary area, the total grants allocated to SEPs, the work experience of the SERs, and the total amount of money disbursed to industry and government. Sources of funds, total grants, and amounts of money disbursed to collaborating actors appeared to be significant predictors of the amount of money disbursed to SERs. In a similar way to the amounts of money disbursed to SERs, about 39% of the variance in the amounts of money disbursed to the collaborating actors was attributed to the SEP's sources of funds, SEP type, SER academic rank, SER disciplinary area, the amount of money granted to the SEP, and the amount of money disbursed to SERs, SERs academic rank, and work experience of SERs. The

total grant allocated to SEPs appeared to predict 65% of the variance of money disbursed to industry and government.

Fourth, SERs believed that factors related to themselves—particularly their academic rank, experience, commitment, and disciplinary area, followed by the nature of the SEP—appeared to affect the reciprocal benefits more than factors related to university leadership and the autonomy and alignment of societal engagement units. The perceptions of SERs with different work experience and academic rank appeared to be similar across the factors related to SERs, institutional leadership, societal engagement units, and SEPs. SERs that belonged to different academic disciplines exhibited differences on the influence of factors related to SEPs, societal engagement units, and institutional leadership.

Fifth, universities' societal engagement activities seem less sustainable than desired, which is likely due to weak project management efforts related to the initiation, implementation, and monitoring and evaluation of SEPs. Three mechanisms were identified to enhance the sustainability of universities' societal engagement: task rigor and information processing, the development of long-lasting partnerships, and the development of clear exit strategies. Nonetheless, the qualitative data on mechanisms that enhance the sustainability of universities' societal engagement led to inquiries whether there were differences in the perceptions of SERs depending on their academic discipline, academic rank, and work experience. The SERs believed that maintaining information and task rigor, creating long-lasting partnerships, and developing clear exit strategies appeared to have positive impacts on the sustainability of universities' societal engagement: maintaining information and task rigor, followed by creating long-lasting partnerships had more influence in enhancing the sustainability of the SEU than the development of clear exit strategies. Although SERs' work experience plays an important role, the SERs' perceptions based on academic discipline and academic rank tend to exhibit differences in the roles of a clear exit strategy to enhance the sustainability of universities' societal engagement.

The findings highlighted above may add an input to the ongoing discussion on universities' societal engagement in the Ethiopia context. Those findings are

discussed in the following five sections, which are informed by themes highlighted in the study's research questions and hypotheses.

7.2. Discussions

7.2.1. Types and Dimensions of Universities' Societal Engagement

The conceptualization and classification of universities' societal engagement remain unsettled (Nabaho et al., 2022; Perkmann, King, & Pavelin, 2011; Quoc et al., 2021), but the present study has identified three types of societal engagement: KTT, community service, and consultancy services. These types are classified based on the organizational structures and sources of funds dimensions.

Table 25 Classification of Societal Engagement Activities

Organizational structure / Sources of Funds	Internally funded	Externally funded
KTT	+	+
Community service	+	+
Consultancy services	+	+

+ *shows the possibility in which the specific SEP could be classified under the internally funded or externally funded streams*

Table 25 shows that the types of societal engagement are framed based on organizational structures and sources of funds. While the organizational structure pertains to the societal engagement activities as described in the organizational structure of the university, the sources of funds dimension illustrates who provides the necessary grants to actually carry out societal engagement projects. Therefore, depending on the sources of funds, the three types of universities' societal engagement are further classified as internally or externally funded societal engagement activities. The classification of universities' societal engagement based on organizational structure and sources of funds may reduce the ongoing confusion over the types of universities' societal engagement activities (Compagnucci & Spigarelli, 2020). However, given the differences in disciplinary areas (Nkhoma,

2020), including national and international contexts (Mugabi, 2015), controversy over the classification of universities' societal engagement is likely to persist. What is important to further investigate is related to the extent to which different types of societal engagement contribute to the reciprocal benefits that the university, industry, and government generate from SEPs. Previous research has hinted that different types of societal engagement activities affect teaching and research functions (Quoc et al., 2021) and university income (Degl et al., 2019) differently.

Furthermore, the effectiveness of universities' societal engagement depends heavily on their institutionalization into universities' organizational structures. In this regard, it was found that universities in Ethiopia are institutionalizing different types of societal engagement activities across their organizational structure. However, consistent with other researchers (Mugabi, 2015), the mere existence of organizational units dedicated to societal engagement activities, including the integration of different forms of budgeting, was found not to guarantee the full institutionalization of universities' societal engagement. This would require the integration of societal engagement indicators into the recruitment and promotion criteria of faculty, the development of national and institutional policy instruments, and structures pertaining to the university's external engagement. At the same time, binding national and institutional frameworks on universities' societal engagement are lacking, which appears to support earlier researchers (example, Cremonini & Adamu, 2021) in their claim that the SEU in Ethiopia is overlooked in universities' policy and strategic documents.

Moreover, the exploration of the organizational structure of the case university revealed that although its core documents emphasize the university's core mission as teaching, research, and community engagement and service, the latter two aspects are placed in a single office. This is exemplified by university research and community engagement being coalesced at the vice-president and college levels. In other words, units dedicated to societal engagement appear to be inextricably bound up with research functions. Leaving other things aside, the form and arrangement of the college-level research and community service council do not mirror the units that exist at the vice-president level, which places role strain on societal engagement leaders and practitioners (Bess & Dee, 2008b). Societal engagement leaders are

responsible for both leading research and the university's community engagement efforts. They are accountable to independent units organized by the VPRCE.

Furthermore, consistent with other research on the Ethiopian context (Tamrat, 2019) and beyond (Rowe et al., 2017; Smitha et al., 2014), the space given to the societal engagement function of universities, despite recent advances, was found to be much more constricted than the other functions. Previously, faculty members were supposed to spend 75% of their time on teaching and 25% on research (Tamrat, 2019). Faculty's engagement in societal engagement activities was subsumed under the time allotted to research responsibilities, though this changed under the newly ratified education and training policy, which allots 60% of faculty time to teaching and 25% and 15% to research and community engagement activities, respectively (FDRE, 2023a).

Today's universities are experiencing mission overload (Cremonini & Adamu, 2021; Freel, Persaud, & Chamberlin, 2019) that can be attributed to national and global pressures. Hence, while teaching, research, and community engagement remained the core functions of higher education institutions, the third item is still often considered as a peripheral activity (Benneworth, 2009). Research in the South African context (B. Johnson, 2020) shows that community engagement professionals considered community engagement to be the "stepchild" of higher education, meaning that universities gave more attention to teaching and research responsibilities than to community engagement activities. Career progression, for instance, largely depends on the teaching and research performance of the faculty (Atta-owusu & Fitjar, 2023).

The inclination toward teaching and research among Ethiopian universities could be attributed to the nature and historical development of higher education in the country. Universities in Ethiopia are primarily designed to produce trained labor force (Asgedom, 2005; Saint, 2004). Although the federal government has recently grouped its public universities into research universities, universities of applied sciences, comprehensive universities (Hunde et al., 2023), including the lately added category—Technology specialized universities (FBC, 2020), almost all universities are preoccupied with teaching. This may be because of the low economic capacity of the country in general and hosting regional states in particular (Gashahun, 2020)

or to the limited capacity of universities to create regional and national demand for their research and engagement functions (Benneworth, 2009). Mugabi (2015) posited as "African universities are not yet key players in cutting-edge innovation" (P.23).

7.2.2. The Benefits of Universities' Societal Engagement

A multitude of economic and noneconomic benefits of universities´ societal engagement to the university, industry and government have been identified. The benefits synthesized from the present research extends the view of previous researchers (Burbridge & Morrison, 2021; Perkmann et al., 2011, 2013) who described it in terms of research commercialization and patenting. It also supplements other researchers who tried to single out the benefits universities´ societal engagement to universities (Benneworth & Cunha, 2015; Quoc et al., 2021), industry (Benneworth, 2009), and government (Benneworth, 2009). Unlike these researchers, the present research tried to understand the benefits of universities´ societal engagement using a jointly implemented SEP and the benefits were analyzed from a reciprocal perspective. The application of a analytical model synthesized from the stakeholder theory, triple helix and boundary spanning approaches also offered unique opportunity to approach the benefits, factors affecting the reciprocal benefits and mechanisms of enhancing the sustainability of universities' societal engagement activities.

SEPs diversify university´s income, provide monetary benefits to faculty members in terms of professional fees and per-diems, strengthen quality of teaching and research, and enhance the university´s legitimacy and visibility. Some of these benefits support previous research (example, Quoc et al., 2021) that demonstrate a positive impact of academic engagement, commercialization, and public engagement on the university´s teaching and research activities. Participation in co-creation projects helps faculty develop new types of teaching and learning environments, supported by practices and experiments. Therefore, SEPs— at the individual and university levels, are potential to enhance higher education quality in Ethiopia. Concomitantly, SEPs help universities in Ethiopia build their public confidence,

which according to some researchers (see, Cremonini & Adamu, 2021) has declined since the founding of the first higher education institution in the country.

Industry plays an essential role in realizing the external engagement of universities (Perkmann et al., 2011), and the results of the present study show that firms that partnered with government and universities to implement demand-driven SEPs extend their market chain, improve their profit margins, and acquire access to new knowledge and technology embedded in SERs. In this regard, the benefits that firms generated from universities' societal engagement support previous research (Elvekrok et al., 2018) that demonstrates similar results from Norway and beyond.

Furthermore, the collaboration of the three actors on specific societal engagement activities helped the government obtain products at affordable prices, which lowered the amount of money the government had to spend in foreign hard currencies. Such practices appear to support the country's domestic economic reform that encourages homegrown innovation to mitigate the shortages of foreign currency in the country (FDRE-PDC, 2020). The collaboration between university, industry, and government in this regard tends to adapt solutions using existing resources that replace if not supplement imported products.

The government—using its power and capabilities—directed industry and universities to complement the implementation of its policies and strategies. Of particular importance, joint societal engagement activities such as the ISSD helped the government achieve its policy aims at the local level. Cognizant of this, the government maximized its societal acceptance. Especially in countries like Ethiopia where government acceptance has been shaky for decades, providing innovative solutions to long-standing problems like low agricultural productivity become a source of pride and a means to maximize government acceptance.

The economic and non-economic benefits are interconnected; indeed, they can be placed along a continuum with economic benefits at one end and non-economic benefits at the other. What we need to know at this juncture is the extent to which the three institutional spheres derive economic and non-economic benefits from the SEU. Consequently, it is relevant to look into how SERs perceive universities, industry, and government generate economic and non-economic benefits from

universities' societal engagement activities. With this in mind, the SERs believed that there exists inter- and intra-institutional difference in the reciprocal benefits of universities' societal engagement. All in all, the university appears to reap greater non-economic benefits than the industry and government institutional spheres. Keeping the Ethiopian higher education in to account, the following may explain the observed differences.

First, Ogunsanya and Govender (2019) posit that community engagement is linked to the traditional academic roles of teaching and research. It extends the university's teaching and research roles to the non-academic community. In addition, the SEU is regarded as a means to solve societal problems and enhance social wellbeing. Hence, although societal engagement—as demonstrated in the qualitative and quantitative stages of the research—provides considerable monetary benefits to the university and others, the philosophical underpinnings of societal engagement—i.e., supporting the community—are likely to influence the SERs to be inclined toward non-economic rather than economic benefits.

Second, Ethiopia's higher education has grown considerably in the first decades of the 21st century; thus, such expansions lead faculty members to focus on teaching rather than research (Mohamedbhai, 2014) and community services activities (Desta & Belay, 2018). Under such circumstances, SERs are likely to justify the value of SEPs in terms of its non-economic benefits to research and, especially, teaching practices.

Third, the existing higher education landscape in Ethiopia may also prompt SERs to place more weight on the non-economic benefits of universities' societal engagement. Although the development of self-reliant higher education has remained a concern of the Ethiopian government (FDRE, 2009), higher education institutions are still financed by the federal government (Mamo, 2015). Accordingly, the performances of higher education institutions are not evaluated in terms of the income they generate from external engagement. For example, participation in any sort of community or societal engagement is required for academic promotion (MoSHE, 2020a), but the evaluation of such efforts are dominated by superficial measures related to the number of SEPs in which a faculty member has been involved. The amount of grants or income that the faculties generate through societal

engagement activities has received limited attention when evaluating their performance in societal engagement activities.

Furthermore, SERs believed that the three institutional spheres exhibit differences in the amounts of benefits they receive from SEPs. It was found that the university has a greater possibility of earning both economic and non-economic benefits than industry or government. Collaborations between universities and other institutions are likely to experience power imbalances (Ogunsanya & Govender, 2019), which affects the roles in and benefits gained from collaborations. According to this argument, the power imbalances between three institutional spheres collaborated to execute the SEPs may contribute to the differences in the reciprocal benefits.

7.2.3. Factors Affecting the Benefits of Universities' Societal Engagement

The qualitative phase of the research revealed that a combination of factors related to task (types of societal engagement), people (institutional leaders and SERs), and boundary-spanning units (the organization and alignment of societal engagement offices) contributed to the scope and amounts of reciprocal benefits that the university, industry, and government generated from universities' societal engagement. These factors were further operationalized to examine their effect on the benefits that that the three actors generate from SEPs. The set of factors and their effects on those reciprocal benefits tend to support previous researchers who approached the antecedents of the third mission as individual (Atta-owusu, 2021) and institutional factors (Karlsdottir et al., 2023; Sormani & Rossano-rivero, 2022). Attachment to a certain locality and set of social networks (Atta-owusu & Fitjar, 2022) direct and indirect benefits (Atta-owusu & Fitjar, 2023) shape the external engagement of university faculty. Similarly, others (Sormani & Rossano-rivero, 2022) have reported that the role of competence, relatedness, and autonomy of the faculty and the support they receive from the institutional leaders all enhance academic engagement. As such, researchers like Perkmann et al. (2011) have sought to use research quality as a predictor variable to examine the antecedents of faculty's engagement with industry. Against this background, the factors that influence the reciprocal benefits of universities' societal engagement are examined at two levels: first, the factors that determine the amount of money disbursed to SERs and the

industry and government institutional spheres; second, the differences in SERs' perceptions of the factors that influence reciprocal benefits. The former discusses the extent to which the amount of money disbursed to the SERs and industry and government is determined by factors related to the demographic characteristics of the SERs, SEP type, total grants, and money disbursed to industry and government, while the latter deals with the extent to which the SERs believed those factors influenced the presumed benefits of universities' societal engagement.

About 39% of the variance in the amount of money disbursed to SERs was explained by factors related to the SERs (disciplinary area, work experience, academic rank), SEP type (KTT, community service, consultancy services), sources of funds (internally or externally funded), amounts of grants allocated to SEPs, and amounts of money disbursed to industry and government. In addition, changing the amount of money disbursed to industry and government into a dependent variable and using the amount of money disbursed to SERs as the independent variable while including the other variables in the model yielded a similar percentage variance (39%). The variables considered to examine the variances in the amount of money disbursed to SERs and industry and government from the SEPs were similar except in the replacement of money disbursed to SERs with money disbursed to industry and government. Hence, the variance among the independent variables was found to be comparable, as expected. However, in line with other researchers who have demonstrated the role of funding in engagement and publications (see, Gush, Jaffe, Larsen, & Laws, 2018), total grant amounts to be the most significant contributor to the monetary variance disbursed to SERs and industry and government. This demonstrates that the amount of money disbursed to SERs and industry and government from the SEPs depends heavily on the amount of grants allocated to SEPs.

The reciprocal benefits gained by SERs, and industry and government exhibited differences in line with the type of societal engagement activity at play. These insights are supported by the quantitative findings. Although the distinction between types of universities' societal engagement remains controversial (Ogunsanya & Govender, 2019), the amount of money disbursed from KTT and community service to the SERs and government and industry appeared to be larger than the money disbursed from consultancy services. The qualitative findings revealed that consultancy service

projects have longer project lifetimes than KTT and community service projects. As a result, the benefits generated from consultancy service may not become evident in a short period of time. Contrarily, KTT and community services operate over shorter periods; thus, unlike consultancy services, the monetary benefits generated from such SEPs are easier to identify and assess.

As such, externally funded SEPs are likely to render greater monetary benefits than internally funded SEPs. This may be due to the nature and characteristics of externally funded SEPs. The qualitative data illustrated that those SEPs have higher grants than internally funded SEPs. In addition, the monetary disbursements related to professional fees and per diems are likely in externally funded SEPs. Most internally funded SEPs are operated in line with governmental rules and regulations; thus, the possibility to obtain monetary disbursements related to per diems and professional fees— as in community service projects—is limited, if not prohibited by institutional and/or national regulations.

However, the amount of money disbursed to the industry and government institutional spheres tends to be higher in SEPs funded by the university. There may be two conflicting reasons for that. First, as indicated in the quantitative findings, between 17.94% and 84.82% percent of the total grants allocated to SEPs is disbursed to SERs in the form of daily allowances and/or professional fees. The qualitative findings make it fair to argue that such disbursements are solicited mainly from externally funded SEPs. In other words, considerable portions of total grants funded by external organizations are channeled to SERs rather than to industry and government. Second, most internally funded SEPs are related to community service, that involves capacity building in the collaborating institutional spheres. Previous research (Perkmann et al., 2013) has revealed that the type of societal engagement activity, such as academic engagement and commercialization, appeared to demonstrate differences in terms of driving factors and their consequences for society; such differences are attributed to the scope and amounts of funds allotted to the SEPs.

Furthermore, the qualitative findings showed that academics with higher academic rank are motivated by institutional benefits, while SERs with lower academic rank are driven by individual economic benefits. Relying on the scale of payments,

academics at lower ranks earn lower salaries than those with a higher rank. Therefore, although faculty remuneration in the Ethiopian context is low (Sintayehu, 2021), the differences in remuneration between faculty members of different academic ranks is likely to contribute to their commitment to and motivation for conducting societal engagement activities. Given this fact, academics with higher rank are likely to tune their motivation toward benefiting the university, while those of lower rank may be inclined to gain an additional income that helps meet their financial challenges. Along the same lines, academics with more experience are likely to build better social networks (Atta-owusu & Fitjar, 2022), which may help them shape better frameworks through which all three institutional spheres could benefit from societal engagement activities. Seniority, which generally accords with academic rank, is taken as a precursor for successful collaboration with external organizations (Perkmann et al., 2013).

In line with this, the quantitative findings on the role of academic rank in determining the amount of money disbursed to SERs, and industry and government reveal mixed results. On one hand, the amount of money disbursed to SERs declines with increases in academic rank. Although the concept and practice of academic rank are bounded by context, the findings tend to support other research (Atta-owusu, 2021) that has demonstrated the role of faculty members' career, pecuniary, and prosocial motivation in shaping the scope and magnitude of their engagement. According to Attea-Owusu, while early-career scholars are motivated by career concerns, those in later career stages are motivated by monetary inducements. Meanwhile, faculty members in mid-career are motivated by prosocial conditions. Perkmann et al. (2013) also argued that academic engagement is pursued by highly motivated and successful individuals. Therefore, the difference in the amount of money disbursed to SERs may also be related to the motivation for and perceived success of societal engagement activities. However, the effect of academic rank on the amount of money disbursed to industry and government reveals a different trend. SEPs whose PIs held the assistant professor rank tended to disburse less money to industry and government than SEPs run by associate professors. This finding runs counter to some of the traditional perspectives, widely internalized by senior faculty members, which hold that interactions between universities and other actors reduce the traditional legitimacy of the university (Ogunsanya & Govender, 2019).

In line with other research (see, Bhullar et al., 2019; Karlsdottir et al., 2023), the qualitative stage of the present study showed that the reciprocal benefits of SEPs are related to the disciplinary areas of SERs. SEPs in the natural and physical science deliver higher reciprocal benefits than SEPs in the social sciences. The quantitative stage also illustrated that researchers' disciplinary area had an effect on the amount of money disbursed to SERs, industry, and government. SERs in education and behavioral sciences, the social sciences, law and governance, and business and economics received smaller monetary disbursements than SERs in the engineering sciences. Meanwhile, SERs from the health sciences, agricultural sciences, and natural and computational sciences received larger disbursements than SERs in the engineering sciences. These differences may be related to the nature of the SEPs. Ogunsanya and Govender (2019) remark that academics from sciences, technology, engineering, mathematics, and health sciences are often engaged in contract research and commercialization efforts. By contrast, SERs in the social sciences and humanities are occupied with provisions of soft training to external organizations. Consequently, the financial performance of SERs in the social sciences and humanities is likely to be lower than those in engineering and similar fields. Researchers from the social sciences and humanities seldom perform well in receiving grants for SEPs (Perkmann et al., 2013).

Furthermore, based on the nature of academic disciplines (Becher, 1994; Biglan, 1973b, 1973a), differences in reciprocal benefits from the SEU based on SER's disciplinary areas is to be expected. Societal problems are complex and usually require the manipulation of technical skills related to engineering, agriculture, and the health sciences. Therefore, although parallel discussions concerning the traditions of societal engagement across different disciplines are lacking, one can acknowledge that the disbursements that SERs in the humanities and social sciences received from SEPs were likely to be lower than SERs in engineering and related disciplines.

The influence of academic discipline on the funds disbursed to industry and government yields mixed results. On one hand, the amount of money disbursed to industry and government from SEPs in the engineering sciences was found to be higher than SEPs in the social sciences, law and governance, and business and economics. SEPs from the engineering sciences tended to deliver lower

disbursement to industry and government than SEPs in the health, agriculture, natural, computational, and educational and behavioral sciences. Considering the applied nature of those disciplines, the disbursements rendered to government and industry are expected to be higher in the engineering sciences. However, the actual disbursements to industry and government were found to be higher in other disciplinary areas. This may be related to the capacity and development of activities in the industry and government institutional spheres. The qualitative findings revealed that a considerable number of SEPs focused on capacity and behavioral development, which could be undertaken by disciplines other than engineering sciences.

Work experience is believed to influence the external engagement of faculty (Perkmann et al., 2013). However, its effect on academic engagement is not straightforward. Some (Karlsdottir et al., 2023) have shown that work experience has a positive and strong effect on faculty's external engagement. In light of this, the work experience of the SERs appears to be positively related with the amount of money disbursed to SERs. This could be related to the development of the social capital of the SERs, which helped them in one way or another to win SEP competitions and receive larger grants and for a longer implementation periods. Seniority—a concept closely connected to work experience—is likely to lead to wider networks and more robust university–industry collaboration activities (Karlsdottir et al., 2023). Furthermore, the money disbursed to SERs and industry and government has an inverse relationship; that is, the amount of money disbursed to industry and government has a spillover effect on the amount of money disbursed to the SERs, and vice versa.

Perceptions of SERs of the factors affecting the reciprocal benefits of universities' societal engagement

The qualitative findings illustrated that factors related to SERs, institutional leaders, SEP type, and the organization and alignment of societal engagement units affected the reciprocal benefits of SEPs, and the quantitative findings confirmed that these factors are likely to affect the reciprocal benefits to a medium degree. At this juncture, it is important to ask two questions. First, which group(s) of factors do SERs believe are most important in influencing the reciprocal benefits, and why is

that the case? Second, do SERs with different academic disciplines, work experience, and academic ranks vary in their reactions toward the factors that affect the reciprocal benefits of universities' societal engagement? These questions are discussed in the following sections.

Which factors do SERs perceive as most influential, and why is that the case?

Factors related to SERs—academic rank, experience, commitment, and disciplinary area—influence the reciprocal benefits of universities' societal engagement more than those related to SEP type, the autonomy and alignment of societal engagement units, and the commitment and accountability of institutional leaders. This could be related to the central roles that SERs play in their universities' societal engagement efforts. Research on community service and KTT in Ethiopia reveals that the responsibility for designing, implementing, and evaluating SEPs falls on the shoulders of the faculty; that is, on SERs (Desta & Belay, 2018). Furthermore, previous research (Atta-owusu, 2021) has suggested that academics are considered the architects of SEPs. Hence, the benefits of SEPs largely depend on the strength, commitment, and orientation of the SERs.

However, the role of other factors, such as the nature and characteristics of SEPs, in determining reciprocal benefits should not be ignored. The SERs believed that SEP type did influence the reciprocal benefits; indeed not all types of SEPs render identical benefits to the collaborating actors. This could be related to the diversity in objective and scope of SEP type as articulated in the institutional frameworks for SEPs. Although national policy directions are lacking (Cremonini & Adamu, 2021), universities in Ethiopia have institutional frameworks that determines the scope and objectives of different types of societal engagement, including KTT, community service, and consultancy services. Often, community service is considered university's voluntary support rendered to the local area, while KTT and consultancy services are seen as specific ways to address societal problems through the dissemination of knowledge and technology to a community in need. Concomitantly, the benefits expected from such types of SEPs are likely to vary.

Furthermore, Cremonini and Adamu (2021) revealed that a lack of trust, accountability and a weak institutional understanding of global developments in higher education are affecting universities' social responsibilities in Ethiopia. The qualitative findings of the study offer insights into the effect of trustworthiness, accountability and transparency of leaders on the reciprocal benefits of universities' societal engagement. SERs agreed that the influence of institutional leaders on the reciprocal benefits was not as strong as the factors related to the SERs and SEPs types. While there may be several explanations for these differences, it is fair to argue that the factors related to institutional leaders, such as accountability, transparency, and responsiveness, are not highly pronounced in the context of universities' societal engagement. Reports (Sahlu, 2022) have indicated that although Ethiopian universities are affected by myriad issues of dishonesty, these dubious practices are especially prevalent in the case of material procurement and construction sought by the universities.

The effect of societal engagement leaders on the reciprocal benefits of the SEU could be discussed along two lines. First, societal engagement leaders are expected to foster the involvement of faculty in societal engagement activities. The support that leaders deliver to the faculty on matters related to autonomy, relatedness, and competence (Sormani & Rossano-rivero, 2022) is essential to enhancing the effects of the SEU. Keeping other things constant, the existence of transparent and accountable institutional leaders will contribute to the motivation of academics (Sormani & Rossano-rivero, 2022) and thus to the benefits that SEPs deliver to universities, industry, and the government.

Furthermore, in line with other researchers (Comacchio et al., 2012), leaders in boundary-spanning units such as college research and community service units, KTT units, and community and consultancy services need to possess technical and networking competencies to contribute to reciprocal benefits. Societal engagement officers bridge the interactions between the university and other actors on matters related to external engagement. Accordingly, although the commitment of SERs is important, the implementation of joint SEPs such as the ISSD falls on clearly defined interaction modalities and deliverables that depend in turn on the consent of the interacting institutional spheres. Hence, societal engagement leaders are expected to be equipped with the knowledge and skills needed to design and implement strategic

responses (Prysor & Henley, 2018). By the same token, one could argue that societal engagement leaders with robust technical and networking competencies are likely to establish institutional environments that foster reciprocal benefits from SEPs. Recent research has also asserted that universities dynamic capabilities influence the practice of their third mission activities (Stolze & Sailer, 2022).

Notably, the university's third mission has been described as a "boundary enactment transaction" (Compagnucci & Spigarelli, 2020, p. 2) that bridges the interaction between universities and the society (Sormani & Rossano-rivero, 2022). Therefore, the benefits expected from SEPs appeared to be related to the internal and external alignment of organizational units. Although the agreement of the SERs relative to the other three sets of factors is found to be low, the way organizational units are organized did appear to influence the reciprocal benefits. For instance, the qualitative analysis found that decentralized organizational units offer greater possibilities and more robust tendencies to foster reciprocal benefits than centralized societal engagement units. This could be related to the freedom bestowed on faculty to choose and implement societal engagement activities. Decentralization empowers decision-making processes and practices (Lo, 2010); thus, it offers a wider set of possibilities to create partnerships and interaction modalities with different groups of stakeholders.

The perception of SERs of the factors that affect the reciprocal benefits appeared to exhibit differences based on their academic discipline. More specifically, a majority of SERs from the agricultural sciences and business and economics rated the two groups of factors (i.e., institutional leaders and type of societal engagement activities) above medium while a majority of SERs from the remaining disciplinary areas rated those groups of factors below medium, and the differences were found to be statistically significant. SERs from the agricultural sciences and business and economics believed that the institutional leaders and type of societal engagement activities have a greater influence on the reciprocal benefits than SERs from the engineering sciences, the natural and computational sciences, education and behavioral sciences, and the social sciences, law, and governance. Academic disciplines play pivotal roles in shaping academics' attitudes and areas of engagement (Freel et al., 2019). Becher (1994) argued that the distinctions among academic disciplines have a wide array of implications for higher education research, policy,

and practice. Therefore, the SEPs likewise the academics are better explained by the disciplinary areas of the societal engagement researchers.

7.2.4. The Sustainability of Universities' Societal Engagement

Results from the qualitative stage of the research revealed that the SEPs as practiced at Mekelle university are less sustainable, which is consistent with other researchers (example, Cremonini & Adamu, 2021), who argued that the failure to ensure the sustainability of universities' societal responsibilities is one of the critical problems facing universities in Ethiopia. Relying on project management researchers (Horine, 2013), a lack of robust information to initiate, implement, and close SEPs and the failure to establish long-lasting partnerships among different stakeholders deter the sustainability of the SEU. In this regard, strategic elements that fall into two types—information processing and external representation (Aldrich & Herker, 1977)—were found to be essential to enhancing the sustainability of a university's societal engagement. Maintaining task rigor, developing clear exit strategies, and creating long-lasting partnerships were found to be important to enhancing the sustainability of the SEU. While task rigor and the development of clear exit strategies are related to information processing, creating long-lasting partnerships is connected with the external representation of the university on matters related to implementing its societal engagement activities. A lack of concrete and reliable information to demonstrate the need to commence SEPs, the failure to ensure appropriate monitoring and evaluation, and paying insufficient attention to project closure all hinder the sustainability of universities' societal engagement. There are thus considerable challenges pertaining to sound project planning, implementation, and closure, and failure in any of these elements lead to inefficiencies and discontinuities (PMBOK, 2004).

The university's guiding documents (Mekelle University, 2016, 2018b, 2018a) recommend that faculty members to develop SEPs that focus on pressing societal problems. That includes considering the concrete feasibility study outputs compiled either by SERs themselves or by the university. The findings revealed that although feasibility studies are considered as precursors to launching SEPs, most SERs are driven instead by their motivation as faculty members. Feasibility studies offer

instrumental insights into the adaptability of intervention projects such as SEPs to specific economic, social, and political contexts (Orsmond & Cohn, 2015), and failure to carry them out can lead to wastage or an incompatibility between what is needed and what is implemented. Hand-in-hand with clearly identified needs, the institutionalization of appropriate monitoring and controlling mechanisms is vital to ensure the success and sustainability of universities' societal engagement during the implementation and completion stages (Crawford & Bryce, 2007).

In addition to the monitoring and evaluation activities, the development of clear exit strategies appeared to play a major role in determining the sustainability of universities' societal engagement activities. The development of such strategies, including any handover mechanisms, can enhance the impact of a project (Horine, 2013). Despite this fact, project exit strategies have been overlooked in the development of project proposals and during the closure of SEPs. In this regard, the dissemination of success stories and investing in the capacity of recipient organizations (PMBOK, 2004) may contribute to the sustainability of SEPs.

The creation of long-lasting partnerships is also found to be vital to enhancing the sustainability of universities' societal engagement. Nevertheless, the present study has shown that partnerships created by the university and other stakeholders on matters related to the SEU are limited due to the following key factors. First, there is a lack of balance between economic and non-economic benefits that the university and other actors generate from universities' societal engagement. It was understood a preference for economic benefits at the expense of non-economic benefits hinders the sustainability of SEPs. Second, a lack of clear role division and balance among participating actors challenges the sustainability of partnerships. Petersen et al. (2022, p. 894) indicate that the sustainability of the university's third mission is partly related to the capability of the community partners to "co-produce development outcomes" in line with the university's third mission.

However, the reaction of SERs to the sustainability strategies appeared to be mixed. More specifically, SERs of different academic ranks exhibited differences in their preferences toward maintaining information and task rigor and the development of clear exit strategies. A majority of SERs with the rank of associate professor rated both maintaining information and task rigor and the development of clear exit

strategies below moderately important, whereas those SERs with the rank of lecturer or assistant professor rated the indicated strategies above moderately important. The experience of the SERs, which is compounded by their academic rank, may contribute to the differences in their perceptions of the importance of the various strategic areas. Academics with higher ranks place greater emphasis on teaching and research activities, while those SERs with lower rank demonstrate pro-third mission activities (Freel et al., 2019). The emphasis of SERs on strategies relevant to enhancing the sustainability of universities' societal engagement is likely to vary based on their academic rank.

The perception of SERs of mechanisms that enhance the sustainability of universities' societal engagement also varied based on their disciplinary area. A majority of academics in health and engineering sciences rated the development of exit strategies above moderately important more than SERs from other disciplinary areas. This may be related to the nature of SEPs run in the areas of health and engineering sciences, which focus on hard activities (Karlsdottir et al., 2023) and may also demand clear exit strategies to enhance their sustainability and impact.

7.3. Conclusions

The SEU—often described as the third mission of universities—involves KTT, community service, consultancy services, and similar activities implemented to address societal needs. Although the ultimate target of universities' societal engagement is intended to benefit society, the university itself and its collaborating actors derive reciprocal benefits unique to their organizational nature and traits. The benefits that universities draw from societal engagement activities coalesce with its pursuit of enhancing responsiveness to the community and ensuring excellence in teaching, research, and financial security. Hence, societal engagement helps universities address the transformation of their core mission—teaching and learning, research, and income generation—and improves their visibility and legitimacy among key stakeholders such as the community, government, and industry. Businesses, unlike universities, are engaged in the production of goods and services. Hence, their collaboration with universities in activities such as joint SEPs is

important to boost the production and marketability of their goods and services. More specifically, the flow of knowledge and technology among the collaborating actors and the development of innovative market chains benefited firms in developing new products and increasing existing market possibilities. Moreover, the tripartite interactions between universities, industry, and government in pursuit of implementing universities' societal engagement help the government to achieve some of its overarching goals in community development. Universities' SEPs scaffold the implementation of government policies and strategies and create opportunities for the development and adaptation of new solutions to long-standing challenges. The government, unlike the other two institutional spheres, has a guiding power that can oblige universities to align their societal engagement with the government's economic and social policies. Hence, some of the benefits of universities' societal engagement to governments emanate from the overall guiding capacity of the government to industry and government, including the need to meld the capacities of the two institutional spheres with the aim of ensuring national economic and social development.

The interactions between the nature of societal engagement activities (such as type of societal engagement, sources of funds, and amount of funds), SERs (including academic rank, work experience, and disciplinary area), and the institutionalization of universities' societal engagement across universities' organizational structures determine the scope and depth of benefits that the firms, government, and universities generate from SEPs. However, the amount of grant allocated to SEPs appears to be critical in limiting or enhancing the reciprocal benefits that the university, firms, and government can draw from the SEPs. That is, with an increase in the amount of grants allotted to SEPs, the economic and non-economic benefits that universities, firms, and government derive are likely to increase as well. This is particularly true as the scope and depth of implemented SEPs are intricately linked with the source and amount of grant allocated to SEPs.

Ensuring the sustainability of universities' societal engagement calls for proper project initiation, implementation, and closure. Managing societal engagement activities in light of project management principles is integral to enhancing their sustainability. In this regard, SEPs must rely on adequately processed information and systematically developed tools of monitoring and implementation. The

development of exit and sustainability strategies may also be relevant to foster the impact of SEPs at the community and national levels.

7.4. Implications of the Study

As indicated in chapter one, research on universities' societal engagement has shown remarkable growth since the end of the 20th century. However, most studies on universities' societal engagement and/or third mission are conducted in developed countries, mainly in Europe and North America. Therefore, the findings of the present study may offer insights into universities' societal engagement in the context of a developing region. It also contributes to the ongoing discussion on universities' societal engagement, including the concept itself, its classifications and benefits, contributing factors, and sustainability enhancement strategies in the context of higher education in Ethiopia.

Furthermore, previous research focuses on unilateral perspectives to examine the benefits of universities' societal engagement to communities and universities. The exploration of reciprocal benefits from three perspectives—university, industry, and government—may contribute to the ongoing discussion on the effect of universities' societal engagement to the collaborating actors. The study has shown that collaboration between the university, firm, and government to implement societal engagement activities, in addition to its benefits to communities benefited all three of those institutional spheres.

The research also makes contributions to the development of mixed methods research in higher education. Mixing qualitative and quantitative research in one research project is not adequately articulated in that field in general (Cai, 2018) and when discussing universities' societal engagement in particular (Schnurbus & Edvardsson, 2022). Therefore, the procedures followed to link the qualitative and quantitative research stages may strengthen discussions of integrating qualitative and quantitative research approaches in a single research project.

The study also has practical implications for university leaders at different levels, particularly in making the university's societal engagement activities more sustainable

through the application of information processing and task rigor, the development of long-lasting partnerships, and through crafting clear exit strategies. The study revealed that the sustainability of universities' societal engagement in Ethiopia was found to be low and the indicated strategies, coupled with the application of project management planning and implementation, are essential to improve its sustainability.

7.5. Limitations and Future Research

The research is situated in the ongoing discussion pertaining to universities' third mission, which is subject to different names and conceptualizations. Notwithstanding that, the literature and theoretical approaches used to frame and substantiate the research questions and findings are largely Western-centric. Although every effort was made to situate the research in the Ethiopian higher education setting, the confusion observed in the extant literature tends to transgress into this research. Therefore, future research needs to focus on contextualizing the benefits of universities' societal engagement considering the institutional dynamics of the collaborating actors.

The role of the interacting institutional spheres is likely to differ in line with the nature of those institutional spheres and SEPs. Nevertheless, the present study focused on how the interacting institutional spheres are (and could) benefit from SEPs. The benefits that the interacting institutional spheres generated from the SEPs were not explored in light of the roles they played in the joint SEPs. Therefore, future research needs to extend the reciprocal benefits by considering the roles of the institutional spheres in implementing joint societal engagement activities.

Despite the effort to include research participants from the university, firm, and government institutional spheres in the qualitative stage of the research, the quantitative stage relied on research participants selected only from universities. Accordingly, the benefits that the industry and government obtained from universities' societal engagement activities were discussed based on the responses of SERs to the survey, which may limit the generalizability of the research. Hence, future research can address these shortcomings by considering survey participants

from industry and government. Furthermore, as the tripartite interactions between industry, government, and universities depend on the maturity of those interactions in temporal terms and the institutional logics of specific organizations (Cai, 2014; Liu & Cai, 2017), future research could focus on different types of universities and time series data that demonstrate project life span, the amounts of grants to SEPs, and the funds disbursed in different activities and institutional spheres.

8. REFERENCES

Ackermann, F., & Eden, C. (2011). Strategic Management of Stakeholders: Theory and Practice. *Long Range Planning*, *44*(3), 179–196. https://doi.org/10.1016/j.lrp.2010.08.001

Adams, K. R. (2014). The Exploration of Community Boundary Spanners in University–Community Partnerships. *Journal of Higher Education Outreach and Engagement*, *18*(3), 113–118.

Addis Ababa University. (2020). Research and Technology Transfer. Retrieved August 20, 2020, from http://www.aau.edu.et/offices/v_president-office/office-of-the-vice-precsident-for-research-and-technology-transfer/

Agasisti, T., & Bertoletti, A. (2022). Higher education and economic growth: A longitudinal study of European regions 2000 – 2017. *Socio-Economic Planning Sciences*, *81*(July 2020), 1–18. https://doi.org/10.1016/j.seps.2020.100940

Aldrich, H., & Herker, D. (1977). Boundary Spanning Roles and Organizational Structure. *Academy of Management Review*, *2*(2), 217–230.

Alemie, A. (2014). University-Community Engagement and its Contribution for Community Development:The case of university of Gondar. In Y. Seyoum, S. Demelash, F. Dinsa, G. Abera, W. Tasisa, M. Kebede, … Koye Kassa (Eds.), *Strengthn Quality and Relevance of Education for Sustainable National development* (pp. 196–212). Haremaya University.

Allen, M. (1996). Research Productivity and Positive Teaching Evaluations: Examining the Relationship Using Meta-Analysis. *Journal of the Association for Communication Administration (JACA)*, *2*, 77–96.

Altbach, P. G. (2006). *International Higher Education: Reflections on Policy and Practice Publication Series Center for International Higher Education*. Boston: Center for International Higher Education,. Retrieved from http://www.bc.edu/cihe/

Amare, S. (2005). Higher Education in Ethiopia: Status and Challenges. 25 EAIE Forum. Retrieved from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.researchgate.net/profile/Solomon-Amare-Zewolde/publication/345254873_In_Extremis_Solomon's_Article/links/5fa19beda6fdccfd7b97d24f/In-Extremis-Solomons-Article.pdf

Andoh, H. (2017). Research: The " Lost Mission " of African Universities. *International Higher Education*, *91*, 20–22. https://doi.org/DOI: http://dx.doi.org/10.6017/ihe.2017.91.10035 India:

Ankrah, S., & Al-tabbaa, O. (2015). Universities — industry collaboration: A

systematic review. *Scandinavian Journal of Management*, *31*(3), 387–408. https://doi.org/10.1016/j.scaman.2015.02.003

Appe, S., Rubaii, N., & Castro, S. L. (2017). The Concept and Context of the Engaged University in the Global South: Lessons from Latin America to Guide a Research Agenda. *Journal of Higher Education Outreach and Engagement*, *21*(2), 7–36.

Argandoña, A. (2011). *Stakeholder Theory and Value Creation -Working paper* (IESE Business School No. 13) (Vol. 3). Madrid, Spain. Retrieved from academia.edu

Asgedom, A. (2005). Higher Education in Pre-revolution Ethiopia: Relevance and Academic Freedom. *The Ethiopian Journal of Higher Education*, *2*(2), 1–45.

Ashcroft, K., & Rayner, P. (2012). The Purposes and Practices of Quality Assurance in Ethiopian Higher Education: Journey , Adaptation and Integration. *International Journal of Business Anthropology*, *3*(2), 19–35.

Assie-Lumumba, N. T. (2006). *Higher education in Africa: Crises, reforms and transformation-Working Paper Series* (CODESRIA Working Paper Series). *CODESRIA Working paper series*. Dakar: Senegal: Council for the Development of Social Science Research in Africa. Retrieved from www.codesria.org

Atta-owusu, K. (2021). *Promoting academic engagement in regions: How individual and contextual factors shape engagement activities*. University of Stavager. https://doi.org/10.31265/usps.76

Atta-owusu, K., & Fitjar, R. D. (2022). Engaging for the love of place?The role of place attachment in academics' regional engagement efforts. *Regional Studies*, *56*(12), 1–12. https://doi.org/10.1080/00343404.2022.2034778

Atta-owusu, K., & Fitjar, R. D. (2023). Incentivizing knowledge exchange engagement: direct and indirect benefits of external engagement. *Studies in Higher Education*, 1–12. https://doi.org/10.1080/03075079.2023.2185601

Ayalew, E. (2012). Salary and Incentive Structure in Ethiopian Higher Education. In P. G. Altbach & I. F. Pacheco (Eds.), *Paying the Professorate : A global Comparison of Compensaton and Contracts* (pp. 125–135). Routledge.

Ayana, A., Borman, G., Subedi, A., Abay, F., Mohammed, H., Nefo, K., … Dessalegn, T. (2013). Integrated Seed Sector Development in Ethiopia: Local seed business development as an entrepreneurial model for community based seed production in Ethiopia (pp. 88–97). Community Seed Production. Retrieved from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://core.ac.uk/download/pdf/219473702.pdf

Ayenachew, W. A. (2015). Exploring the Ethiopian Higher Education from the Developmental Perspectives. *Bahir Dar Journal of Education*, *15*(2), 1–37.

Bahru, Z. (2014). *The Quest for Socialist Utopia: The Ethiopian Student Movement, C.*

1960-1974. Boydell & Brewer Ltd.

Becher, T. (1994). The Significance of Disciplinary Differences. *Studies in Higher Education*, *19*(2), 151–161.

Bender, G. (2008). Exploring conceptual models for community engagement at higher education institutions in South Africa. *Perspectives in Education*, *26*(1), 81–95.

Benneworth, P. (2009). The Regional Engagement of Universities :Building Capacity in a Sparse Innovation Environment. *Higher Education Management and Policy*, *21*(1), 1–18. https://doi.org/10.1787/hemp-v21-art8-en

Benneworth, P., & Cunha, J. (2015). Universities' contributions to social innovation: reflections in theory & practice. *European Journal of Innovation Management*, *18*(4), 1–26. https://doi.org/10.1108/EJIM-10-2013-0099

Benneworth, P., de Boer, H., & Jongbloed, B. (2015). Between good intentions and urgent stakeholder pressures: institutionalizing the universities' third mission in the Swedish context. *European Journal of Higher Education*, *5*(3), 280–296. https://doi.org/10.1080/21568235.2015.1044549

Benneworth, P., & Jongbloed, B. W. (2010). Who matters to universities? A stakeholder perspective on humanities, arts and social sciences valorisation. *High Educ*, *59*, 567–588. https://doi.org/10.1007/s10734-009-9265-2

Benneworth, P., Young, M., & Normann, R. (2017). Between Rigour and Regional Relevance? Conceptualising Tensions in University Engagement for Socio-Economic Development. *Higher Education Policy*, *30*, 443–462. https://doi.org/10.1057/s41307-017-0061-9

Berman, E. A. (2017). An Exploratory Sequential Mixed Methods Approach to Understanding Researchers ' Data Management Practices at UVM : Integrated Findings to Develop Research Data Services. *Journal of EScience Librarianship*, *6*(1), 1–24. https://doi.org/10.7191/jeslib.2017.1104

Bess, J. L., & Dee, J. R. (2008a). *Understanding College and University organization: Theories for effective Policy and Practice* (Volume I). Virgina: Stylus Publishing,LLC.

Bess, J. L., & Dee, J. R. (2008b). *Understanding College and University Organization: Theories for Effective Policy and Practice* (Volume II). Virginia: Stylus Publishing,LLC.

Bhullar, S. S., Nangia, V. K., & Batish, A. (2019). The impact of academia-industry collaboration on core academic activities: Assessing the latent dimensions. *Technological Forcasting & Social Change*, *145*(2019), 1–11. https://doi.org/10.1016/j.techfore.2019.04.021

Bidandi, F., Ambe, A. N., & Mukong, C. H. (2021). Insights and Current Debates on Community Engagement in Higher Education Institutions: Perspectives on the University of the Western Cape. *SAGE Open*, *11*(2), 1–11. https://doi.org/10.1177/21582440211011467

Biglan, A. (1973a). Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology*, *57*(3), 204–213. https://doi.org/10.1037/h0034699

Biglan, A. (1973b). The characteristics of subject matter in different academic areas. *Journal of Applied Psychology*, *57*(3), 195–203. https://doi.org/10.1037/h0034701

Bishaw, A., & Lasser, J. (2012). Education in Ethiopia: Past, Present and Future Prospects. *African Nebula*, *5*, 53–69.

Bishaw, A., & Melesse, S. (2017). Historical Analysis of the Challenges and Opportunities of Higher Education in Ethiopia. *Higher Education for the Future*, *4*(1), 31–43. https://doi.org/10.1177/2347631116681212

Bloom, D. E., Canning, D., Chan, K., & Luca, D. L. (2014). Higher Education and Economic Growth in Africa. *International Journal of African Higher Education*, *1*(1), 23–57.

Bolisani, E., & Bartianu, C. (2018). The Elusive Definition of Knowldge. In E. Bolisani & C. Bartianu (Eds.), *Emergent Knowldge Strategies: strategic thinking in knowldge management* (pp. 1–22). Springer International Publishing.

Bowen, G. A. (2008). Naturalistic inquiry and the saturation concept: a research note. *Qualitative Research*, *8*(1), 137–152. https://doi.org/10.1177/1468794107085301

Brown, K., Shephard, K., Warren, D., Hesson, G., Fleming, J., Brown, K., … Fleming, J. (2016). Using Phenomenography to Build an Understanding of how University People Conceptualise their Community-Engaged Activities. *Higher Education Research and Development*, *35*(4), 643–657. https://doi.org/10.1080/07294360.2015.1137880

Bryman, A. (2008). *Social Research Methods* (3rd ed.). New York: Oxford University Press.

Bryman, A. (2012). *Social Research Methods* (4th ed.). New York: Oxford University Press Inc.

Burbridge, M., & Morrison, G. M. (2021). A Systematic Literature Review of Partnership Development at the University – Industry – Government Nexus. *Sustainability*, *13*(13780), 1–24.

Burnard, P., Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Analysing and Presenting Qualitative Data. *British Dental Journal*, *204*(8), 429–432. https://doi.org/10.1038/sj.bdj.2008.292

Cai, Y. (2014). Implementing the Triple Helix model in a non-Western context: an institutional logics perspective. *Triple Helix*, *1*(1), 1–20. https://doi.org/10.1186/s40604-014-0001-2

Cai, Y. (2018). What drives the choices of mixed methods in higher education research? In E. Pekkola, J. Kivisto, V. Kohtamaki, Y. Cai, & A. Lyytinen (Eds.), *Theoretical and Methodological Perspectives of Higher Education Management and Transformation: an advanced reader for PhD students* (pp. 29–50). Tampere

University Press.
Cai, Y., & Ahmad, I. (2021). From an Entrepreneurial University to a Sustainable Entrepreneurial University: Conceptualization and Evidence in the Contexts of European University Reforms. *Higher Education Policy*, *36*(1), 20–52. https://doi.org/10.1057/s41307-021-00243-z
Cai, Y., & Amaral, M. (2021). The Triple Helix Model and the Future of Innovation: A Reflection on the Triple Helix Research Agenda. *Triple Helix*, *8*(2021), 217–229. https://doi.org/10.1163/21971927-12340004
Cai, Y., & Amaral, M. (2022). Triple Helix Model of Innovation: From Boundaries to Frontiers. *Triple Helix*, *9*(2), 107–117. https://doi.org/10.1163/21971927-12340007
Cai, Y., & Etzkowitz, H. (2020). Theorizing the Triple Helix model: Past , present , and future. *Triple Helix*, *7*(2–3), 1–38. https://doi.org/10.1163/21971927-bja10003
Cai, Y., & Lattu, A. (2022). Triple Helix or Quadruple Helix: Which Model of Innovation to Choose for Empirical Studies ? *Minerva*, *60*(2), 257–280. https://doi.org/10.1007/s11024-021-09453-6
Cameron, R. (2009). A sequential Mixed Model Research Design: Design, analytical and display issues. *International Journal of Multiple Reserach Approaches*, *3*(2), 140–152.
Carayannis, E. G., & Campbell, D. F. (2009). 'Mode 3' and 'Quadruple Helix': toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management*, *46*(3–4), 201–234.
Carayannis, E. G., Caputo, F., & Del Giudice, M. (2017). Technology Transfer as Driver of SMART Growth : a quadruple /Quantuple Innovation framework approach. In D. Vrontis, Y. Weber, & E. Tsoukatos (Eds.), *Global and national business theories and practice:bridging the past with the future* (pp. 313–333). EuroMed Press.
Carl, J., & Menter, M. (2021). The social impact of universities : assessing the effects of the three university missions on social engagement. *Studies in Higher Education*, *46*(5), 965–976. https://doi.org/10.1080/03075079.2021.1896803
Carter, N., Bryant-lukosius, D., Dicenso, A., & Blythe, J. (2014). The Use of Triangulation in Qualitative Research. *Methods & Meanings*, *41*(5), 545–547. https://doi.org/10.1188/14.ONF.545-547
Chandramohan, S., & Bhagwan, R. (2022). Insights into community engagement at a University of Technology in South Africa. *Perspectives in Education*, *40*(2), 189–206. https://doi.org/10.18820/2519593X/pie.v40.i2.14
Chapleo, C., & Simms, C. (2010). Stakeholder Analysis in Higher Education: A case study of the University of Portsmouth. *Perspective*, *14*(1), 12–20. https://doi.org/10.1080/13603100903458034

Chatterton, P., & Goddard, J. (2000). The Response of Higher Education Institutions to Regional Needs. *European Journal of Education*, *35*(4), 475–496. https://doi.org/10.1111/1467-3435.00041

Chau, V. S., Gilman, M., & Cristina, S. (2017). Aligning university–industry interactions: The role of boundary spanning in intellectual capital transfer. *Technological Forecasting & Social Change*, *123*(2017), 199–209. https://doi.org/http://dx.doi.org/10.1016/j.techfore.2016.03.013

Cho, Y. H. (2017). Towards an engaged campus stakeholders ' perceptions of university social engagement in South Korea. *International Journal of Sustainability in Higher Education*, *18*(2), 185–202. https://doi.org/10.1108/IJSHE-12-2015-0194

Clark, B. R. (1983). *The Higher Education System. Academic Organization in Cross-National Perspective*. California: University of California Press.

Clark, B. R. (1998). *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*. New York: Elsevier Science Regional Sales.

Cloete, N., Bailey, T., Pillay, P., Bunting, I., & Maassen, P. (2011). *Universities and Economic Development in Africa*. Cape Town:South Africa: CHET.

Comacchio, A., Bonesso, S., & Pizzi, C. (2012). Boundary Spanning between Industry and University: the role of Technology Transfer Centres. *Journal of Technology Transfer*, *37*(6), 943–966. https://doi.org/10.1007/s10961-011-9227-6

Compagnucci, L., & Spigarelli, F. (2020). The Third Mission of the university: A systematic literature review on potentials and constraints. *Technological Forecasting & Social Change*, *161*(September 2020), 1–30. https://doi.org/10.1016/j.techfore.2020.120284

Connelly, L. M. (2016). Trustworthiness in Qualitative Research. *MEDSURG Nursing*, *25*(6), 435–436.

Corbetta, P. (2003). *Social Research :Theory,Methods and Techniques*. London: Sage Publications Ltd.

Cortina, J. M. (1993). What Is Coefficient Alpha? An Examination of Theory and Applications. *Journal of Applied Psychology*, *78*(1), 98–104.

Cousin, G. (2010). Positioning positionality: The reflexive turn. In M. Savin-Baden & C. H. Major (Eds.), *New Approaches to Qualitative Research:Wisdom and uncertainty* (pp. 9–18). New York: Sage Publications.

Crawford, P., & Bryce, P. (2007). Project monitoring and evaluation: a method for enhancing the efficiency and effectiveness of aid project implementation. *International Journal of Project Management*, *21*(2003), 363–373. https://doi.org/10.1016/S0263-7863(02)00060-1

Cremonini, L., & Adamu, A. Y. (2021). Social Responsibility in Higher Education: The Case of Ethiopia. In A. Papadimitriou & M. Boboc (Eds.), *Re-envisioning Higher Education ' s Public Mission: Global Perspectives* (pp. 229–

250). Switzerland: Palgrave Macmillan.
Creswell, J. W. (2012). *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research* (4th ed.). Boston: Pearson.
Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. *Research design Qualitative quantitative and mixed methods approaches*. London: Sage Publications. https://doi.org/10.1007/s13398-014-0173-7.2
Creswell, J. W., & Clark, V. L. P. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). Sage Publications.
Daft, R. L. (2008). *Organization Theory and Design* (10th ed.). South-Western: Cengagge learning. https://doi.org/10.1017/CBO9781107415324.004
DeCarlo, M. (2018). *Scientific Inquiry in Social Work*. Roanke VA: Center for Open Education. Retrieved from https://open.umn.edu/opentextbooks/textbooks/scientific-inquiry-in-social-work
Degl, M., Matousek, R., & Tzeremes, N. G. (2019). The interconnections of academic research and universities ' " third mission ": Evidence from the UK. *Research Policy*, *48*(9), 1–13. https://doi.org/10.1016/j.respol.2019.05.002
Delanty, G. (2018). *Community:key ideas* (3rd ed.). New York :USA: Routledge.
Desta, A. A., & Belay, H. M. (2018). Nature , Benefits , Challenges , and Opportunities of University- Community Engagement at the University of Gondar , Ethiopia: A Case Study. *International Journal of Research on Service-Learning & Community Engagement*, *6*(1), 1–15.
Dimaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisted : Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review*, *48*(2), 147–160. https://doi.org/10.17323/1726-3247-2010-1-34-56
Doh, P. (2018). A Quadruple Helix Framework for University-led Community Innovation Systems in Africa. In E. Pekkola, J. Kivisto, V. Kohamaki, Y. Cai, & A. Lyytinen (Eds.), *Theoretical and Methodological Perspectives of Higher Education Management and Transformation: an advanced reader for PhD students* (pp. 87–104). Tampere: University of Tampere press.
Dollinger, M. J. (1986). Environmental Boundary Spanning and Information Processing Effects on Organizational Performance. *Academy of Management Journal*, *27*(2), 251–368.
Donatiello, D., & Gherardini, A. (2018). All that Glitters is Not Gold: the Surrogate Use of University Spin-Offs. Insights from Italy. *Higher Education Policy*, *32*(2), 203–226. https://doi.org/10.1057/s41307-017-0079-z
Dooris, M. J., Kelley, J. M., & Trainer, J. F. (2004). Strategic Planning in Higher Education. *International Encyclopedia of Education*, *2004*(123), 5–11. https://doi.org/10.1016/B978-0-08-044894-7.00885-X

Doyle, L., & Brady, A. (2016). An overview of mixed methods research – revisited. *Journal of Research in Nursing*, *21*(8), 623–635. https://doi.org/10.1177/1744987116674257

Dufera, D. (2004). The Status of Research Undertaking in the Ethiopian Higher Institutions of Learning with Special Emphasis on AAU. *The Ethiopian Journal of Higher Education*, *1*(1), 83–104.

Dzisah, J., & Etzkowitz, H. (2008). The Renewal of the African University: Towards a "Triple Helix" Development Model. In H. Etzkowitz & M. Roest (Eds.), *Transforming University-Industry Government Relations in Ethiopia* (pp. 180–193). IKED.

Eddine, S. N., & Asgedom, A. G. (2015). A New Dynamics for Community Service in Ethiopian Higher Education: policy Brief 1/2015.

Elvekrok, I., Veflen, N., Nilsen, E. R., Gausdal, A. H., Elvekrok, I., Veflen, N., … Firm, A. H. G. (2018). Firm innovation benefits from regional triple-helix networks. *Regional Studies*, *52*(9), 1214–1224. https://doi.org/10.1080/00343404.2017.1370086

Ernst, C., & Chrobot-Mason, D. (2011). *Boundary Spanning Leadership: six practices for solving Problems,driving innovation, and transforming organization*. New York: The McGraw Hill.

Etzkowitz, H. (2000). *The Second Academic Revolution: MIT and the Rise of Entrepreneurial Science.* Gordon and Breach, London.

Etzkowitz, H. (2008). *The Triple Helix: University-Industry-Government Innovation in Action.* New York: Routledge.

Etzkowitz, H. (2013). Anatomy of the entrepreneurial university. *Social Science Information*, *52*(3), 486–511. https://doi.org/10.1177/0539018413485832

Etzkowitz, H., & Dzisah, J. (2007). The triple helix of innovation: towards a university-led development strategy for Africa. *ATDF Journal*, *4*(2), 3–11.

Etzkowitz, H., & Zhou, C. (2007). Regional Innovation Initiator: The Entrepreneurial University in Various Triple Helix Models. In *Singapore Triple Helix VI Conference Theme Paper Regional* (pp. 1–25).

FBC. (2020, January 3). Ministry classifies universities according to excellence. Retrieved May 14, 2023, from https://www.fanabc.com/english/1738-2/

FDRE-Civil Service Commission. (2020). Domestic Daily Allowance Determination for Government Employees (Directive number 3/2012. Addis Ababa:Ethiopia.

FDRE-PDC. (2020). Ten Years Development Plan: A Pathway to Prosperity (2021-2030). Retrieved from mopd.gov.et

FDRE. (1993). *The Ethiopian Science and Technology Commission-National Science and Technology Policy.* Addis Ababa, Ethiopia. Retrieved from http://www.ethiopianreview.com/pdf/001/National S&T Policy.pdf

FDRE. (1995). The Constitution of the Federal Democratic Republic of Ethiopia

Proclamation No.1/1995. Addis Ababa :Ethiopia, Ethiopia.
FDRE. (2003). *Higher Education Cost sharing Council of Minsters Regulation No.91/2003*. Addis Ababa.
FDRE. (2009). The Federal Democratic Republic of Ethiopia-Higher Education Proclamation No. 650/2009. Addis Ababa :Ethiopia.
FDRE. (2010). Growth and Transformation Plan (GTP) (2010/11-2014/15). Addis Ababa-Ethiopia.
FDRE. (2012). National Science, Technology and Innovation Policy:Building Competitiveness through Innovation. Addis Ababa:Ethiopia.
FDRE. (2016). *Growth and Transformation Plan II (GTP II) (2015/16-2019/20)*. Addis Ababa-Ethiopia.
FDRE. (2019). Public Higher Education Institution Income Generating Enterprise Establishment Council of Ministers regulation No.465/2019.
FDRE. (2023a). FDRE-Education and Training Policy. Addis Ababa: Ministry of Education.
FDRE. Higher Education, Technical and Vocational Training Research Institution and Industry Linkage Proclamation Number 1298/2023. (2023). Ethiopia.
Feleke, M. (2016). Revenue Diversification and Reform in Ethiopian Higher Education. *International Higher Education*, (87), 25–27.
Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving Integration in Mixed Methods Designs — Principles and Practices. *Health Research and Educational Trust*, *48*(6), 2134–2156. https://doi.org/10.1111/1475-6773.12117
Fick-cooper, L., Williams, A., Moffatt, S., & Baker, E. L. (2019). Boundary Spanning Leadership : Promising Practices for Public Health. *The Management Moment*, *25*(3), 288–290. https://doi.org/10.1097/PHH.0000000000001004
Fitzgerald, H. E., Bruns, K., Sonka, S. T., Furco, A., & Swanson, L. (2016). The Centrality of Engagement in Higher Education. *Journal of Higher Education Outreach and Engagement*, *20*(1), 223–244.
Fongwa, S., Marais, L., & Atkinson, D. (2014). Universities and Regional Development: Lessons from the OECD Regional Assessment of the Free State, South Africa. *JHEA/RESA*, *12*(2), 29–52.
Franz, N. (2010). A Holistic Model of Engaged Scholarship: Telling the Story across Higher Education's Missions. *Journal of Higher Education Outreach and Engagement*, *13*(4), 31–50.
Freel, M., Persaud, A., & Chamberlin, T. (2019). Faculty Ideals and Universities Third Mission. *Technological Forecasting and Social Change*, *147*, 10–21. https://doi.org/10.1016/j.techfore.2019.06.019
Freeman, R. E., Harrison, J. S., & Wicks, A. C. (2007). *Managing for Stakeholders-*

Survival, Reputation, and Success. Yale University Press. https://doi.org/10.2139/ssrn.1186402

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & de Colle, S. (2010). *Stakeholder Theory: The State of the Art*. New York :USA: Cambridge University Press, Cambridge. https://doi.org/10.1017/CBO9780511815768

Friedman, R., & Podolny, J. (1992). Differentiation of Boundary Spanning Roles : Labor Negotiations and Implications for Role Conflict. *Administrative Science Quarterly*, *37*(1), 28–47. https://doi.org/10.2307/2393532

Garber, M., Creech, B., Epps, W. D., Bishop, M., & Chapman, S. (2010). The Archway Partnership: A Higher Education Outreach Platform for Community Engagement. *Journal of Higher Education Outreach and Engagement*, *14*(3), 69–81.

García-terán, J., & Skoglund, A. (2018). A Processual Approach for the Quadruple Helix Model: the Case of a Regional Project in Uppsala. *J Knowl Econ*, 1–25.

Gashahun, A. D. (2020). University-Industry Linkage practice in Ethiopia: A Study on Debre Markos Institute of Technology, Debre Markos University. *International Journal of Scientific & Engineering Research*, *11*(8), 1913–1920.

Gebremeskel, H. H., & Feleke, K. M. (2016). Exploring the context of Ethiopian higher education system using Clark ' s triangle of coordination. *Tertiary Education and Management*, *19*(2), 99–120. https://doi.org/10.1080/13583883.2016.1149739

Geschwind, L., Kekäle, J., Pinheiro, R., & Sørensen, M. P. (2019). Responsible Universities in Context. In M. P. Sørensen, L. Geschwind, J. Kekäle, & R. Pinheiro (Eds.), *The Responsible University*. https://doi.org/10.1007/978-3-030-25646-3

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of Data Collection in Qualitative Research: interviews and focus groups. *British Dental Journal*, *204*(6), 291–295. https://doi.org/10.1038/bdj.2008.192

Gizaw, A. K. (2019). *Ethiopia's STI Policy , Strategy and Updates(unpublished)*. Addis Ababa :Ethiopia. Retrieved from www.moshe.ethernet.et

Gobena, S. T., Gopal, M., & Abeya, T. G. (2021). Status of Technology Transfer and Innovation in Ethiopia. *International Journal of Multidisciplinary and Current Educational Research (IJMCER)*, *3*(4), 122–130.

Godelier, M. (2010). Community, society, culture: Three keys to understanding today's conflicted identities. *Journal of the Royal Anthropological Institute*, *16*(1), 1–11. https://doi.org/10.1111/j.1467-9655.2009.01593.x

Godonoga, A., & Sporn, B. (2023). The conceptualisation of socially responsible universities in higher education research : a systematic literature review. *Studies in Higher Education*, *48*(3), 445–459. https://doi.org/10.1080/03075079.2022.2145462

Gornitzka, Å. (1999). Governmental policies and organisational change in higher education. *Higher Education*, *38*(1), 5–31. https://doi.org/10.1023/A:1003703214848

Guba, E. G. (1981). Criteria for Assessing the Trustworthiness of Naturalistic Inquiries. *Educational Communication and Technology*, *29*(2), 75–91.

Guerrero, M., Urbano, D., Fayolle, A., Klofsten, M., & Mian, S. (2016). Entrepreneurial universities : emerging models in the new social and economic landscape. *Small Business Economics*, *47*(3), 551–563. https://doi.org/10.1007/s11187-016-9755-4

Gush, J., Jaffe, A., Larsen, V., & Laws, A. (2018). The effect of public funding on research output: the New Zealand Marsden Fund. *New Zealand Economic Papers*, *52*(2), 227–248. https://doi.org/10.1080/00779954.2017.1325921

Harrison, R. L., Reilly, T. M., & Creswell, J. W. (2020). Methodological Rigor in Mixed Methods : An Application in Management Studies. *Journal of Mixed Methods Research*, *14*(3), 473–495. https://doi.org/10.1177/1558689819900585

Hart, A., & Northmore, S. (2011). Auditing and Evaluating Engagement: Lessons from a UK Case Study. *Higher Education Quar*, *65*(1), 34–58. https://doi.org/10.1111/j.1468-2273.2010.00466.x

Hattie, J., & Marsh, H. W. (1996). The relationship between research and teaching: A meta-analysis. *Review of Educational Research*, *66*(4), 507–542.

Hawkins, M. A. (2012). Knowledge Boundary Spanning Process: Synthesizing Four Spanning Mechanisms. *Management Decision*, *50*(10), 1800–1815. https://doi.org/10.1108/00251741211279611

Horine, G. M. (2013). *Project Management: Absolute Beginner's Guide* (3rd ed.). Indiana: Que publishing.

Huang, Y., Luo, Y., Liu, Y., & Yang, Q. (2016). An Investigation of Interpersonal Ties in Interorganizational Exchanges in Emerging Markets : A Boundary-Spanning Perspective. *Journal of Management*, *42*(6), 1557–1587. https://doi.org/10.1177/0149206313511115

Hunde, A. B., Yacob, E. T., Tadesse, G. A., Guesh, K., Gobaw, M. K., Dechassa, N., … Wondie, Y. (2023). *Differentiating the Higher Education System of Ethiopia:A National Report*. Spriger Vs. https://doi.org/https://doi.org/10.1007/978-3-658-39082-2

Irarrázaval, I., & Valdivieso, G. (2017). Puentes UC: A bridge between university and society. *Gateways: International Journal of Community Research and Engagement*, *10*, 46–57. https://doi.org/10.5130/ijcre.v10i1.5471

Israel, M., & Hay, I. (2006). *Research Ethics for Social Scientists:Research Ethics for Social Scientists*. London: Sage Publications. https://doi.org/10.4135/9781849209779

Ivanova, I. (2014). Quadruple Helix Systems and Symmetry: a Step Towards

Helix Innovation System Classification. *Journal of Knowldge Economy*, *5*(2), 357–369. https://doi.org/10.1007/s13132-014-0201-z

Jacob, W. J., Sutin, S. E., Weidman, J. C., & Yeager, J. L. (2015). Community Engagement in Higher Education: International and local perspectives. In W. J. Jacob, S. E. Sutin, J. C. W. Yeager, & J. L. (Eds.), *Community Engagement in Higher Education: Policy Reforms and Practice* (pp. 1–28). Sense Publishers.

James, C., & Janet, M. (2002). The Societally Responsive University: Public Ideals , Organisational, and the possibility of Engagement. *Tertiary Education and Management*, *8*(2), 127–144.

Janke, E., Flores, S., & Edwards, K. (2022). Community–Academic Partnerships in the Community Engagement Literature: A Scoping Review. *Journal of Higher Education Outreach and Engagement*, *26*(2), 5–28.

Jensen, M. C. (2002). Value Maximization, Stakeholder Theory, and the Corporate Objective Function. *Business Ethics Quarterly*, *12*(2), 235–256. https://doi.org/10.2307/3857812

Johnson, B. (2020). Community engagement: Barriers and drivers in South African higher education. *South African Journal of Higher Education*, *34*(6), 87–105.

Johnson, G., Scholes, K., & Whittington, R. (2008). *Exploring Corporate Strategy. Text and Cases* (8th ed.). Pearson education.

Jongbloed, B., Enders, J., & Salerno, C. (2008). Higher education and its communities: Interconnections, interdependencies and a research agenda. *Higher Education*, *56*, 303–324. https://doi.org/10.1007/s10734-008-9128-2

Kaiser, K. (2009). Protecting respondent confidentiality in qualitative research. *Qualitative Health Research*, *19*(11), 1632–1641. https://doi.org/10.1177/1049732309350879

Karlsdottir, V., Torfason, M. T., Edvardsson, I. R., & Heijstra, T. M. (2023). Assessing Academics ' Third Mission Engagement by Individual and Organisational Predictors. *Administrative Sciences*, *13*(9), 1–22.

Kerblad, L. A., Seppa¨nen-Ja¨rvela, R., & Haapakoski, K. (2021). Integrative Strategies in Mixed Methods Research. *Journal of Mixed Methods Research*, *15*(2), 152–170. https://doi.org/10.1177/1558689820957125

Kerr, C. (2001). *The Uses of the University* (5th ed.). Massachusetts: Harvard university press.

Kettunen, J. (2015). Stakeholder relationships in higher education. *Tertiary Education and Management*, *21*(1), 56–65. https://doi.org/10.1080/13583883.2014.997277

Kezar, A. (2006). To use or Not to Use Theory: Is that the Qestions. In J. C. Smart (Ed.), *Higher education handbook of theory and research* (Vol. XXI, pp. 283–284). Springer.

Knudsen, M. P., Frederiksen, M. H., & Chester, R. (2021). New forms of

engagement in third mission activities : a multi-level university-centric approach. *Innovation: Organization & Management*, *23*(2), 209–240. https://doi.org/10.1080/14479338.2019.1670666

Koekkoek, A., Ham, M. Van, & Kleinhans, R. (2021). Unraveling University–Community Engagement: A Literature Review. *Journal of Higher Education Outreach and Engagement*, *25*(1), 3–24.

Kohoutek, J., Pinheiro, R., Čábelková, I., & Šmídová, M. (2017). Higher Education Institutions in Peripheral Regions: A Literature Review and Framework of Analysis. *Higher Education Policy*, *30*, 405–423. https://doi.org/10.1057/s41307-017-0062-8

Kornbluh, M. (2015). Combatting Challenges to Establishing Trustworthiness in Qualitative Research. *Qualitative Research in Psychology*, *12*(4), 397–414. https://doi.org/10.1080/14780887.2015.1021941

Koryakina, T., Sarrico, C. S., & Teixeira, P. N. (2015a). Third Mission Activities: University Managers' Perceptions on Existing Barriers. *European Journal of Higher Education*, *5*(3), 316–330. https://doi.org/10.1080/21568235.2015.1044544

Koryakina, T., Sarrico, C. S., & Teixeira, P. N. (2015b). Universities' Third Mission Activities: Challenges to Extending Boundaries. In E. Reale & E. Primeri (Eds.), *The Transformation of University Institutional and Organizational Boundaries* (pp. 63–82). Sense Publishers.

Koul, L. (2006). *Methods of Educational Research* (3rd ed.). New Delhi: Vikas Publishing House PVT LTD.

Krčmářová, J. (2011). The Third Mission of Higher Education Institutions : conceptual framework and application in the Czech Republic and application in the Czech Republic. *European Journal of Higher Education*, *1*(4), 315–331. https://doi.org/10.1080/21568235.2012.662835

Krefting, L. (1991). Rigor in Qualitative Research: The Assessment of Trustworthiness. *The American Journal of Occupational Therapy*, *45*(3), 214–222.

Kroll, H., Schricke, E., & Stahlecker, T. (2013). Scope and determinants of the 'third role'of higher education institutions in Germany. *Higher Education Policy*, *26*(2), 263–284.

Lai, C., & Lin, S. (2017). Systems Theory. In C. Scott, L. Lewis, J. R. Barker, J. Keyton, T. Kuhn, & aaige K. Turner (Eds.), *The International Encyclopedia of Organizational Communication.* (pp. 1–18). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118955567.wbieoc203

Laredo, P. (2007). Revisiting the Third Mission of Universities: Toward a Renewed Categorization of University Activities? *Higher Education Policy*, *20*(4), 441–456. https://doi.org/10.1057/palgrave.hep.8300169

Larrán Jorge, M., & Andrades Peña, F. J. (2017). Analysing the literature on university social responsibility: A review of selected higher education

journals. *Higher Education Quarterly*, *71*(4), 302–319.
Leydesdorff, L. (2012). The Triple Helix , Quadruple Helix , … , and an N -Tuple of Helices : Explanatory Models for Analyzing the Knowledge-Based Economy ? *J Knowl Econ*, *3*(25), 25–35. https://doi.org/10.1007/s13132-011-0049-4
Lima, S., Dieguez, T., & Conceição, O. (2022). Higher education and third mission ' dynamics : DEMOLA case study. *International Journal of Multidisciplinary Research and Growth Evaluation*, *3*(4), 149–152. https://doi.org/10.54660/anfo.2022.3.4.4
Lindberg, M., Lindgren, M., & Packendorff, J. (2014). Quadruple Helix as a Way to Bridge the Gender Gap in Entrepreneurship : The Case of an Innovation System Project in the Baltic Sea Region Quadruple Helix. *Journal of Knowldge Economynowldge Economy*, *5*(1), 94–113. https://doi.org/10.1007/s13132-012-0098-3
Liu, C., & Cai, Y. (2017). Triple Helix Model and Institutional Logics in Shenzhen Special Economic Zone. *Science and Public Policy*, *15*(2), 221–231.
Lo, W. Y. W. (2010). Decentralization of higher education and its implications for educational autonomy in Taiwan. *Asia Pacific Journal of Education*, *30*(2), 127–139. https://doi.org/10.1080/02188791003721572
Mamo, F. (2015). *Revenue generation Strategies in Sub-saharan Africa*. University of tewente.
Mcdowell, G. R. (2003). Engaged Universities : Lessons from the Land-Grant Universities and Extension. *The Analysis of American Academcy*. https://doi.org/10.1177/0002716202238565
Mcminn, J. G. (2014). Boundary Spanning in Higher Education : Faculty Perspectives on Becoming an Administrator. In *Oxford Handbook Topics in Psychology* (pp. 1–23). Oxford University Press. https://doi.org/https://doi.org/10.1093/oxfordhb/9780199935291.013.50
Mêgnigbêto, E. (2013). Triple Helix of university - industry - government relationships in West Africa. *Journal of Scientometric Research*, *2*(3). https://doi.org/10.4103/2320-0057.135413
Mehari, Y. H. (2016). *Governance Reform in the Ethiopian Higher Education System:Organisational responses to Business management tools in the case of Mekelle university*. University of Tampere.
Mekelle University-Reserach Development and Partnership Directorate Office. (2020). *2020 Research Project Proposal calls*. Mekelle-Ethiopia.
Mekelle University. (2016). *Mekelle University's Community service and Consultancy Policy*. Mekelle-Ethiopia.
Mekelle University. (2017). Mekelle University Senate legislation. Mekelle University.

Mekelle University. (2018a). *Guideline for Evaluation of knowledge and technology transfer proposals*. Mekelle-Ethiopia.
Mekelle University. (2018b). *Mekelle university Guideline for Evaluation of Consultancy Proposals*. Mekelle-Ethiopia.
Mekelle University. (2019). *Mekelle University´s Annual Performance Report for 2018/19*. Mekelle-Ethiopia.
Mekelle University. (2020). Vice President For Research and Community Service. Retrieved August 20, 2020, from http://www.mu.edu.et/index.php/vice-president-for-research-and-community-service
Mendelow, A. L. (1981). Environmental Scanning--The Impact of the Stakeholder Concept. *ICIS 1981 Proceeding*.
Mengist, A. (2022). Practices and Challenges of Community Services at Debre Markos University , Ethiopia : A Case Study. In *Corporate Social Responsibility* (pp. 1–17).
Miller, T. R., Baird, T. D., Littlefield, C. M., Kofinas, G., Chapin, F. S., & Redman, C. L. (2008). Epistemological pluralism: Reorganizing interdisciplinary research. *Ecology and Society*, *13*(2), 46. https://doi.org/10.5751/ES-02671-130246
Mitchell, R. K., & Wood, D. J. (1997). Toward a Theory of Stakeholder Identification and Salience : Defining the Principle of Who and What Really Counts. *Academy of Management Review*, *22*(4), 853–886.
MoE. (2015). *Federal Democratic Republic of Ethiopia Education Sector Development Programme V (ESDP V)2015/16-2019/20*. Addis Ababa. Retrieved from https://moe.gov.et/storage/Books/ESDP V English.pdf
MoE. (2018). Ethiopian Education Development Roadmap An integrated Executive Summary (2018-2030). Draft for Discussion.
Mohamedbhai, G. (2014). Massification in Higher Education Institutions in Africa : Causes , Consequences , and Responses. *International Journal of African Higher Education*, *1*(1), 60–83.
Molas-Gallart, J., Salter, A., Patel, P., Scott, A., & Duran, X. (2002). Measuring Third Stream Activities: Final Report to the Russel Group of Universities. *SPRU-Science and Technoly Policy Research*.
Molla, T. (2018). *Higher Education in Ethiopia:Structural inequalities and Policy Responses*. Springer.
Montesinos, P., Carot, J. M., Martinez, J. M., & Mora, F. (2008). Third Mission Ranking for World Class Universities: Beyond teaching and research. *Higher Education in Europe*, *33*(2/3), 259–271. https://doi.org/10.1080/03797720802254072
MoSHE. Harmonized standard for Academic Staff Promotion in Public Univrsities: Directive number AR01/2020 (2020). Ethiopia.
MoSHE. (2020b). *የሳይንስ፣ የከፍተኛ ትምህርትና ስልጠና የአሥር ዓመት ልማት ዕቅድ (2013-*

2022) [Ten Year Strategic Plan for Training, Science and Higher Education (2020/21-2029/30]. Addis Ababa :Ethiopia.

MoSHE. (2020c). **የአሥር ዓመት ልማት ዕቅድ**[Ten years Lead Plan]. Addis Ababa :Ethiopia.

Mtawa, N. N., Fongwa, S. N., & Wangenge-Ouma, G. (2016). The Schoalrship of University -Community Engagement:Interrogating Boyer´s model. *International Journal of Educational Development*, *49*, 126–133.

Mugabi, H. (2015). Institutionalization of Community Engagement at African Universities. *International Journal of Higher Education*, *4*(1), 187–199.

Mull, C. D., & Jordan, J. W. (2014). Boundary Spanning. *Reclaiming Children and Youth; Bloomington*, *23*(4), 56–59.

Mulu, N. K. (2017). The Links between Academic Research and Economic Development in Ethiopia : The Case of Addis Ababa University. *European Journal of STEM Education, 2*(2), 1–10.

Musiał, K. (2010). Redefining External Stakeholders in Nordic Higher Education Redefining External Stakeholders in. *Tertiary Education and Management*, *16*(1), 45–60. https://doi.org/10.1080/13583881003629822

Nabaho, L., Turyasingura, W., Twinomuhwezi, I., & Nabukenya, M. (2022). The Third Mission of Universities on the African Continent : Conceptualisation and Operationalisation. *Higher Learning Research Communications*, *12*(1), 81–98. https://doi.org/10.18870/hlrc.v12i1.1298

Negash, T. (1990). *The Crisis of Ethiopian Education: Some implications for Nation-Building*. Uppsala: Uppsala reports on Education.

Neuman, L. (2007). *Basics of Social Research: Qualitative and Quantitative Approaches* (2nd ed.). Boston: Pearson Education, Inc' A1l.

Ngulube, P., Mathipa, E. R., & Gumbo, M. T. (2015). Theoretical and Conceptual Frameworks in the Social and Management Sciences. In E. Mathipa & M. Gumbo (Eds.), *Addressing Hesearch Challenges: Making headway in Developing Researchers* (pp. 43–66). Noordywk: Mosala-MASEDI Publishers & Booksellers cc. https://doi.org/10.13140/RG.2.1.3210.7680

Nkhoma, N. M. (2020). Differentiating University Community Engagement: An African Tale in Civil Society – International Perspectives on University–Community Partnerships. In P. Blessinger (Ed.), *University Community Partnerships for Promoting Social Responsibility in Higher Education* (pp. 169–184). Emerald Group Publishing Ltd. https://doi.org/10.1108/S2055-364120200000023012

OECD. (2019). *Benchmarking Higher Education System Performance*. OECD Publishing. https://doi.org/10.1787/be5514d7-en

Ogunsanya, O. F., & Govender, I. G. (2019). University-Community Engagement : Current Tensions and Future Trends. *International Journal of African Higher Education*, *6*(1), 51–76.

Oqubay, A. (2015). *Made in Africa: industrial policy in Ethiopia*. New York :USA: Oxford University Press.

Orsmond, G. I., & Cohn, E. S. (2015). The Distinctive Features of a Feasibility Study : Objectives and Guiding Questions. *Occupation, Participation and Health*, *35*(2), 169 –177. https://doi.org/10.1177/1539449215578649

Papadimitriou, A., & Boboc, M. (2021). *Re-envisioning Higher Education's Public Mission:Global Perspectives*. Switzerland: Palgrave Macmillan.

Peeke, G. (1980). Role Strain in the Further Education College. *The Vocational Aspect of Education*, *32*(83), 77–80. https://doi.org/10.1080/10408347308001391

Peer, V., & Penker, M. (2016). Higher Education Institutions and Regional Development: A Meta-analysis. *International Regional Science Review*, *39*(2), 228–253. https://doi.org/10.1177/0160017614531145

Perkmann, M., King, Z., & Pavelin, S. (2011). Engaging excellence? Effects of faculty quality on university engagement with industry. *Research Policy*, (May), 1–14. https://doi.org/10.1016/j.respol.2011.01.007

Perkmann, M., Tartari, V., Mckelvey, M., Autio, E., Broström, A., Este, P. D., … Sobrero, M. (2013). Academic Engagement and Commercialisation : A review of the Literature on University – Industry relations. *Research Policy*, *42*(2), 423–442.

Petersen, I., Kruss, G., & Rheede, N. Van. (2022). Strengthening the university third mission through building community capabilities alongside university capabilities. *Science and Public Policy*, *49*(6), 890–904. https://doi.org/https://doi.org/10.1093/scipol/scac036

Pfeffer, J., & Salancik, G. R. (2003). *The external control of organizations: A resource dependence perspective*. Stanford University Press.

Pilbeam, C., & Jamieson, I. (2010). Beyond Leadership and Management : The Boundary-spanning Role of the Pro-Vice Chancellor. *Educational Management Adminstration and Leadership*, *38*(6), 758–776. https://doi.org/10.1177/1741143210379058

Pillay, P. (2010). *Linking Higher Education and Economic Development: Implications for Africa From Three Successful Systems*. Centre for Higher Education Transformation (CHET). Retrieved from www.chet.org.za

Pinheiro, R., Langa, P. V., & Pausits, A. (2015a). One and two equals three? The third mission of higher education institutions. *European Journal of Higher Education*, *5*(3), 233–249. https://doi.org/10.1080/21568235.2015.1044552

Pinheiro, R., Langa, P. V., & Pausits, A. (2015b). The institutionalization of universities' third mission: Introduction to the special issue. *European Journal of Higher Education*, *5*(3), 227–232. https://doi.org/10.1080/21568235.2015.1044551

PMBOK. (2004). *A Guide to the Project Management Body of Knowldge* (3rd ed.).

Pennsylvania: Project Management Institute Inc.
Prysor, D., & Henley, A. (2018). Boundary Spanning in Higher Education Leadership : identifying boundaries and practices in a British university. *Studies in Higher Education*, *43*(12), 2210–2225. https://doi.org/10.1080/03075079.2017.1318364
Pugh, R., Hamilton, E., Soetanto, D., Jack, S., Ronan, N., Pugh, R., … Jack, S. (2022). Nuancing the roles of entrepreneurial universities in regional economic development. *Studies in Higher Education*, *47*(5), 964–972. https://doi.org/10.1080/03075079.2022.2055320
Quoc, A. N., Le, M. T., & Pham, H.-H. (2021). The Impact of the Third Mission on Teaching and Research Performance : Evidence From Academic Scholars in an Emerging Country. *SAGE Open*, *11*(4), 1–12. https://doi.org/10.1177/21582440211054493
Reda, N. W. (2017). Balanced scorecard in Higher Education Institutions: Congruence and Roles to Quality Assurance Practices. *Quality Assurance in Education*, *25*(4), 489–499. https://doi.org/10.1108/QAE-09-2015-0038
Reda, N. W., & Gebre-eyesus, M. T. (2018). Graduate Unemployement in Ethiopia: The ´Red flag´and Its implicaitons. *International Journal of African Higher Education*, *5*(1), 31–43.
Renwick, K., Selkrig, M., Manathunga, C., Keamy, R. K., Renwick, K., Selkrig, M., … Manathunga, C. (2020). Community engagement is … : revisiting Boyer ' s model of scholarship. *Higher Education Research & Development*, *39*(6), 1232–1246. https://doi.org/10.1080/07294360.2020.1712680
Ringel, L., Hiller, P., & Zietsma, C. (2018). Toward Permeable Boundaries of Organizations? *Research in the Sociology of Organizations*, *47*, 3–28. https://doi.org/10.1108/S0733-558X20180000057001
Rolfo, S., & Finardi, U. (2014). University Third mission in Italy : organization , faculty attitude and academic specialization. *Journal of Technology Transfer*, *39*(3), 472–486. https://doi.org/10.1007/s10961-012-9284-5
Roper, C. D., & Hirth, M. A. (2005). A History of Change in the Third Mission of Higher Education : The Evolution of One-way Service to Interactive Engagement. *Journal of Higher Education Outreach and Engagement*, *10*(3), 3–21.
Rowe, A. N., Hoyt, L., & Carrier, C. (2017). Faculty Perspectives on Rewards and Incentives for Community-engaged Work: A multinational Exploratory Study. *Gateways: International Journal of Community Research and Engagement*, *10*, 249–264. https://doi.org/10.5130/ijcre.v10i0.5268
Rüegg, W. (2004). *Universities in the Nineteenth and Early Twentieth Centuries (1800–1945)*. Cambridge University Press, Cambridge.
Rugambwa, A. (2019). Implementing the Third Mission : What African Universities Can Learn From One Another and from Abroad. In M. K. Banja (Ed.), *Selected Readings in Education Volume 2* (pp. 128–142). Marvel

Publishers. Retrieved from https://www.researchgate.net/publication/341041900_Implementing_the_Third_Mission_What_African_Universities_Can_Learn_From_One_Another_and_from_Abroad

Rugambwa, A. (2020). Implementing the Third Mission : What African Universities Can Learn From One Another and from Abroad. In *Selected Readings in Education* (pp. 144–158). Marvel Publishers.

Sahlu, S. (2022). Report Exposes Myraids of Malpracticein Educational Institutions. *The Reporter-Septamber 24.2022*.

Saint, W. (2004). Higher Education in Ethiopia : The Vision and Its Challenges. *Journal of Higher Education in Africa*, *2*(3), 83–113.

Sandmann, L., Jordan, J., & Mull, C. (2014). Measuring Boundary-Spanning Behaviors in Community Engagement. *Journal of Higher Education Outreach and Engagement*, *18*(14), 83–104.

Schnurbus, V., & Edvardsson, I. R. (2022). The Third Mission Among Nordic Universities : A Systematic Literature Review. *Scandinavian Journal of Educational Research*, *66*(2), 238–260. https://doi.org/10.1080/00313831.2020.1816577

Schotter, A. P. J., Mudambi, R., & Doz, Y. L. (2017). Boundary Spanning in Global Organizations. *Journal of Management Studies*, *54*(4), 403–421. https://doi.org/10.1111/joms.12256

Schyndel, T. Van, Pearl, A. J., & Purcell, J. W. (2019). Extending Our Conceptualization of Boundary- Spanning Leadership for Community Engagement. *Journal of Higher Education Outreach and Engagement*, *23*(2), 63–78.

Scott, R. (2003). *Organizations: Rational, Natural, and Open Systems* (5th ed.). New Jersey: Pearson Education, Inc.

Secundo, G., Elena Perez, S., Martinaitis, Ž., & Leitner, K. H. (2017). An Intellectual Capital framework to measure universities' third mission activities. *Technological Forecasting and Social Change*, *123*, 229–239. https://doi.org/10.1016/j.techfore.2016.12.013

Sedgwick, P. (2014). Unit of Observation versus Unit of Analysis. *The British Medical Journal (BMJ)*, (13 June 2014). https://doi.org/10.1136/bmj.g3840

Semela, T. (2011). Breakneck Expansion and Quality Assurance in Ethiopian Higher Education: Ideological Rationales and Economic Impediments. *Higher Education Policy*, *24*(2011), 399–425.

Sheehan, D., & Higgs, J. (2013). Practice Based Education: Theoretical Underpinnings. In J. Higgs, D. Sheehan, J. B. Currens, W. Letts, & G. M. Jensen (Eds.), *Realising Exemplary Practice Based Education:Practice,Education,Work and Society* (pp. 13–24).

Sijde, P. Van Der, Popma, M., & Tushune, K. (2012). The Community-Engaged

University : The Case of Universities in Ethiopia. *International Journal of Business Anthropology*, *3*(2), 36–53.

Šima, K., Benneworth, P., Pinheiro, R., & Beseda, J. (2017). What are the Cultural Preconditions of Universities' Regional Engagement? Towards a Disciplinary Sensitive Model of the University-Region Interface. *Higher Education Policy*, *30*(4), 517–532. https://doi.org/10.1057/s41307-017-0056-6

Sintayehu, B. (2021). Living Standard of Academic Staff at Haramaya University. *Education Research International*, *1*, 1–11.

Smirnova, Y. V. (2015). Knowledge , Knowledge Transfer , Technology Transfer : A Conceptualization. In *6th International Conference on Building Cultural Bridges: Integrating Languages,Lingustics, Literature,Translation and Journalisim in Education*. Almaty, Kazakhstan. Retrieved from https://www.researchgate.net/publication/271326173_Knowledge_Knowledge_Transfer_Technology_Transfer_A_Conceptualization#fullTextFileContent

Smitha, K., Elsea, F., & Patrick., C. (2014). Engagement and academic promotion: a review of the literature. *Higher Education Research & Development*, *33*(4), 836–847.

Soares, L., Steele, P., & Wayt, L. (2016). Evolving Higher Education Business Models Leading with Data to Deliver Results. Retrieved from https://www.tiaa.org/public/institute/publication/2016/evolving-higher-education-business-models-leading

Sørensen, M. P., Geschwind, L., Kekäle, J., & Pinheiro, R. (2019). *Responsible University:Exploring the Nordic Context and Beyond*. Palgrave Macmillan.

Sormani, E., & Rossano-rivero, S. (2022). Facilitating Academic Engagement with Society : A Bonding Social Capital Approach to Self-Determination. *Triple Helix*, 1–29. https://doi.org/10.1163/21971927-bja10036

Stick, S. L., Creswell, J. W., & Lincoln, N. (2006). Using Mixed-Methods Sequential Explanatory Design : From Theory to Practice. *Field Methods*, *18*(1), 3–20. https://doi.org/10.1177/1525822X05282260

Stieb, J. A. (2009). Assessing Freeman ' s Stakeholder Theory. *Journal of Business Ethics*, *87*(3), 401–414. https://doi.org/10.1007/s10551-008-9928-4

Stolze, A., & Sailer, K. (2022). Advancing HEIs' third-mission through dynamic capabilities: the role of leadership and agreement on vision and goals. *Journal of Technology Transfer*, *47*(2). https://doi.org/10.1007/s10961-021-09850-9

Strier, R. (2013). Fields of paradox: university–community partnerships. *Higher Education*, *68*(2), 155–165.

Sung, T. K., & Gibson, D. V. (2005). Knowledge and Technology Transfer : levels and key factors. *International Juurnal of Technology Management*, *29*(3–4). https://doi.org/10.1504/IJTM.2005.005997

Taber, K. S. (2017). The Use of Cronbach ' s Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, *48*, 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Taliento, M. (2022). The Triple Mission of the Modern University : Component Interplay and Performance Analysis from Italy. *World*, *3*, 489–512. https://doi.org/10.3390/world3030027

Tamiru, J. (2017). Exploring Employment Status and Education – Job Match among Engineering Graduates in Ethiopia : Policy Implications. *International Journal of African Higher Education, 4*(1), 2–15.

Tamrat, W. (2019). Re-engaging with community service in universities. *University World News*, (May/2019).

Tamrat, W., & Teferra, D. (2020). Private higher education in Ethiopia : risks , stakes and stocks. *Studies in Higher Education*, *45*(3), 677–691. https://doi.org/10.1080/03075079.2019.1582010

Tassew, B., Getnet, Y., Nega, A., Tilahun, E., Abebe, W., Roro, M., … Sisay, M. M. (2021). Female Academic Career Development and Administrative Positions at Addis Ababa University : a Mixed-Method Study. *Ethiopian Journal of Health Development*, *35*(30–39).

Taylor, M. (2006). The Firm: Coalition, Communities and Collective Agency. In M. Taylor & P. Oinas (Eds.), *Understanding the Firm: Spatial and Organizational Dimensions* (pp. 87–116). New York: Oxford University Press Inc.

Teferra, D. (2014). Charting African Higher Education — Perspectives at a Glance. *International Journal of African Higher Education*, *1*(1), 10–21.

Trencher, G., Yarime, M., Mccormick, K. B., Doll, C. N. H., & Kraines, S. B. (2014). Beyond the Third Mission : Exploring the Emerging University Function of Co-creation for Sustainability. *Science and Public Policy*, *41*(2014), 151–179. https://doi.org/10.1093/scipol/sct044

Vanderstoep, S. W., & Jonston, D. D. (2009). *Research Methods for Everyday Life:Blending Qualitative and Quantitative Approaches*. San Francisco: Jossey-Bass.

Viale, R., & Etzkowitz, H. (2005). Third academic revolution: polyvalent knowledge. The "DNA" of the Triple Helix. In *The 5th Triple Helix theme paper, Turin, Italy, May, available at: triplehelix5. com.* (pp. 1–28).

Vught, F. van, & de Boer, H. (2015). Governance Models and Policy Instruments. In S.-O. M. Huisman J., de Boer H., Dill D.D. (Ed.), *The Palgrave International Handbook of Higher Education Policy and Governance* (Vol. 18, pp. 38–56). London: Palgrave Macmillan. https://doi.org/10.1007/978-1-137-45617-5

Wahab, S. A., Rose, R. C., & Osman, S. I. W. (2012). Defining the Concepts of Technology and Technology Transfer: A Literature Analysi. *International Business Research*, *5*(1), 61–71.

Watson, D. (2007). *Managing Civic and Community Engagement*. McGraw-Hill Education (UK): Open University Press.

Waugh, W. L. (2003). Issues in University Governance:More "Professional and Less Academic." *The Annals of the American Academy of Political and Social Science*, *585*(1), 84–96. https://doi.org/10.1177/0002716202238568

Weerts, D. J., & Sandmann, L. R. (2010). Community Engagement and Boundary-Spanning Roles at Research Universities. *The Journal of Higher Education*, *81*(6), 632–657. https://doi.org/10.1080/00221546.2010.11779075

Williams, W., & Lewis, D. (2008). Strategic management tools and public sector management. *Public Management Review*, *10*(5), 653–671. https://doi.org/10.1080/14719030802264382

Wyborn, A. T. B. C., Meyer, C. C. R., Addison, R. M. C. P. F. E., & Curran, S. L. C. K. (2018). Boundary Spanning at the Science – Policy Interface : the practitioners' perspectives. *Sustainability Science*, *13*(4), 1175–1183. https://doi.org/10.1007/s11625-018-0550-9

Yigeremu, M., Zenebe, M., Abebe, W., & Sisay, M. M. (2021). Gender Inequity in Higher Education in Ethiopia. *Ethiopian Journal of Health Development*, *35*(SI-2), 1–2.

Yizengaw, T. (2004). The Status and Challenges of Ethiopian Higher Education System and its Contribution to Development. *The Ethiopian Journal of Higher Education*, *1*(1), 1–19.

9. APPENDICES

Appendix 1: Informed Consent Form

A. Information sheet

Dear Sir or Madam,

My name is Nigusse Weldemariam Reda, and I am currently doing my PhD at Tampere University (Finland) and Mekelle University (Ethiopia). My dissertation is tentatively entitled *Societal Engagement of Public Universities in Ethiopia: Mutuality and Sustainability*. The main purpose of the study is to explore the reciprocal benefits and sustainability of universities´ societal engagement in Ethiopia. Societal engagement implies the structured activities (projects) that universities undertake to benefit society in collaboration with industry, communities, and government offices and bureaus, and to benefit their core functions and processes. Considering this definition, the study is intended to explore the perceptions of leaders in different institutional spheres (community, university, industry, and government) of the social engagement of universities and its benefits, the factors that enhance or reduce the mutual benefits of universities' societal engagement, and the mechanisms that help ensure the sustainability of that engagement.

The results of the study are expected to inform policymakers, university leaders, and faculty members in Ethiopian higher education institutions. More specifically, the study will draw a policy brief that indicates the gaps pertaining to existing societal engagement by universities and the mechanisms through which policy gaps could be filled. In addition, as the dissertation intends to explore and examine the perceptions of leaders in industry, communities, and governments of the social engagement of universities, it may help university leaders to revisit institutional policies and guidelines pertaining to societal engagement functions.

The study has qualitative and quantitative phases. In the qualitative phase, Mekelle University will be treated as a case study, while in the quantitative phase four systematically selected public universities in Ethiopia will be considered. The qualitative phase of the research will inform the data collection instruments, procedures, and domains to be examined in the quantitative phase. The qualitative data will be collected from university stakeholders (vice presidents for research and community services, principal investigators of societal engagement projects), industry (leaders with experience in collaborating with universities), community members and civil associations (leaders of the community and beneficiaries of selected societal engagement projects), and government offices (the Ministry of Sciences and Higher Education and regional bureaus and offices that have cooperated with universities' societal engagement projects). Data for the qualitative phase of the research will be collected through interviews and focus group discussions, after which quantitative data will be collected through surveys of academic staff with experience in societal engagement projects at four public universities.

Given your demonstrated involvement in societal engagement projects, you have been identified as a candidate to participate in the first phase of the research. Your participation in the interview or focus group discussion will be voluntary, and you will be free to withdraw at any point in the data collection process; in the event you decide to leave, the data you provide will be deleted from any archives and recordings made during the research process. Moreover, data will be reported anonymously, so your name, position, and other information that could be directly or indirectly associated with you will not appear in written transcripts or any publications and documentation related to the study. The interview and focus group discussions will be tape recorded, but only with your consent. The recorded data will be kept confidential and erased after the process of reviewing the dissertation is carried out. The final copy of the dissertation will be archived in the libraries of both Mekelle University and Tampere University and will be free to access by any audience. If you are willing to participate in the qualitative phase of this research, you are kindly requested to complete the consent form and return it to the researcher or the person who gave it to you.

If you have any questions or concerns about this research, please feel free to contact me (Email: Nigusse.reda@tuni.fi /kg_weldie@yahoo.com) or my supervisors,

Professor Prof. Yuzhuo Cai (yuzhuo.cai@uta.fi) or Dr. Mulugeta Tsegai (mutks@gmail.com).

Thank you for taking time to read this information.

Yours faithfully,

B. The consent form

- I understand that the research on the societal engagement of public universities in Ethiopia is being conducted by Nigusse Weldemariam Reda, a PhD student at Tampere University and Mekelle University, for his doctoral dissertation. I understand that the study is mainly focused on exploring and examining the perceptions of leaders in different institutional spheres (university, community, government, and industry) of the social engagement of universities and mechanisms to enhance the sustainability of the societal engagement of public universities in Ethiopia.
- I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.
- I grant permission for the interview to be tape recorded and transcribed and kept in the transcribed shorthand form.
- I also grant permission for the data generated from my interview and any documents provided to be published in the dissertation and future publication(s).
- I understand that every possible effort will be made to ensure confidentiality and anonymity.
- I confirm that I have read and understand the information sheet and voluntarily agree to participate in the research.

Participant (Name and Signature) _____

Place and Date _____

Appendix 2: Interview Guide for UICL and Plan and Budget Officers

Interview Guide for University-Industry and Community Linkage Officers

1. Background issues

1.1 Your experience in the office (when you started working and why you decided to work in the post).

1.2 How did you find the post (what lessons have you learned?)

2. Core guiding questions about university–industry community linkage

2.1 When was the university–industry and community linkage program started?

2.2 How the university–industry and community linkage structured?

2.3 Why do you think university–industry and community linkage is needed at the university?

2.4 How is it related to other units (colleges and institutes) of the university?

2.5 Are there problems with the structure of university–industry and community linkage at the vice president level and college levels?

2.6 Do you think the structure of university–industry and community linkage matches the nature of and structures in industry?

3. Core guiding questions about the university's societal engagement activities[16]

3.1 What benefits does the university earn from its societal engagement activities?

3.2 How much income does the university generate from its societal engagement activities?

3.3 How do the societal engagement activities of the university benefit society?[17]

3.4 Do you think adequate strategies and policies (both national and institutional) are in place to derive benefits from societal engagement activities?

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[16] Societal engagement implies structured activities (projects) that universities carry out to benefit society in collaborations with industries, communities, and government offices and bureaus and to benefit their core functions and processes

[17] Society includes the major stakeholders (industry, community and civil society, government) that collaborate with or benefit from the university's societal engagement.

3.5 What conditions do you think are essential for enhancing or obstructing the social engagement of universities?

3.6 How does the university enhance the sustainability of its societal engagement activities?

Appendix 3: Interview Guide for College Research and Community Service Council chairs

Interview Guide for College Research and Community Service Council Members at Mekelle University

1. Can you share with us (me) your overall impression of the benefits of the university's societal engagement activities?
    1.1. Do you think the benefits are mutual?
    1.2. Do the university and other actors derive benefits from societal engagement?
2. What do you think are the major benefits of your societal engagement project?
    2.1. What benefits does it contribute to the society?
        2.1.1. Financial benefits?
        2.1.2. Non-financial benefits?
        2.1.3. Which benefits is much evident and why?
    2.2. What benefits does it contribute to the university?
        2.2.1. Financial benefits (example)?
        2.2.2. Nonfinancial benefits (example)?
        2.2.3. Benefits to teaching, research, and other engagement activities (example)?
        2.4.4 In what ways do you think social engagement projects support teaching?

3. What factors enhance or deter the social engagement of universities?
    3.1. Factors related to national policies and strategies.
        3.1.1. Do you think that existing economic policies and strategies support universities to undertake societal engagement?
        3.1.2. How does higher education expansion affect universities' societal engagement?
    3.2. Factors related to different institutional spheres (collaborating institutions).

3.2.1. Organizational structures or units created to oversee societal engagement activities?
3.2.2. Interface of organizational units across collaborating actors (industry, government)?
3.2.3. Readiness and experience of faculty members (researchers)?
3.2.4. Readiness and commitment of institutional leaders?

4. How sustainable are the university's societal engagement activities?
4.1. Do you think that societal engagement activities are sustainable? Why?
4.2. Do you think creating sustainable interactions among different actors contributes to the sustainability of societal engagement?

4.3. How does the movement of people, information, and knowledge contribute to sustainability of sustainability of societal engagement?

Appendix 4: Interview Guide for PIs

Interview Guide for Principal Investigators

1. Can you share with us (me) your overall impression of the benefits of the university's societal engagement activities?

    1.1. Do you think benefits are mutual?

    1.2. Do the university and other actors gain benefits from societal engagement?

2. What do you think are the major benefits of your societal engagement project?

    2.1 What benefits does it contribute to society?

        2.1.1. Financial benefits?

        2.1.2. Non-financial benefits?

        2.1.3. Which benefits are most evident and why?

    2.2. What benefits does social engagement contribute to the university?

        2.1.1. Financial benefits (example)?

        2.1.2. Non-financial benefits (example)?

        2.1.3. Benefits to teaching, research, and other engagement activities (example)?

        2.1.4. In what ways do you think social engagement projects support teaching?

3. What factors enhance or deter the social engagement of universities?

    3.1. Factors related to national policies and strategies.

        3.1.1. Do you think existing economic policies and strategies support universities to undertake societal engagement?

        3.1.2. How does higher education expansion affect universities´ societal engagement?

    3.2. Factors related to different institutional spheres.

        3.2.1. Organizational structures or units created to oversee societal engagement activities?

        3.2.2. Interface of organizational units across collaborating actors?

        3.2.3. Readiness and experience of faculty members (researchers)?

        3.2.4. Readiness and commitment of institutional leaders?

4. How sustainable are the university's societal engagement activities?

4.1. Do you think that societal engagement activities are sustainable? Why?

4.2. Do you think that creating sustainable interactions among different actors contributes to the sustainability of societal engagement?

4.3. How does the movement of people, information, and knowledge contribute to the sustainability of societal engagement.?

Appendix 5: Interview Guide for Officers from Industry and Government

Interview Guide for Practitioners from Government Offices Linked to Integrated Seed Sector Development

1. Can you share with us (me) your overall impression of the benefits of the integrated seed sector development project?
    1.1. Do you think the integrated seed sector development program benefits the government and other firm?

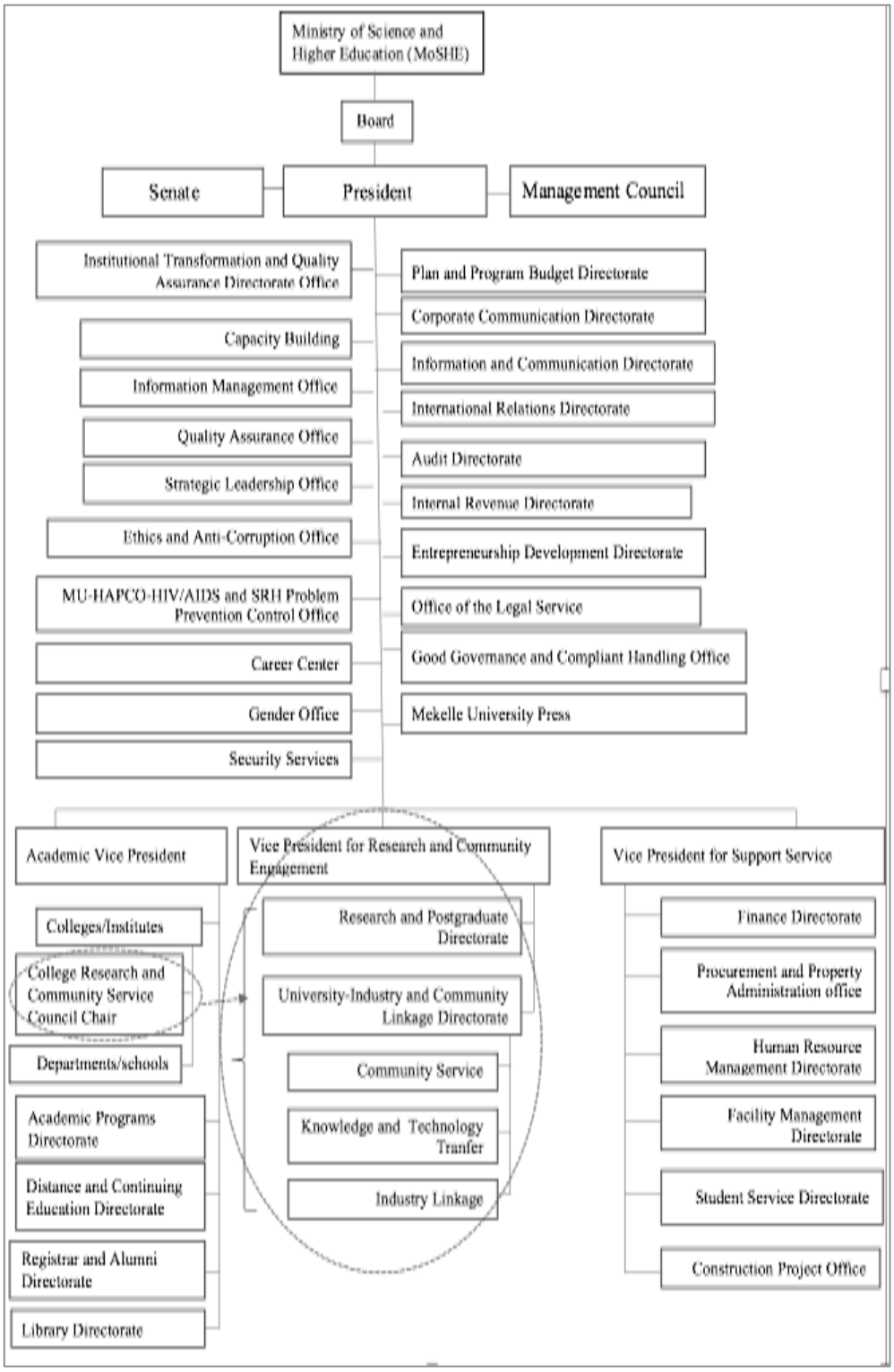
2. What do you think are the major benefits of the integrated seed sector development project?
    2.1. What benefits does it contribute to the government?
        2.1.1. Financial benefits (example)?
        2.1.2. Non-financial benefits (example)?
        2.1.3. Which benefits are most evident and why?
3. What factors hindered the government from reaping benefits from the integrated seed sector development project?
    3.1. Factors related to national policies and strategies.
        3.1.1. Do you think existing economic policies and strategies support universities to undertake societal engagement?
        3.1.2. How does higher education expansion affect universities´ societal engagement?
    3.2. Factors related to national policies and strategies.
        3.2.1. Organizational structures or units created to overee societal engagement activities?

        3.2.2. Interface of organizational units across the collaborating actors?
        3.2.3. Readiness and experience of faculty members (researchers)?
        3.2.4. Readiness and commitment of institutional leaders?
4. How sustainable are the university's societal engagement activities?

4.1. Do you think that the integrated seed sector development activities are sustainable? Why?
4.2. Do you think creating sustainable interactions among different actors contributes to the sustainability of societal engagement?

4.3. How does the movement of people, information, and knowledge contribute to the sustainability of societal engagement?

Appendix 6: Organizational Structure of Mekelle University


Ministry of Science and Higher Education (MoSHE)
Board
Senate
President
Management Council
Institutional Transformation and Quality Assurance Directorate Office
Capacity Building
Information Management Office
Quality Assurance Office
Strategic Leadership Office
Ethics and Anti-Corruption Office
MU-HAPCO-HIV/AIDS and SRH Problem Prevention Control Office
Career Center
Gender Office
Security Services
Plan and Program Budget Directorate
Corporate Communication Directorate
Information and Communication Directorate
International Relations Directorate
Audit Directorate
Internal Revenue Directorate
Entrepreneurship Development Directorate
Office of the Legal Service
Good Governance and Compliant Handling Office
Mekelle University Press
Academic Vice President
Vice President for Research and Community Engagement
Vice President for Support Service
Colleges/Institutes
College Research and Community Service Council Chair
Departments/schools
Academic Programs Directorate
Distance and Continuing Education Directorate
Registrar and Alumni Directorate
Library Directorate
Research and Postgraduate Directorate
University-Industry and Community Linkage Directorate
Community Service
Knowledge and Technology Tranfer
Industry Linkage
Finance Directorate
Procurement and Property Administration office
Human Resource Management Directorate
Facility Management Directorate
Student Service Directorate
Construction Project Office

Appendix 7: Survey Questionnaire

Dear respondent,

I am a PhD candidate at Tampere University in Finland and Mekelle University in Ethiopia. I am currently writing my PhD thesis on the societal engagement of public universities in Ethiopia. The study has the following aims:

- To examine the reciprocal benefits that universities and other actors (mainly industry and government) generate from the social engagement of universities;
- To identify factors that affect the reciprocal benefits that the university and other actors (mainly industry and government) generate from the social engagement of universities; and
- To explore strategies that could enhance the sustainability of universities' societal engagement.

The study follows an exploratory mixed sequential research design, and the data collected through this survey will be used to test the themes identified in the qualitative phase of the research. Hence, given your participation in different social engagement projects (such as knowledge and technology transfer, outreach education, community-based research and education, community service, and consultancy services), I am confident that you have a wealth of information that is relevant to my research inquires. The outputs of the research, beyond the completion of my doctorate, are expected to include recommendations for policymakers and higher education leaders in Ethiopia on issues related to knowledge and technology transfer, outreach education, community-based research and education, community service, and consultancy services. Participation in the survey is voluntary, and any information collected through this questionnaire will be kept confidential and analyzed anonymously. Hence, neither your name nor your institution's name will be reported in connection with your responses to this questionnaire. I appreciate your participation in the survey. The questionnaire will take you from 20 to 30 minutes to complete. Thank you for volunteering to participate in the survey!

Regards,

Nigusse Weldemariam, Mekelle University, Institute of Pedagogical Sciences

Mobile: 0932051295 Email: kg_weldie@yahoo.com

Part I: Demographic data

1. Your university _____
2. Institution name _____
3. Department name _____
4. Work experience at institution (in years and months) _____
5. Age (in years) _____
6. Gender (male, female) _____
7. Academic qualification(s) (BA/BSc, MSc, MEd, MA, PhD, MD, DVEM) _____
8. Academic rank (Assistant Lecturer, Lecturer, Assistant Professor, Associate Professor, Professor) _____

Part II: Engagement in social engagement projects (knowledge and technology transfer, community service, consultancy services)

This section comprises items that inquire into the type(s) of societal engagement, amount(s) of funds granted, and monetary benefits drawn from social engagement projects involving knowledge and technology transfer, community service, consultancy services, outreach education, and community-based research). Please review each item and provide your responses in the spaces provided.

9. Indicate the type(s) of social engagement project(s) in which you participated as principal investigator since 2010 in the Ethiopian calendar (2017/2018).[18]

    9.1 Knowledge and technology transfer _____
    9.2 Community service _____
    9.3 Consultancy services _____
    9.4 Community-based research or education _____
    9.5 Outreach education _____

[18] NOTE: If you were entitled to execute one type (e.g., community services) in two or more consecutive years (e.g., in 2010 and 2011 in the Ethiopian calendar) or more than one type (knowledge and technology transfer, community service, consultancy services, community-based research or education, or outreach education) in one year or in at least two consecutive years, please consider the project with the grant amount.

10. Indicate the total amount of funds (in Ethiopian birr) granted to social engagement project(s) in which you participated as principal investigator since 2010 in the Ethiopian calendar (2017/2018).[19] _____

11. Indicate the sources of funds granted to social engagement project(s) in which you participated as principal investigator since 2010 in the Ethiopian calendar (2017/2018).[20]

    11.1 From the university's budget (e.g., recurring budget)
    11.2 From external organizations (e.g., industry, municipality)

Part III: Amounts disbursed for and generated from different activities

Consider the societal engagement project with the largest grant amount you have led since 2010 in the Ethiopian calendar (2017/2018) as principal investigator and provide the amounts of money disbursed or generated in the lines below. In all cases, if you cannot provide the exact amount, please provide your best estimate.

12. Total funds (in Ethiopian birr) disbursed in the form of per diems for researchers. _____

13. Total funds (in Ethiopian birr) disbursed in the form of professional fees for researchers. _____
14. Total funds (in Ethiopian birr) disbursed for capacity development (e.g., training) for workers in industry (e.g., workers in schools, seed firms, cement factories). _____

[19] NOTE: If you were entitled to execute one type (e.g., community services) in two or more consecutive years (e.g., in 2010 and 2011 in the Ethiopian calendar) or more than one type (knowledge and technology transfer, community service, consultancy services, community-based research or education, or outreach education) in one year or in at least two consecutive years, please consider the project with the grant amount.

[20] NOTE: If you were entitled to execute one type (e.g., community services) in two or more consecutive years (e.g., in 2010 and 2011 in the Ethiopian calendar) or more than one type (knowledge and technology transfer, community service, consultancy services, community-based research or education, or outreach education) in one year or in at least two consecutive years, please consider the project with the grant amount.

15. Total funds (in Ethiopian birr) disbursed for infrastructure development (such as physical plant, including laboratories) in industry (e.g., schools, seed firms, cement factories). _____

16. Total funds (in Ethiopian birr) generated for the university (e.g., in the form of overhead costs). _____

Part IV: Your perceptions of the benefits of societal engagement to the institution

Consider the social engagement project(s) you have led since 2010 in the Ethiopian calendar (2017/2018) as principal investigator and rate the extent to which the institution benefited.

	Item	Not at all	Very Little Extent	Little Extent	Great Extent	Very Great Extent
1	Generated income for the institution (e.g., in the form of 10% overhead costs)?					
2	Helped the institution create business ventures with other institutions?					
3	Provided per diems for researchers?					
4	Provided professional fees for researchers?					
5	Helped researchers fulfill the criteria for academic promotion?					
6	Created a conducive environment for students' practical involvement?					
7	Generated datasets applicable for teaching and learning?					
8	Generated field-based scenarios relevant for teaching complex lessons?					
9	Contributed to the development of a demand-based curriculum at the institution?					
10	Motivated researchers to apply their knowledge and skills to solve societal problems?					
11	Motivated other researchers to frame new research inquires?					
12	Created opportunities for the development of new research teams?					
13	Initiated the development of interdisciplinary research at the institutional level?					
14	Helped the institution earn societal trust?					
15	Helped the institution fulfill its moral responsibility of helping society?					

16	Helped the institution discharge its mission related to community service and consultancy services?					
17	Helped the institution publicize itself?					

Part V: Your perceptions of the benefits of societal engagement to industry

Consider the social engagement project(s) you have led since 2010 in the Ethiopian calendar (2017/2018) as principal investigator and rate the extent to which industry or external organizations benefited.

	Item	Not at All	Very Little Extent	Little Extent	Great Extent	Very Great Extent
1	Enhanced linkages between producers (e.g., small and micro firm) and consumers (e.g., hotels, industries)?					
2	Facilitated the marketability of goods and services produced by industry or organizations (e.g., schools, households, hospitals, manufacturing firm, cooperatives)?					
3	Equipped industry or organizations (e.g., schools, households, hospitals, manufacturing firm, cooperatives) with new knowledge and technology?					
4	Helped industry or organizations (e.g., schools, households, hospitals, manufacturing firm, cooperatives) to alleviate wastage of resources?					
5	Helped industry or organizations (e.g., schools, households, hospitals, manufacturing firm, cooperatives) to sustain the income they generate?					
6	Helped industry or organizations (e.g., schools, households, hospitals, manufacturing firm, cooperatives) to increase their production capacities or the quality of services provided to customers?					
7	Adapted Indigenous knowledge relevant for industry or organizations (e.g., schools, households, hospitals, manufacturing firm, cooperatives)?					

Part VI: Your perceptions of the benefits of societal engagement to government

Consider the social engagement project(s) you have led since 2010 in the Ethiopian calendar (2017/2018) as principal investigator and rate the extent to which governments benefited.

	Item	Not at All	Very Little Extent	Little Extent	Great Extent	Very Great Extent
1	Delivered a product (e.g., seeds, chemicals, crops, services) that could generate foreign currency for the government?					
2	Delivered a product (e.g., seeds, chemicals, crops, services) that replaced products previously imported from other countries?					
3	Supported the government (e.g., federal, regional, zonal, or woreda or local levels) to address part of its financial shortfall?					
4	Supported the implementation of government policies initiated by the federal, regional, zonal, or woreda or local levels?					
5	Attracted new institutions (e.g., non-governmental organizations) relevant for the implementation of government policies?					
6	Generated policy briefs relevant for policy development?					
7	Supported the government in building its social acceptance?					
8	Helped the government earn the trust of the public?					

Part VII: Factors affecting the reciprocal benefits of universities' social engagement

Consider the social engagement project(s) you have led since 2010 in the Ethiopian calendar (2017/2018) as principal investigator and rate the extent to which the following factors affected the actual delivery of reciprocal benefits that you intended.

	Item	Very low	Low	Medium	High	Very high
1	Capability of institutional leaders (e.g., college or school research and community service heads) to take risks?					
2	Readiness of institutional leaders (e.g., college or school research and community service heads) to address inquires in a timely fashion?					
3	Readiness of institutional leaders (e.g., college or school research and community service heads) to address problems emerging during the implementation of societal engagement projects?					
4	Commitment of institutional leaders (e.g., college or school research and community service heads) to undertake objective evaluations of societal engagement project proposals?					
5	Impartiality of institutional leaders (e.g., college or school research and community service heads) to allocate budget to selected societal engagement projects?					
6	Commitment of institutional leaders (e.g., college or school research and community service heads) to allocate sufficient time for the development of societal engagement project proposals?					
7	Readiness of institutional leaders (e.g., college or school research and community service heads) to allocate sufficient time for implementation of societal engagement projects?					
8	Capability of institutional leaders (e.g., college or school research and community service heads) to exercise their authority?					
9	Commitment of societal engagement leaders (e.g., college or school research and community service heads) to make decisions in line with institutional guidelines?					
10	Assertiveness of institutional leaders (e.g., college or school research and community service heads) to manage unnecessary interventions from higher-level authorities?					
11	The effect of societal engagement researchers' experience (whether veteran or novice) on the reciprocal benefits intended to be obtained from societal engagement projects?					
12	The effect of societal engagement researchers' academic rank (from lecturer through professor) on the reciprocal benefits intended to be obtained from societal engagement projects?					
13	The effect of societal engagement researchers' disciplinary area (e.g., social sciences, humanities, science and technology fields) on the reciprocal					

	benefits intended to be obtained from societal engagement projects?					
14	Alignment of societal engagement offices at the university (whether similar or different offices are institutionalized across the university)?					
15	Institutionalization of societal engagement offices at the university (whether centralized or decentralized)?					
16	Division of tasks among societal engagement offices (whether or not all tasks are the responsibility of one office) at the university?					
17	Type of social engagement project (community service, knowledge and technology transfer, outreach, community-based education, or consultancy services)?					
18	Sources of funds (external or internal) for the social engagement project?					
19	Availability of appropriate monitoring and evaluation tools?					

Part VIII: Strategies to enhance the sustainability of universities' social engagement

This section comprises items designed to assess the extent to which activities related to information processing and external representation enhance the sustainability (i.e., continuity) of universities' societal engagement. Please choose the response option that best fits your view for each item.

	Item	Not important	Slightly important	Moderately important	Important	Very important
1	Critical examination of societal problems?					
2	Identification of evidence-driven interventions?					
3	Development of clear strategies related to social engagement projects?					
4	Identification of expected societal problems, whether natural or anthropogenic?					
5	Examination of needs among the institutions (university, industry, government, etc.) that collaborated to implement the societal engagement of the university?					
6	Development of a workable memorandum of understanding or joint agreement among the institutions (university, industry, government, etc.) that collaborated to implement the social engagement of the university?					
7	Development of ongoing fora among institutions (e.g., university, industry, government) that collaborated to implement the social engagement of the university?					
8	Renewal of interaction areas among institutions (e.g., university, industry, government) that collaborated to implement the social engagement of the university?					
9	Preparation of clear exit strategies for social engagement projects?					
10	Equipping beneficiaries with the skills and knowledge that will help them sustain the outputs of the university's social engagement projects?					
11	Dissemination of outputs generated from the university's social engagement projects to potential beneficiaries?					
12	Adaptation of outputs generated from the university's social engagement projects to local contexts?					

Thank you for taking the time to complete this survey; please provide your name and email?[21]

[21] NOTE: Your name and email will be used to track who responds to the invitation.