

Bridging Knowledge and Community Change: Examining the Mediating Role of Knowledge Translation Mechanisms between Knowledge Production Practices and Community Engagement Outcomes in Central Uganda

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ABSTRACT

This study examined the mediating role of knowledge translation mechanisms in the relationship between knowledge production practices and community engagement outcomes in selected universities in Central Uganda. A mixed-methods cross-sectional research design was employed, integrating quantitative data collected from 330 academic staff with qualitative insights obtained from key informants. Structural equation modelling (SEM) was used to assess the direct and indirect relationships among knowledge production practices, knowledge translation mechanisms, and community engagement outcomes. The findings revealed that teaching or learning and knowledge services have significant positive effects on community engagement outcomes, both directly and indirectly through knowledge translation mechanisms. Capacity-building mechanisms emerged as the most significant mediator, significantly linking teaching or learning and knowledge services to community engagement outcomes. In contrast, research activities did not exert a significant direct effect on community engagement outcomes in the final model, suggesting that research outputs generate societal benefits only when effectively translated into practical and accessible forms. The results further showed that communication and structural mechanisms play supportive roles in the knowledge translation process; however, their influence was less substantial than that of capacity-building mechanisms. The study concludes that the effectiveness of knowledge production practices in enhancing community engagement depends largely on the presence of effective knowledge translation mechanisms that facilitate the dissemination, application, and utilization of academic knowledge. Universities can therefore maximize their societal impact by strengthening capacity-building initiatives, promoting community-based learning approaches, expanding knowledge services, and institutionalizing structures that support knowledge translation. The findings contribute to understanding how universities can improve their engagement with communities and enhance their contribution to sustainable development.

Keywords: Knowledge Production Practices, Knowledge Translation Mechanisms, Community Engagement Outcomes, Capacity Building, Teaching and Learning, Knowledge Services, Universities, Central Uganda, Structural Equation Modelling.

INTRODUCTION

Despite the continued growth in university research output, concerns remain regarding the extent to which knowledge generated within universities contributes to addressing societal challenges. Contemporary higher education scholarship increasingly argues that the value of university knowledge should not only be measured by publications and citations but also by its influence on policy, practice, and community well-being (Gibbons et al., 1994; UNESCO, 2020). Consequently, attention has shifted from knowledge production alone to the processes through which knowledge is transferred, adapted, and utilized by intended beneficiaries.

Knowledge translation has emerged as a critical mechanism through which universities can bridge the gap

between research production and societal application. Graham et al. (2006) defines knowledge translation as a dynamic and iterative process involving the synthesis, dissemination, exchange, and ethically sound application of knowledge to improve outcomes for individuals, communities, and institutions. Through knowledge translation, research findings move beyond academic circles and become accessible to policymakers, practitioners, industry actors, and local communities. Effective knowledge translation mechanisms may include community outreach programmes, policy dialogues, extension services, innovation hubs, technology transfer initiatives, public engagement forums, collaborative research partnerships, and dissemination platforms (Boaz et al., 2018; Ward et al., 2009).

The growing emphasis on knowledge translation is consistent with the evolution of university knowledge production from the traditional Mode 1 model toward Mode 2 knowledge production. According to Gibbons et al. (1994), Mode 2 knowledge is generated through collaboration among multiple stakeholders and is applied within the context of solving societal problems. Similarly, Van de Ven (2007) argues that engaged scholarship requires continuous interaction between universities and external stakeholders throughout the knowledge generation and utilization process. Such interaction strengthens the relevance, accessibility, and applicability of university-generated knowledge to community needs.

Recent African studies have reinforced the importance of knowledge translation within universities. Etomaru et al. (2022), in a study of Makerere University, found that although universities increasingly recognize the importance of knowledge translation, weak institutional linkages, limited incentives, and inadequate funding often constrain the movement of research findings into policy and practice. Similarly, Oronje et al. (2022) observed that building researchers' capacity in knowledge translation significantly improves the ability of universities to communicate evidence effectively to policymakers and other stakeholders. Furthermore, Jowi (2024) notes that contemporary transformations in African higher education increasingly emphasize partnerships, knowledge exchange, community engagement, and the practical application of research to address societal challenges.

In developing-country contexts, including Uganda, knowledge translation remains particularly important because societal challenges often require locally relevant and evidence-based solutions. Although research productivity among Ugandan universities has grown substantially, evidence suggests that only a small proportion of research findings are effectively incorporated into policy decisions or community development interventions (Makerere University, 2021; UNCST, 2023). Recent initiatives such as the "Translating Science into Policy and Practice" programme implemented at Kyambogo University further demonstrate growing recognition of the need to strengthen research-to-policy and research-to-community linkages within African universities (Kyambogo University, 2023). This suggests that the challenge is not merely one of knowledge production but also of the mechanisms available for translating knowledge into practical action and sustainable community outcomes.

Consequently, knowledge translation mechanisms are increasingly recognized as a mediating factor that determines whether knowledge production practices generate meaningful community engagement outcomes. Effective translation processes can improve community participation, strengthen university-community partnerships, enhance policy uptake of research evidence, promote innovation adoption, and ultimately contribute to socioeconomic transformation (Graham et al., 2006; Nutley et al., 2007). Evidence from African universities further indicates that capacity-building, stakeholder engagement, policy-oriented communication, and institutional support systems are critical enablers of successful knowledge translation and societal impact (Etomaru et al., 2022; Oronje et al., 2022). Conversely, weak knowledge translation systems can result in research outputs remaining largely confined to academic publications with limited societal impact. It is against this background that this study examines the mediating role of knowledge translation mechanisms in the relationship between knowledge production practices and community engagement outcomes in universities in Central Uganda. The study is premised on the argument that the influence of university knowledge production on communities is not direct but is significantly shaped by the effectiveness of mechanisms that facilitate the transfer, dissemination, adaptation, and utilization of knowledge by community stakeholders.

Statement of the Problem

Universities in Uganda are expected to contribute to national development through research, teaching, and community engagement by generating and applying knowledge that addresses societal challenges and promotes socioeconomic transformation (Ondari-Okemwa, 2021; NPA, 2025). Over the past two decades, Uganda's higher education sector has experienced significant growth, with the number of universities increasing from about 30 in 2000 to over 50 by 2020, accompanied by substantial growth in research output and scientific publications (MOES, 2020; UNCST, 2021). Despite this expansion, evidence suggests that the societal benefits of university-generated knowledge have not increased at a comparable rate, raising concerns about the effectiveness of universities in translating knowledge into meaningful community outcomes.

Although research and teaching functions have expanded considerably, community engagement remains the least institutionalized and least visible of the three core university missions (Brackmann, 2015; McNair & Ramaley, 2018; Mugabi, 2015). Studies indicate that only a limited proportion of research outputs influence policy or community practice, while a significant share of university-generated knowledge remains confined to academic publications and conferences (Nakabugo, 2012; Obuku *et al.*, 2017). Furthermore, many communities continue to perceive university research as insufficiently responsive to their needs and priorities (Muwagga, 2021). These trends suggest a disconnect between knowledge production within universities and the realization of tangible community engagement outcomes.

The persistence of this gap points to challenges associated not only with knowledge production but also with the mechanisms through which knowledge is disseminated, exchanged, adapted, and utilized. Knowledge translation mechanisms such as community outreach programmes, policy engagement platforms, extension services, knowledge-sharing forums, innovation hubs, and university-community partnerships have been identified as critical pathways for transforming academic knowledge into societal value (Graham *et al.*, 2006; Ward *et al.*, 2009). However, while existing studies have examined knowledge production practices and community engagement separately, limited empirical evidence exists on how knowledge translation mechanisms influence the relationship between the two within the context of Ugandan universities.

Despite national policy frameworks emphasizing research, innovation, and knowledge utilization as drivers of transformation (NPA, 2025), the extent to which knowledge translation mechanisms facilitate the conversion of university-generated knowledge into meaningful community engagement outcomes remains inadequately understood. This study therefore seeks to evaluate the mediating role of knowledge translation mechanisms in the relationship between knowledge production practices and community engagement outcomes in universities in Central Uganda. The study aims to generate evidence on how effective knowledge translation can strengthen university-community linkages and enhance the contribution of higher education institutions to societal transformation and development.

Objectives of the study

To evaluate the mediating role of knowledge translation mechanisms on knowledge production practices and community engagement outcomes in universities in central Uganda.

LITERATURE REVIEW

The literature demonstrates that universities play a fundamental role in knowledge production through research, teaching, and community engagement. However, contemporary scholarship increasingly emphasizes that the value of university knowledge lies not only in its production but also in its translation into practical solutions that address societal challenges. As universities are called upon to contribute more directly to social and economic development, the effectiveness of knowledge production practices is increasingly assessed through their ability to generate measurable community benefits (Gibbons *et al.*, 1994; Boyer, 1996).

Knowledge translation emerges as a critical process linking knowledge production practices to community engagement outcomes. It involves the synthesis, dissemination, exchange, and application of knowledge in ways that make it accessible and useful to policymakers, practitioners, and communities (Graham *et al.*, 2006).

The literature suggests that while universities generate substantial amounts of knowledge, much of it remains underutilized due to inadequate translation mechanisms, weak stakeholder linkages, and limited institutional support for knowledge transfer activities (Ward et al., 2010; Etomaru et al., 2022).

Knowledge Services refer to the institutional functions and support systems through which universities generate, package, and provide knowledge to stakeholders. These include advisory services, training programmes, extension services, consultancy, and other knowledge-support activities that facilitate access to university expertise. In contrast, Knowledge Translation Mechanisms comprise the processes and pathways through which knowledge is communicated, adapted, exchanged, and applied by intended users. Such mechanisms include communication processes, capacity-building initiatives, stakeholder engagement platforms, knowledge-brokering activities, and institutional structures that facilitate the movement of knowledge from universities into policy and practice (Graham et al., 2006; Ward et al., 2009). While Knowledge Services provide the content and support necessary for knowledge dissemination, Knowledge Translation Mechanisms determine how effectively that knowledge is transferred, understood, and utilized to generate societal impact.

The review further indicates that community engagement has evolved into a core mission of universities globally. Community engagement enables universities to collaborate with external stakeholders in addressing social, economic, and environmental challenges while simultaneously enhancing the relevance of research and teaching activities. Effective engagement creates mutual benefits by facilitating knowledge exchange, strengthening public trust, and promoting evidence-based solutions to community problems (European Commission, 2020; Murphy & Dyrenfurth, 2019). Community engagement outcomes are reflected through various dimensions, including policy changes, community improvements, and stakeholder satisfaction and perceptions. Studies reveal that university-generated knowledge can influence policy formulation, support evidence-based decision-making, and facilitate regulatory reforms. Research findings can therefore contribute significantly to addressing public challenges and improving governance systems when effectively translated and adopted by relevant stakeholders (Nutley et al., 2007; Clark, 1983).

Recent African scholarship similarly underscores the importance of strengthening knowledge translation processes within universities. Studies conducted in Uganda, Kenya, and South Africa show that although universities are increasingly expected to contribute to national development, limited institutional capacity, inadequate research dissemination strategies, and weak university-community linkages continue to hinder the uptake of research evidence by policymakers and communities (Etomaru et al., 2022; Oronje et al., 2022; Jowi, 2024). Furthermore, evidence from African higher education institutions suggests that stakeholder engagement, knowledge sharing, and collaborative research partnerships are essential for enhancing the societal relevance and utilization of university-generated knowledge.

The literature also highlights the contribution of university knowledge to community improvements, particularly in areas such as local economic development, health and wellbeing, education, skills development, and environmental sustainability. Through applied research, outreach activities, innovation initiatives, and knowledge services, universities can stimulate entrepreneurship, promote health interventions, enhance workforce skills, and support sustainable development practices. These outcomes demonstrate the potential of higher education institutions to drive positive socioeconomic transformation when research is aligned with community needs and effectively translated into action (Goldstein & Drucker, 2006; Sandmann et al., 2009).

A recurring theme in the literature is the importance of stakeholder perceptions and satisfaction as indicators of successful community engagement. Positive perceptions of university relevance, trustworthiness, and responsiveness strengthen community participation and facilitate the uptake of university knowledge products. However, studies also show that weak partnerships, limited community involvement, and inadequate feedback mechanisms can reduce the perceived value and impact of university activities within communities (Hart & Northmore, 2011; Edelman, 2020).

The review identifies communication, capacity-building, and structural mechanisms as important Knowledge Translation Mechanisms that mediate the relationship between knowledge production practices and community engagement outcomes. Communication mechanisms facilitate the dissemination, accessibility, and

exchange of knowledge; capacity-building mechanisms enhance the ability of communities to absorb, interpret, and utilize knowledge; while structural mechanisms provide the institutional frameworks, policies, incentives, and partnerships necessary for sustained engagement. Together, these mechanisms determine the extent to which knowledge generated within universities influences societal outcomes (Habermas, 1984; Cohen & Levinthal, 1990; Etzkowitz & Leydesdorff, 2000). In contrast, Knowledge Services function as institutional inputs that support the provision and availability of knowledge, which subsequently operates through these translation mechanisms to influence community outcomes.

Despite growing scholarship on university knowledge production and community engagement, significant gaps remain, particularly in Uganda and the broader African context. Existing studies have largely examined knowledge production practices and community engagement independently, with limited attention given to the distinct roles of Knowledge Services and Knowledge Translation Mechanisms. Furthermore, empirical evidence on how communication, capacity-building, and structural mechanisms jointly mediate the translation of university-generated knowledge into meaningful community outcomes remains inadequate. This study therefore seeks to address this gap by evaluating the mediating role of Knowledge Translation Mechanisms in the relationship between knowledge production practices and community engagement outcomes in universities in Central Uganda. The study is premised on the argument that the influence of university knowledge production on communities is not direct but is significantly shaped by the effectiveness of mechanisms that facilitate the transfer, dissemination, adaptation, and utilization of knowledge by community stakeholders.

METHODOLOGY

This study adopted a mixed-methods approach to evaluate the mediating role of knowledge translation mechanisms in the relationship between knowledge production practices and community engagement outcomes in universities in Central Uganda. A cross-sectional research design employing a concurrent triangulation strategy was used to facilitate the simultaneous collection and analysis of quantitative and qualitative data. The mixed-methods approach enabled the study to obtain comprehensive evidence regarding how knowledge production practices influence community engagement outcomes and the extent to which knowledge translation mechanisms mediate this relationship. The study was conducted in Makerere University, Uganda Martyrs University, and Bugema University, selected to represent urban, peri-urban, and rural university contexts respectively.

The study targeted academic staff, university administrators, research and innovation managers, community engagement coordinators, and selected community stakeholders associated with the three universities. A sample of 330 academic staff was selected using stratified random sampling to ensure adequate representation across faculties, schools, and disciplines. In addition, purposive sampling was employed to select key informants, including university leaders, directors of research and innovation, community engagement officers, policymakers, and community representatives with relevant knowledge and experience regarding knowledge production, knowledge translation, and community engagement processes.

Quantitative data were collected using structured questionnaires designed to measure the major study constructs. Knowledge production practices were assessed through indicators related to research activities, teaching and learning activities, and knowledge services. Knowledge translation mechanisms were measured using indicators relating to communication mechanisms, capacity-building mechanisms, and structural mechanisms. Community engagement outcomes were assessed through indicators including policy changes, community improvements, and stakeholder satisfaction and perception. Qualitative data were collected through key informant interviews, focus group discussions, and document reviews to generate deeper insights into how university-generated knowledge is translated and utilized to influence community outcomes.

Quantitative data were analyzed using descriptive statistics, Pearson correlation analysis, and Structural Equation Modeling (SEM) to examine both direct and indirect relationships among the study variables and to establish the mediating effect of knowledge translation mechanisms. The analysis was conducted using STATA version 18.5. Qualitative data were analyzed thematically using NVivo version 10, involving coding, categorization, and interpretation of emerging themes related to knowledge production, knowledge translation,

and community engagement. Findings from the quantitative and qualitative strands were integrated during interpretation to provide a holistic understanding of the phenomenon under investigation.

The validity and reliability of the research instruments were established using the Content Validity Index (CVI) and Cronbach's Alpha coefficient, respectively. Ethical principles were observed throughout the study, including obtaining informed consent, ensuring confidentiality and anonymity of respondents, and guaranteeing voluntary participation. Data collection instruments were based on a five-point Likert scale, and mean scores, standard deviations, and inferential statistics were used to assess respondents' perceptions regarding knowledge production practices, knowledge translation mechanisms, and community engagement outcomes within the selected universities.

Study limitations

1. Response Bias: The study relied on self-reported data, which may have been affected by social desirability and recall bias. This was minimized through pre-testing and the use of structured data collection instruments.
2. Cross-Sectional Design: Data were collected at one point in time, limiting the ability to establish causal relationships among knowledge production practices, knowledge translation mechanisms, and community engagement outcomes. Future studies could use longitudinal designs to address this limitation.

RESULT AND DISCUSSION

Respondent socio-demographic characteristics

To understand the dynamics of knowledge production practices, knowledge translation mechanisms, and community engagement outcomes in universities, academic staff members were identified as the primary respondents for this study because of their direct involvement in research, teaching, knowledge dissemination, and community engagement activities. Accordingly, Table 1 presents the socio-demographic characteristics of the respondents who participated in the study. The distribution includes gender, age, academic qualifications, marital status, employment status, academic rank, professional experience, institutional tenure, and other relevant characteristics. These socio-demographic attributes provide important contextual information for interpreting the study findings and understanding how individual and institutional characteristics may influence knowledge production, knowledge translation, and community engagement processes within the selected universities.

Table 1: Respondent socio-demographic characteristics

-	Category	Frequency	Percent
Gender	Female	118	35.76
	Male	212	64.24
Age group	<29	2	0.61
	30–39	66	20
	40–49	161	48.79
	50–59	90	27.27
	60+	11	3.33

Highest academic qualification	Bachelor's	34	10.3
	M.Phil (taught)	1	0.3
	Master's (taught)	92	27.88
	PhD / Doctorate	203	61.52
Marital status	Divorced / Separated	17	5.15
	Married	255	77.27
	Single	49	14.85
	Widowed	9	2.73
Employment status	Contract	9	2.74
	Full-time	228	69.51
	Part-time	91	27.74
Experience in higher education	≤9	67	20.3
	10–14	83	25.15
	15–19	83	25.15
	20–24	63	19.09
	≥25	34	10.3
Years with institution	≤5	40	12.12
	6–10	131	39.7
	11–15	64	19.39
	16–20	72	21.82
	≥21	23	6.97
Mode of work	Fully Online	3	0.91
	Hybrid	76	23.03
	On-campus	251	76.06
Research support access	Adequate	168	50.91
	Inadequate	48	14.55
	Not available	6	1.82
	Somewhat adequate	108	32.73
Teaching/Learning support	Adequate	284	86.06

	Inadequate	7	2.12
	Not available	3	0.91
	Somewhat adequate	36	10.91
Knowledge services support	Adequate	277	83.94
	Inadequate	8	2.42
	Not available	1	0.3
	Somewhat adequate	44	13.33

Source: Primary data, 2026

The demographic profile of respondents indicates that the study successfully captured perspectives from an experienced and professionally established academic workforce, which is particularly important for understanding knowledge production practices, knowledge translation mechanisms, and community engagement outcomes within universities. Male respondents constituted the majority (64.24%), compared to 35.76% females, reflecting the gender composition commonly observed within academic institutions. This distribution ensured that the study captured insights from a broad cross-section of academic staff involved in research, teaching, and community engagement activities.

The age distribution shows that most respondents were in their mid- and late-career stages, with 48.79% aged between 40 and 49 years and 27.27% aged between 50 and 59 years. This suggests that the study benefited from participants who possessed substantial professional experience, institutional memory, and a deeper understanding of the processes surrounding knowledge generation, dissemination, and application within universities. Such experience is valuable in assessing how universities produce knowledge and translate it into outcomes that benefit communities. The respondents were also highly qualified, with 61.52% holding PhD degrees and a further 27.88% possessing master's degrees. This high level of academic qualification strengthens the credibility and reliability of the data collected, as respondents were well-positioned to provide informed perspectives on research, teaching, knowledge-sharing activities, and the mechanisms through which knowledge is transferred beyond the university. The educational profile further suggests a strong capacity among respondents to engage with issues relating to knowledge translation and community engagement.

Regarding employment and professional characteristics, the majority of respondents were married (77.27%) and employed on a full-time basis (69.51%), indicating a relatively stable and committed academic workforce. Part-time staff accounted for 27.74%, while only 2.74% were employed on contract terms. The findings further reveal substantial professional experience, with 25.15% of respondents having served between 10 and 14 years and another 25.15% having worked between 15 and 19 years in higher education. In addition, most respondents had served their current institutions for between 6 and 10 years (39.70%), suggesting considerable familiarity with institutional systems, policies, and community engagement practices. The predominance of on-campus work arrangements (76.06%) also reflects a strong institutional presence and participation in university activities.

Respondents generally perceived institutional support systems positively, although variations were observed across different functional areas. While 50.91% considered research support to be adequate, higher levels of satisfaction were reported for teaching and learning support (86.06%) and knowledge support services (83.94%). These findings suggest that the selected universities have established supportive environments for academic work and knowledge-sharing activities, although research support may require further strengthening to fully enhance knowledge production and translation processes. Overall, the demographic and professional characteristics of respondents indicate that the study drew evidence from a highly experienced, academically qualified, and institutionally embedded group of university staff. This provides a strong foundation for examining the relationship between knowledge production practices, knowledge translation mechanisms, and

community engagement outcomes, and enhances confidence in the validity and reliability of the study findings.

Research activities

Undertaking research remains at the core of the university mandate. Table2 presents the descriptive statistics on research activities among academic staff in the selected universities in Central Uganda. The table provides a summary of respondents' perceptions across three key dimensions: publication output, research funding, and research collaboration. Frequencies and percentages are used to illustrate the distribution of responses, while mean scores and standard deviations highlight the central tendency and variability of responses for each item. This analysis offers insights into the extent and intensity of academic staff engagement in research activities and how these practices are structured within the universities. By examining these dimensions, the study is able to assess the level of research involvement and its potential contribution to community engagement outcomes.

Table 2:Descriptive statistics on respondents' perception of research activities

RESEARCH ACTIVITIES	N	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)	Standard Deviation	Interpretation
Publication Output									
I regularly publish research findings in peer-reviewed outlets.	330	1.21%	9.09%	17.88%	62.42%	9.39%	3.697	0.810	High
My publications address issues that are relevant to community or societal needs.	330	0.91%	6.36%	21.82%	62.12%	8.79%	3.715	0.750	High
I produce research outputs intended for non-academic audiences (e.g., policy briefs, reports).	330	0.30%	7.88%	15.45%	69.39%	6.97%	3.748	0.711	High
Many of my publications explicitly report on or involve community engagement outcomes of my research	330	1.21%	8.48%	20.30%	65.15%	4.85%	3.639	0.756	High
I actively share my publications with community partners (beyond academic circulation).	330	1.82%	11.82%	15.45%	65.76%	5.15%	3.606	0.830	High

Research Funding									
I have secured funding for research projects that include community engagement components.	330	1.82%	22.73%	25.15%	48.79%	1.52%	3.255	0.887	Moderate
Available research funding adequately supports community-oriented research activities.	330	2.42%	25.45%	25.15%	43.33%	3.64%	3.203	0.944	Moderate
Funding requirements allow flexibility for community participation and dissemination.	330	3.33%	15.76%	28.48%	49.09%	3.33%	3.333	0.898	Moderate
Research funding is often aligned or based on its propensity to respond to community engagement challenges	330	1.52%	12.12%	30.30%	53.94%	2.12%	3.430	0.789	High
Research Collaboration									
I collaborate with community, industry, or government partners in my research.	330	1.52%	5.76%	23.03%	64.24%	5.45%	3.664	0.735	High
Research collaborations involve community partners throughout the research process.	330	0.91%	9.09%	23.94%	63.03%	3.03%	3.582	0.736	High
Collaborative research improves the relevance and impact of my research outputs.	330	1.21%	3.94%	19.09%	70.61%	5.15%	3.745	0.668	High
Overall	330						3.552	0.563	High

Key: Likert Scale :5= Strongly agree (SA) , 4= Agree (A) , 3= Neutral (N) , 2= Disagree (D) and 1= Strongly

disagree (SD). Likert Mean: less 3- Disagreement and greater than 3- Agreement.

Legend: Very high (4.24 – 5.00), High (3.43 – 4.23), Moderate (2.62 – 3.42), Low (1.81 – 2.61), Very Low (1.00 – 1.80)

Source: Primary data, 2026

a) Publication Output

Regular publication of research findings in peer-reviewed outlets could be a critical derivative of community change. Bornmann (2012) calls this the “social impact of research” in which peer review legitimises adoption by community stakeholders. Tijssen *et al* (2019) noted how Science Granting Councils in Africa contend with this particular notion of knowledge translation from academia to the community. The findings indicate that respondents are actively engaged in the regular publication of research findings in peer-reviewed outlets, with a majority agreeing (62.42%) or strongly agreeing (9.39%). The mean score of 3.697 (SD = 0.810) reflects a high level of scholarly dissemination among academic staff. However, qualitative findings suggest that while research outputs are produced, their visibility and feedback to local communities may be limited. One participant noted, ***“I have seen students of carpentry and architecture come to my community for internship; however after graduation they don’t come back to give us feedback”*** (FGD001, R6). This suggests that although publication output is strong within academic channels, the translation of research findings back to communities may not always be systematic.

Similarly, respondents reported that their publications often address community or societal needs, with 62.12% agreeing and 8.79% strongly agreeing (Mean = 3.715, SD = 0.750). This indicates that research topics are generally aligned with societal concerns. Nevertheless, some community members perceived limited direct benefits from research outputs. For example, one participant observed, ***“There is nothing much the community has benefited from the university community in regards to knowledge production”*** (FGD002, R1). This suggests that while research may target societal challenges, the practical visibility of its outcomes within communities may require strengthening.

The production of research outputs for non-academic audiences, such as policy briefs and reports, was also rated highly (69.39% agree; 6.97% strongly agree) with a mean of 3.748 (SD = 0.711). This indicates that respondents extend knowledge dissemination beyond academic circles. However, qualitative findings indicate that the application of such knowledge within local communities is sometimes limited. As one participant remarked, ***“Students who study there have knowledge but cannot come and apply that knowledge around the community”*** (FGD002, R5). This implies that although alternative dissemination outputs exist, their practical utilization may not always reach community beneficiaries.

The integration of community engagement outcomes into publications also received strong support (65.15% agree; 4.85% strongly agree), with a mean score of 3.639 (SD = 0.756). This suggests that community-related issues are incorporated into research outputs. However, qualitative evidence indicates that some communities feel excluded from the research process itself. One respondent stated, ***“Most of the research activities are done in different communities and the beneficiaries are not from our community”*** (FGD001, R5), indicating that the geographical focus of research may not always correspond to surrounding communities.

Finally, the active sharing of publications with community partners was rated highly (Mean = 3.606, SD = 0.830), suggesting efforts to disseminate findings to stakeholders. Nonetheless, qualitative findings reveal that feedback mechanisms may not always be consistent, reinforcing the need for stronger communication and knowledge translation processes between universities and local communities.

b) Research Funding

Research funding serves as an inherent architectural constraint for community engagement. At a time when the “publish or perish” culture dominates, funding models can steer away or dictate whether community engagement remains a primary aspiration (Ndebele *et al*, 2023; Tijssen, 2019). Securing funding for projects

that include community engagement components received moderate support. While 48.79% agreed, only 1.52% strongly agreed (Mean = 3.255, SD = 0.887). This suggests that funding opportunities specifically targeting community-oriented research may be limited. Qualitative evidence supports this perception, as one participant explained, *"We rarely see research activities that involve our community directly"* (FGD002, R2), indicating that financial support for community-focused research initiatives may not always translate into local engagement. Similarly, respondents reported moderate agreement that available funding adequately supports community-oriented research (Mean = 3.203, SD = 0.944). The relatively lower mean and higher variability suggest that access to funding for community engagement may differ across departments or projects. This aligns with qualitative concerns that knowledge generated within universities does not always translate into practical community applications. As noted by one respondent, *"Students have knowledge but cannot come and apply that knowledge around the community"* (FGD002, R5), suggesting that resource limitations may constrain implementation of research outcomes. The flexibility of funding requirements to support community participation also received moderate support (Mean = 3.333, SD = 0.898), indicating that while some funding mechanisms allow community involvement, they may not fully accommodate participatory approaches. However, respondents indicated stronger agreement that research funding priorities are increasingly aligned with community engagement challenges (Mean = 3.430, SD = 0.789), suggesting growing recognition of societal needs within funding agendas. These findings point to a "funding disconnect" where, despite a growing recognition of community needs, institutional support for community-oriented research remains under constrain. While researchers perceive a moderate alignment between funding priorities and community engagement challenges, the actual integration of engagement imperatives into funding access remains low, suggesting that current grant structures are not yet fully optimized for community-based work. Furthermore, the moderate ratings for funding flexibility and adequacy indicate that systemic barriers—such as rigid project requirements and limited budget lines—hinder researchers' ability to transform community engagement from a stated goal into a funded operational reality.

c) Research Collaboration

Research Collaboration with community, industry, or government partners is an imperative within university systems. Academics are able to provide methodological expertise, while community members provide local knowledge, lived experience, and cultural context (Israel, *et al*, 2013; Wallerstein, *et al*, 2018). Research collaboration emerged as one of the strongest dimensions of research activities. The majority of respondents reported collaboration with community, industry, or government partners, with 64.24% agreeing and 5.45% strongly agreeing (Mean = 3.664, SD = 0.735). Qualitative findings confirm the presence of such collaborations, particularly through student activities and institutional projects. For instance, one participant explained, *"Students of carpentry and architecture come to our community for internship and they give us some labour"* (FGD001, R6), illustrating how academic engagement can directly support community activities.

Similarly, respondents indicated that community partners are involved throughout the research process (Mean = 3.582, SD = 0.736), suggesting inclusive research practices. This was supported by qualitative evidence showing community participation in university initiatives. As one respondent stated, *"The university carries on construction of buildings and road maintaining and I have always been a participant and supervisor"* (FGD003, R3), indicating collaborative involvement in university-led activities.

Furthermore, the perception that collaborative research improves relevance and impact received strong support (Mean = 3.745, SD = 0.668). Qualitative findings provide additional evidence of the positive outcomes of such partnerships. For example, one participant noted, *"The local council adopted new waste management rules based on the university's research"* (FGD002, R4), demonstrating how collaborative research can influence local policy and community practices. Additionally, community-based initiatives such as model farming projects were highlighted as important learning platforms, with one respondent stating, *"Model farming is one of the activities carried on the university providing skills freely to the community members"* (FGD003, R6).

Overall, the findings indicate that **research activities within the selected universities are relatively strong and actively contribute to knowledge production and external engagement**, with an overall mean score of **3.552 (SD = 0.563)**. Quantitative results demonstrate high levels of participation in **publication output and**

research collaboration, suggesting that academic staff are actively involved in disseminating research findings and partnering with external stakeholders. These activities indicate that universities play a significant role in generating and sharing knowledge that can potentially influence community development and policy processes. However, qualitative findings reveal that while research outputs and collaborations exist, the visibility and practical benefits of research for surrounding communities are sometimes limited. Participants frequently expressed concerns about limited feedback after research activities and insufficient application of academic knowledge within local contexts. For instance, one respondent observed that “*students come to the community for research but after graduation they do not come back to give us feedback*” (**FGD001, R6**), highlighting gaps in research dissemination and follow-up engagement.

Teaching Methods (Pedagogy)

Teaching in universities increasingly incorporates diverse approaches, including collaborative problem-solving, competency-based learning, curriculum alignment, faculty development, and the use of technology. These approaches emphasize practical skills, stakeholder-oriented learning outcomes, and the application of knowledge to real-world challenges. Effective implementation depends on well-prepared academic staff and supportive institutional frameworks that enable meaningful engagement with communities. This section presents descriptive statistics on respondents’ perceptions of teaching practices in selected universities in Central Uganda. It focuses on key dimensions of teaching and learning, including teaching methods, competency-based learning, curriculum development, faculty development, and the use of technology. The analysis is based on a 5-point Likert scale, with mean scores and standard deviations used to assess the level and variability of responses, providing insights into how teaching practices contribute to community engagement outcomes.

Table 3: Descriptive statistics on respondents' perception of teaching practices

TEACHING / LEARNING	N	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)	Standard Deviation	Interpretation
Teaching Methods (Pedagogy)									
My teaching methods emphasize problem-solving using real community challenges.	330	1.21%	1.52%	4.85%	76.36%	16.06%	4.045	0.615	High
I use participatory and experiential learning approaches in my courses.	330	1.52%	1.82%	6.06%	71.82%	18.79%	4.045	0.676	High
Teaching activities encourage students to apply theory to practical contexts.	330	0.61%	3.94%	3.94%	70.00%	21.52%	4.079	0.680	High
Many of the courses I teach include a community engagement component (e.g service-learning, field placements, community projects, internships..)	330	3.03%	5.76%	6.06%	72.73%	12.42%	3.858	0.818	High
Competency-Based									

Learning									
Learning outcomes in my courses are clearly defined in terms of specific competencies students must demonstrate.	330	1.52%	2.12%	10.30%	76.97%	9.09%	3.900	0.637	High
Teaching and assessment methods are aligned with the competencies required for professional or real-world practice.	330	0.30%	3.03%	10.91%	74.55%	11.21%	3.933	0.605	High
Students progress in my courses based on demonstrated mastery of competencies rather than time spent in class alone.	330	0.30%	2.12%	11.52%	73.64%	12.42%	3.958	0.592	High
Feedback provided to students is focused on helping them improve and achieve defined competencies.	330	0.30%	0.30%	9.39%	79.39%	10.61%	3.997	0.490	High
Assessment tasks require students to apply knowledge, skills, and attitudes to authentic or real-life situations.	330	—	2.42%	6.06%	80.61%	10.91%	4.000	0.517	High
Curriculum Development									
Community or industry perspectives inform curriculum design in my discipline.	330	0.91%	5.15%	14.24%	72.42%	7.27%	3.800	0.681	High
Curriculum content reflects current societal and community needs.	330	1.21%	4.85%	17.88%	67.58%	8.48%	3.773	0.719	High
Curriculum reviews incorporate feedback from external stakeholders.	330	0.61%	5.76%	21.21%	61.82%	10.61%	3.761	0.740	High
Curriculum policy within the university underscores integration of community-derived input	330	0.61%	6.36%	21.21%	66.97%	4.85%	3.691	0.690	High
Faculty Development									

I regularly participate in professional development related to community-engaged teaching or research.	330	—	10.30%	13.94%	69.39%	6.36%	3.718	0.733	High
Faculty development programs strengthen my ability to engage with communities.	330	—	3.94%	23.33%	66.97%	5.76%	3.745	0.620	High
Training opportunities support integration of community engagement into academic work.	330	—	5.45%	16.67%	71.21%	6.67%	3.791	0.640	High
Use of Technology in Learning									
I regularly use digital tools to enhance interaction between students and external stakeholders.	330	0.30%	4.85%	10.00%	70.00%	14.85%	3.942	0.684	High
Technology supports experiential or community-based learning in my courses.	330	—	3.64%	8.18%	74.24%	13.94%	3.985	0.606	High
Online platforms facilitate collaboration beyond the university environment.	330	—	3.64%	6.97%	72.42%	16.97%	4.027	0.621	High
Digital platforms and their use in teaching have brought the university closer to the community	330	0.30%	5.15%	10.30%	70.00%	14.24%	3.927	0.689	High
Overall	330						3.899	0.382	High

Key:

- Likert Scale :5= Strongly agree (SA) , 4= Agree (A) , 3= Neutral (N) , 2= Disagree (D) and 1= Strongly disagree (SD).
- Likert Mean: less 3- Disagreement and greater than 3- Agreement.
- Legend: Very high (4.24 – 5.00), High (3.43 – 4.23), Moderate (2.62 – 3.42), Low (1.81 – 2. 61), Very Low (1.00 – 1.80)

Source: Primary data, 2026

a) Teaching Methods (Pedagogy)

Teaching methods or the manner in which pedagogical frameworks are designed, may have an impact on how knowledge is received and in the practical use of that knowledge. The majority of respondents indicated that

their teaching methods emphasize problem-solving based on real community challenges. Specifically, 76.36% agreed and 16.06% strongly agreed, while very few respondents disagreed (1.21% strongly disagree; 1.52% disagree). The mean score of 4.045 (SD = 0.615) indicates a high level of agreement, suggesting that instructors frequently integrate community-based problems into their teaching strategies. Qualitative findings reinforce this perspective by demonstrating how students apply their knowledge in community contexts. For example, one participant explained, ***“Students come out to teach the community new ideas in farming” (FGD003, R6)***, illustrating how teaching approaches incorporate real-life community challenges.

Most respondents also reported using participatory and experiential learning methods in their courses. Specifically, 71.82% agreed and 18.79% strongly agreed, while only a small proportion disagreed. The mean score of 4.045 (SD = 0.676) reflects a high perception, indicating that participatory teaching approaches such as discussions, field activities, and collaborative learning are commonly practiced. Qualitative findings support this by highlighting field-based learning experiences. For instance, one respondent noted, ***“Students of carpentry and architecture come to our communities for internship and they give us some labour” (FGD001, R6)***, demonstrating how experiential learning allows students to interact directly with community environments.

Similarly, a large proportion of respondents indicated that teaching activities encourage students to apply theory to practical contexts, with 70.00% agreeing and 21.52% strongly agreeing. The mean score of 4.079 (SD = 0.680) suggests that instructors strongly promote bridging theoretical knowledge with real-world practice. This is reflected in community testimonies describing how practical learning activities benefit local populations. As one participant explained, ***“People go to the model farm to learn different techniques and skills needed for better production” (FGD003, R6)***, illustrating how academic knowledge is translated into practical applications. Most respondents also indicated that many courses include a community engagement component, such as service learning, field placements, internships, or community projects. Specifically, 72.73% agreed and 12.42% strongly agreed, with a mean score of 3.858 (SD = 0.818), which still falls within the high interpretation range. Qualitative findings confirm this engagement through practical demonstrations of skills. One participant stated, ***“Furniture students also come and support the community with their skills” (FGD002, R3)***, showing how course activities contribute to community development.

These findings are generally consistent with the changing shift towards community-engaged pedagogies. This is majorly borne out of a need, among many universities, to improve the relevance of knowledge for societal needs (Salam et al., 2019; Muthanna & Khine, 2024). These teaching pedagogies can enhance students abilities for knowledge translation and community engagement (Bringle & Hatcher, 2002). However, the slightly lower mean score and higher variation observed in the incorporation of formal community engagement activities suggests that, while applied teaching practices are widely encouraged, the institutionalization of structured engagement mechanisms such as service learning and community-based projects may still vary across courses and departments. Scholars like Bates (2019) and Sorcinelli (2000) have reported that while in some cases experiential pedagogies are widely adopted, their systematic integration into curricula and institutional frameworks remains uneven. For this study, while there are pedagogical shifts towards community learning, its integration as a regular practice needs to be institutionalised and strengthened.

b) Competency-Based Learning

Learning in universities is often about the transfer of critical competencies that facilitate community-derived imperatives. In this study, the majority of respondents reported that learning outcomes in their courses are clearly defined based on specific competencies. The majority of respondents reported that learning outcomes in their courses are defined in terms of competencies, with 76.97% agreeing and 9.09% strongly agreeing. The mean score of 3.900 (SD = 0.637) indicates a high level of implementation of competency-based learning principles. Qualitative findings support this by demonstrating how student competencies translate into practical community benefits. One participant remarked, ***“Students have knowledge and skills that help communities improve the way they do things” (FGD002, R5)***, highlighting the practical value of competency-oriented education.

Similarly, most respondents confirmed that teaching and assessment are aligned with professional competencies, with 74.55% agreeing and 11.21% strongly agreeing. The mean score of 3.933 (SD = 0.605) supports a high level of agreement. Community members also observed how students demonstrate professional competencies in practice. For example, one participant noted, ***“Students demonstrate skills in carpentry and other technical work when they come to the community” (FGD001, R6)***, illustrating how competency-based education contributes to skill development and community service.

A majority of respondents also indicated that students progress based on mastery of competencies, with 73.64% agreeing and 12.42% strongly agreeing. The mean score of 3.958 (SD = 0.592) suggests that competency-based progression is widely practiced. Qualitative findings also highlight how learning activities address real community challenges. One participant explained, ***“The university activities help people learn practical ways of improving their livelihoods” (FGD003, R5)***, demonstrating the relevance of competency development in addressing societal needs.

Furthermore, respondents agreed that feedback helps students achieve competencies, with 79.39% agreeing and 10.61% strongly agreeing, resulting in a mean score of 3.997 (SD = 0.490). In addition, assessment tasks requiring application of knowledge in real-life situations received one of the highest agreement levels (80.61% agree; 10.91% strongly agree; Mean = 4.000, SD = 0.517), indicating that real-world application is strongly integrated into teaching and assessment practices. From these findings, there is a strong imperative on how competence based learning is vital in higher education in Uganda and is consistent with current work in this area (Muthanna & Khine, 2024). For Mulder (2024), such competency-based pedagogical frameworks are useful in bridging academic knowledge and labor market demands. Furthermore, global and regional higher education initiatives, particularly in Africa, emphasize competency-based training as a strategy for producing graduates capable of addressing community and development challenges (RUFORUM, 2021). Today, competence based education is being rolled out in across Ugandan universities and can help reinforce the notion of universities as a medium of community transformation and change (Kitasse & Ssembatya 2024; Nakawuki *et al* (2025).

c) Curriculum Development

How university curricula are designed and how they engage communities in doing so has an implicit effect on community or industry engagement. A large proportion of respondents indicated that community or industry perspectives inform curriculum design, with 72.42% agreeing and 7.27% strongly agreeing. The mean score of 3.800 (SD = 0.681) suggests that external stakeholder input is generally incorporated into curriculum development. Qualitative findings show that such educational opportunities benefit local communities. For instance, one respondent noted, ***“There are students from the community who study for free when they perform well and receive bursaries” (FGD003, R3)***, highlighting how educational initiatives extend opportunities to surrounding communities.

Most respondents also agreed that curriculum content reflects societal and community needs, with 67.58% agreeing and 8.48% strongly agreeing. The mean score of 3.773 (SD = 0.719) indicates that curricula are generally responsive to societal issues. Qualitative evidence further supports this perception, as one participant explained, ***“The students learn things that can help communities improve farming and other businesses” (FGD003, R6)***, demonstrating the relevance of curriculum content to community development. Similarly, respondents indicated that curriculum reviews incorporate external stakeholder feedback, with 61.82% agreeing and 10.61% strongly agreeing, resulting in a mean score of 3.761 (SD = 0.740). Institutional policies emphasizing community input in curriculum development were also positively rated (Mean = 3.691, SD = 0.690), suggesting a generally supportive policy environment. The findings of this study are broadly consistent with existing literature showing that universities increasingly incorporate external stakeholder perspectives in curriculum design to enhance the societal relevance of higher education. According to the OECD (2019), curriculum development in universities must reflect global trends toward stakeholder-informed and demand-driven curricula. Other studies have shown that universities that integrate community actors during curriculum development, are able to generate graduates with skills relevant to local development (Arbo & Benneworth, 2007). However, the relatively higher proportion of neutral responses observed in this study suggests that stakeholder engagement in curriculum review may not yet be fully institutionalized across all departments or

programs. This pattern has been noted in other studies where universities formally recognize the importance of stakeholder participation in curriculum design but face practical challenges in systematically integrating external actors into curriculum governance structures (Benneworth & Jongbloed, 2010). University curricula in central Uganda are increasingly responsive to community and industry needs.

d) Faculty Development

Most respondents reported participating in professional development activities related to community engagement, with 69.39% agreeing and 6.36% strongly agreeing. The mean score of 3.718 (SD = 0.733) indicates that such professional development opportunities are fairly common but not universal. Qualitative findings show that academic expertise plays a role in supporting community learning. One participant stated, *“Students and staff from the university help the community with different knowledge and skills”* (FGD002, R5), indicating the value of faculty knowledge in community engagement. Similarly, faculty development programs were perceived to strengthen community engagement abilities, with 66.97% agreeing and 5.76% strongly agreeing (Mean = 3.745, SD = 0.620). Qualitative findings also highlight knowledge-sharing initiatives where university staff interact directly with communities. For example, one respondent noted, *“Sometimes students and staff come and help communities understand new ideas”* (FGD003, R6), illustrating how academic training supports knowledge dissemination.

e) Use of Technology in Learning

Most respondents indicated that they use digital tools to interact with external stakeholders, with 70.00% agreeing and 14.85% strongly agreeing. The mean score of 3.942 (SD = 0.684) suggests that technology plays a significant role in facilitating engagement beyond the university. Qualitative findings show that technological knowledge has also influenced community practices. For instance, one participant explained, *“I learnt that I can digitally advertise my business and do deliveries because of university customers”* (FGD001, R5), demonstrating how digital literacy can support local entrepreneurship. Similarly, respondents reported that technology supports experiential or community-based learning, with 74.24% agreeing and 13.94% strongly agreeing (Mean = 3.985, SD = 0.606). Participants also observed how technological tools have improved communication and interaction. One respondent noted, *“Many businesses around here now use phones and online platforms because of students”* (FGD001, R3), indicating broader technological diffusion within communities. Online platforms were also perceived to facilitate collaboration beyond the university, with 72.42% agreeing and 16.97% strongly agreeing (Mean = 4.027, SD = 0.621). Additionally, respondents agreed that digital platforms bring the university closer to the community (Mean = 3.927, SD = 0.689). This perception was echoed in qualitative findings, where one participant stated, *“Technology helps the university connect with people outside the campus”* (FGD003, R8), demonstrating the role of digital tools in strengthening university–community relationships.

The **overall mean score of 3.899 (SD = 0.382)** indicates a high level of positive perception regarding teaching practices among respondents. The quantitative findings show strong implementation of **community-engaged pedagogy, competency-based learning, and technology-supported instruction** across the selected universities. Qualitative evidence further demonstrates how these teaching practices manifest in real-life contexts through internships, skill demonstrations, community learning initiatives, and digital engagement. Community members particularly highlighted the practical benefits of student projects, agricultural training, and professional skills demonstrations, which contribute to improved livelihoods and knowledge sharing. However, some variability in responses suggests that the extent of implementation may differ across programs and institutions.

In conclusion, the findings demonstrate that **teaching practices in the selected universities strongly support community engagement and practical learning outcomes**. Instructors widely adopt participatory, experiential, and competency-based teaching approaches that encourage students to apply academic knowledge to real-world problems. Curriculum development and faculty development initiatives also appear to support the integration of community engagement within academic programs. Furthermore, the increasing use of digital technologies enhances collaboration and knowledge exchange between universities and external stakeholders. Overall, these teaching practices strengthen the link between **academic learning, professional skill**

development, and community development, reinforcing the role of universities as key institutions for knowledge transfer and societal transformation.

Knowledge Services

This section presents descriptive statistics on respondents' perceptions of knowledge services in selected universities in Central Uganda. The analysis focuses on key components of knowledge services, including advisory services, training and capacity-building programs, and extension and outreach activities that support knowledge dissemination and application. Responses were measured using a five-point Likert scale to assess the extent to which these knowledge service activities are implemented and contribute to community engagement. Mean scores and standard deviations were computed to determine the overall level of implementation and the consistency of responses across respondents. The findings provide insight into how universities utilize knowledge dissemination, outreach initiatives, and capacity development programs to strengthen knowledge sharing, enhance collaboration with communities, and improve community engagement outcomes.

Table 4: Descriptive statistics on respondents' perception of knowledge services

KNOWLEDGE SERVICES	n	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)	Standard Deviation	Interpretation
Advisory Services									
I provide expert advice to government, NGOs, or community organizations.	330	2.42%	8.48%	23.64%	54.24%	11.21%	3.633	0.880	High
My advisory roles influence decision-making or practice beyond the university.	330	1.52%	5.15%	31.21%	53.94%	8.18%	3.621	0.771	High
Advisory services respond directly to identified community or policy needs.	330	1.52%	8.48%	27.27%	59.09%	3.64%	3.548	0.763	High
Training and capacity-building programs									
I conduct training programs that address priority community or professional needs.	330	0.61%	9.70%	24.24%	63.33%	2.12%	3.567	0.721	High
Training activities enhance participants' ability to apply new knowledge.	330	0.61%	2.73%	24.55%	65.15%	6.97%	3.752	0.647	High
Capacity-building programs contribute to sustained skills development among participants.	330	0.61%	2.42%	22.12%	70.30%	4.55%	3.758	0.600	High
The current university training programs create long-term networks with communities around it	330	0.91%	4.24%	21.52%	67.27%	6.06%	3.733	0.676	High
Extension Services									
I engage in outreach activities such as public	330	0.91%	4.55%	13.33%	72.73%	8.48%	3.833	0.675	High

lectures or community forums.									
Extension services effectively translate university knowledge into practical solutions.	330	0.91%	4.85%	18.18%	66.36%	9.70%	3.791	0.716	High
Outreach activities strengthen relationships between the university and communities.	330	0.30%	1.82%	10.61%	77.88%	9.39%	3.942	0.546	High
Overall	330						3.718	0.484	High

Key:

- Likert Scale :5= Strongly agree (SA) , 4= Agree (A) , 3= Neutral (N) , 2= Disagree (D) and 1= Strongly disagree (SD).
- Likert Mean: less 3- Disagreement and greater than 3- Agreement.
- Legend: Very high (4.24 – 5.00), High (3.43 – 4.23), Moderate (2.62 – 3.42), Low (1.81 – 2. 61), Very Low (1.00 – 1.80)

Source: Primary data, 2026

a) Advisory Services

The results show that a majority of respondents provide advisory services to external stakeholders such as government agencies, non-governmental organizations, and community organizations. Specifically, 54.24% agreed and 11.21% strongly agreed, while 23.64% remained neutral. A smaller proportion disagreed (8.48%) or strongly disagreed (2.42%). The mean score of 3.633 (SD = 0.880) indicates a high perception, suggesting that advisory engagement is relatively common among respondents, though the higher standard deviation indicates some variability in participation levels. The qualitative findings reinforce these results by demonstrating that community members recognize the advisory role played by universities. Participants reported that university staff and students often provide expert guidance that supports local decision-making and practices. For example, one participant stated, *“Students and staff from the university help the community with different knowledge and skills”* (FGD002, R5), while another explained that *“students have knowledge and skills that help communities improve the way they do things”* (FGD002, R5). These insights confirm that advisory services extend academic expertise to community settings.

The findings indicate that advisory roles frequently contribute to decision-making or practices outside the university context. 53.94% agreed and 8.18% strongly agreed, while 31.21% reported a neutral position, suggesting that not all respondents clearly perceive the influence of their advisory activities. The mean score of 3.621 (SD = 0.771) reflects a high level of agreement, indicating that advisory services often extend the impact of academic expertise beyond institutional boundaries. Qualitative data further support this finding, as participants indicated that university experts frequently introduce new knowledge that shapes community practices. For instance, one participant explained that *“sometimes students and staff come and help communities understand new ideas”* (FGD003, R6). This suggests that advisory services contribute to knowledge dissemination and influence practical decision-making within communities.

Most respondents reported that their advisory services address specific community or policy needs. 59.09% agreed and 3.64% strongly agreed, although 27.27% remained neutral. Only a small proportion disagreed. The mean score of 3.548 (SD = 0.763) indicates a high perception, suggesting that advisory activities generally respond to real-world issues faced by communities or policymakers. The qualitative findings support this perception by highlighting the ways in which university expertise addresses practical community challenges.

Participants emphasized that the knowledge shared by students and staff often contributes to improving everyday practices and solving local problems, reinforcing the relevance of advisory engagement.

b) Training and Capacity-Building Programs

The findings show that many respondents conduct training programs that address community or professional priorities. 63.33% agreed and 2.12% strongly agreed, while 24.24% were neutral and 9.70% disagreed. The mean score of 3.567 (SD = 0.721) indicates a high level of perception, suggesting that training initiatives are commonly used as a mechanism for knowledge transfer to external stakeholders. The qualitative data confirm this finding by illustrating how communities participate in university-led training initiatives. For example, one participant explained that ***“people go to the model farm to learn different techniques and skills needed for better production”*** (FGD003, R6), indicating that training programs provide practical learning opportunities for community members. A large majority of respondents agreed that training activities improve participants’ ability to apply new knowledge in practice. 65.15% agreed and 6.97% strongly agreed, with 24.55% neutral responses. The mean score of 3.752 (SD = 0.647) indicates a high perception, suggesting that training programs are perceived as effective in strengthening practical skills. Qualitative findings support this observation. Participants described how university initiatives help communities acquire new knowledge that can be applied directly to their livelihoods. One respondent noted that ***“model farming is one of the activities carried on the university providing skills freely to the community members”*** (FGD003, R6), while another stated that ***“the university activities help people learn practical ways of improving their livelihoods”*** (FGD003, R5).

Most respondents indicated that capacity-building initiatives contribute to long-term skills development among participants. 70.30% agreed and 4.55% strongly agreed, while 22.12% remained neutral. The mean score of 3.758 (SD = 0.600) indicates strong agreement that such programs support sustainable skill development. Qualitative evidence further illustrates this sustained impact. Community members reported that students frequently share practical knowledge during community visits, with one participant explaining that ***“students come out to teach the community new ideas in farming”*** (FGD003, R6). This demonstrates how training initiatives promote continuous learning and long-term capacity development. University training programs create long-term networks with communities-The results show that training programs also help build lasting relationships between universities and surrounding communities. 67.27% agreed and 6.06% strongly agreed, while 21.52% were neutral. The mean score of 3.733 (SD = 0.676) indicates a high perception, suggesting that training initiatives foster long-term collaboration and networking. Qualitative findings support this perspective, as participants emphasized that continuous interaction with students and university staff strengthens relationships and encourages ongoing knowledge exchange between universities and communities.

c) Extension Services

The majority of respondents reported participating in outreach activities, including public lectures, seminars, or community forums. 72.73% agreed and 8.48% strongly agreed, with relatively few neutral or negative responses. The mean score of 3.833 (SD = 0.675) indicates a high level of participation in outreach activities, reflecting the university’s role in disseminating knowledge to the broader community. The qualitative findings strongly support this result by highlighting different forms of outreach activities conducted by universities. For example, one participant noted that ***“they had health camps where they offered free medical checkups and advice which was helpful to the community”*** (FGD002, R3), demonstrating how outreach programs provide direct services to community members. Extension services translate university knowledge into practical solutions-Most respondents agreed that extension services help translate academic knowledge into practical applications for communities. 66.36% agreed and 9.70% strongly agreed, with 18.18% neutral responses. The mean score of 3.791 (SD = 0.716) indicates a high perception, suggesting that extension activities effectively bridge the gap between research and real-world problem-solving.

Qualitative evidence supports this finding by illustrating how extension activities address community needs. Participants described initiatives such as blood donation drives and public health activities. For instance, one participant stated that ***“students donate blood for people in hospitals like accident victims and pregnant mothers”*** (FGD003, R6), demonstrating the practical societal contributions of university outreach. Outreach

activities strengthen university–community relationships. This item received one of the strongest levels of agreement. 77.88% agreed and 9.39% strongly agreed, indicating that outreach activities significantly strengthen relationships between universities and communities. The mean score of 3.942 (SD = 0.546) reflects strong consensus among respondents regarding the positive impact of outreach on community engagement. The qualitative findings further highlight these relationship-building effects. Participants reported community service activities such as environmental clean-up and sanitation initiatives. For example, one participant explained that *“students come to clean drainage areas, pick rubbish and dig holes for dumping”* (FGD003, R8), while another noted that *“students from university church come and clean the neighborhood which is great to see”* (FGD002, R2). These activities strengthen trust and collaboration between universities and surrounding communities.

Overall, the findings indicate that knowledge services constitute a significant mechanism through which universities contribute to community engagement and societal development. The quantitative results demonstrate a consistently high level of engagement across advisory services, training and capacity-building programs, and extension services, with an overall mean score of 3.718 (SD = 0.484). These findings suggest that academic staff frequently provide expert advice, conduct training initiatives, and participate in outreach activities that extend university knowledge beyond institutional boundaries.

The qualitative findings further reinforce these results by illustrating how communities directly experience the benefits of these knowledge services. Participants highlighted the role of university staff and students in offering expert guidance, delivering practical training such as model farming, and conducting outreach initiatives including health camps, sanitation activities, and community service programs. These experiences demonstrate that university knowledge is not only disseminated but also translated into practical solutions that address community needs. Taken together, the convergence of quantitative and qualitative evidence confirms that knowledge services strengthen the connection between universities and surrounding communities. Through advisory support, capacity-building initiatives, and extension activities, universities play an important role in enhancing local skills, improving livelihoods, and fostering sustainable partnerships with communities. These findings underscore the importance of strengthening institutional support for knowledge services to further enhance their impact on community development.

Knowledge Translation Services

This section presents the descriptive statistics on respondents’ perceptions of knowledge translation mechanisms in selected universities in Central Uganda. The analysis focuses on three main dimensions of knowledge translation services, namely communication mechanisms, capacity-building mechanisms, and structural mechanisms that support knowledge sharing and community engagement. Responses were measured using a five-point Likert scale to determine the extent to which knowledge translation activities are implemented within universities. Mean scores and standard deviations were computed to assess the overall level of knowledge translation service implementation and response consistency. The findings provide insight into how universities translate academic knowledge into accessible formats that promote stakeholder collaboration and community development.

Table 5: Descriptive statistics on respondents' perception of knowledge translation services

KNOWLEDGE TRANSLATION MECHANISMS	N	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)	Standard Deviation	Interpretation
Communication Mechanisms									
Research findings are communicated in clear and non-technical language.	330	0.61%	6.06%	27.27%	59.70%	6.36%	3.652	0.717	High
The university uses effective channels to disseminate	33	0.91%	8.48%	26.06%	59.39%	5.15%	3.594	0.755	High

knowledge to communities.	0				%				
Research outputs are shared in a timely manner with relevant stakeholders.	330	1.82%	8.48%	26.97%	57.88%	4.85%	3.555	0.790	High
Communication between researchers and communities is two-way and interactive.	330	1.21%	8.48%	25.45%	56.06%	8.79%	3.627	0.809	High
Community feedback informs how research findings are presented and shared.	330	0.30%	8.48%	23.33%	63.03%	4.85%	3.636	0.720	High
Capacity Building Mechanisms									
The university provides training that enables stakeholders to use research findings.	330	—	7.88%	24.55%	63.03%	4.55%	3.642	0.693	High
Community members are supported to interpret and apply research-based knowledge.	330	3.33%	15.76%	19.70%	58.18%	3.03%	3.418	0.906	Moderate
Capacity-building initiatives enhance stakeholders' problem-solving abilities.	330	—	5.76%	21.21%	66.97%	6.06%	3.733	0.658	High
Knowledge translation activities strengthen long-term stakeholder competencies.	330	1.21%	3.64%	20.61%	70.00%	4.55%	3.730	0.659	High
Training and learning activities improve uptake of university knowledge.	330	0.30%	1.82%	12.42%	77.27%	8.18%	3.912	0.547	High
Structural Mechanisms									
Institutional policies support translating research into community action.	330	0.30%	7.88%	23.03%	63.33%	5.45%	3.658	0.715	High
Dedicated structures or offices facilitate engagement with external stakeholders.	330	0.30%	7.58%	23.94%	63.33%	4.85%	3.648	0.704	High
Incentives exist for staff to engage in knowledge translation activities.	330	0.61%	14.55%	19.09%	58.48%	7.27%	3.573	0.848	High
The university provides resources to support sustained community engagement.	330	2.73%	15.76%	17.27%	60.30%	3.94%	3.470	0.900	High
Institutional frameworks promote long-term collaboration with communities.	330	2.42%	6.36%	23.03%	63.03%	5.15%	3.621	0.783	High
Overall	330						3.631	0.546	High

Key:

- Likert Scale :5= Strongly agree (SA) , 4= Agree (A) , 3= Neutral (N) , 2= Disagree (D) and 1= Strongly disagree (SD).
- Likert Mean: less 3- Disagreement and greater than 3- Agreement.
- Legend: Very high (4.24 – 5.00), High (3.43 – 4.23), Moderate (2.62 – 3.42), Low (1.81 – 2. 61), Very Low (1.00 – 1.80)

Source: Primary data, 2026

a) Communication Mechanisms

Research findings are communicated in clear and non-technical language-Most respondents agreed that research findings are communicated using simple and understandable language. Most (59.70%) agreed and 6.36% strongly agreed, while 27.27% were neutral. The mean score of 3.652 (SD = 0.717) indicates a high perception, suggesting that academic knowledge is generally translated into accessible language for community use. However, the qualitative findings reveal that community members sometimes experience challenges in accessing or understanding research outputs. For example, one participant noted that ***“programs should be translated into local languages so people who cannot read can understand”*** (FGD003, R3), indicating that while communication efforts exist, further adaptation to local linguistic contexts may be needed to enhance accessibility.

The university uses effective channels to disseminate knowledge-The findings show that appropriate communication channels are used to disseminate knowledge to stakeholders. 59.39% agreed and 5.15% strongly agreed, though 26.06% remained neutral. The mean score of 3.594 (SD = 0.755) reflects a high level of agreement, indicating that dissemination platforms such as digital media, publications, or community meetings are utilized. Despite this positive perception among respondents, qualitative evidence suggests that some dissemination channels may not fully reach community members. One participant explained that ***“some activities are advertised online yet many community members cannot access websites”*** (FGD003, R8). This highlights the importance of adopting more inclusive communication channels that are accessible to community stakeholders.

Most (57.88%) respondents agreed that research outputs are shared with stakeholders in a timely fashion. 57.88% agreed and 4.85% strongly agreed, with 26.97% neutral responses. The mean score of 3.555 (SD = 0.790) shows a high perception, although the slightly lower mean suggests room for improvement in the speed of dissemination. Qualitative findings reveal that communities sometimes perceive delays or gaps in feedback after research activities. For instance, a participant stated that ***“students come to our community for research but they never come back to give us feedback”*** (FGD001, R6). This suggests that although dissemination occurs, more consistent feedback mechanisms may strengthen knowledge sharing.

Communication is two-way and interactive-The majority of respondents agreed that communication between researchers and communities is interactive rather than one-sided. 56.06% agreed and 8.79% strongly agreed, while 25.45% were neutral. The mean score of 3.627 (SD = 0.809) indicates a high perception of participatory communication processes. Nevertheless, qualitative findings suggest that some community members still perceive limited interaction between universities and communities. One respondent observed that ***“there is no collaboration between the university and community and each acts independently”*** (FGD001, R5). This highlights the need for stronger engagement mechanisms that foster more consistent dialogue.

Community feedback informs knowledge sharing-Most respondents reported that community feedback influences how research findings are presented and shared. 63.03% agreed and 4.85% strongly agreed, with a relatively high neutral response (23.33%). The mean score of 3.636 (SD = 0.720) suggests a high level of responsiveness to stakeholder feedback. However, qualitative findings reveal that communities desire stronger feedback loops and more inclusive engagement. For example, a participant remarked that ***“there is a very big***

gap between the institution and the community and this needs to change” (FGD001, R1), indicating that communication processes could be strengthened to improve collaboration.

b) Capacity Building Mechanisms

A majority of respondents indicated that the university provides training programs that help stakeholders apply research findings. 63.03% agreed and 4.55% strongly agreed, though 24.55% remained neutral. The mean score of 3.642 (SD = 0.693) reflects high effectiveness of training support. Qualitative findings strongly support this result. Participants described practical training initiatives such as model farming programs that help communities acquire new knowledge and skills. One respondent explained that **“people go to the model farm to learn different techniques and skills needed for better production” (FGD003, R6).** Community members are supported to interpret and apply knowledge-This item is the only one classified as moderate, with 58.18% agreeing but a relatively high proportion of disagreement (19.09%) and 19.70% neutral responses. The mean score of 3.418 (SD = 0.906) indicates variability in perceptions, suggesting that support for knowledge interpretation and application is not yet uniformly experienced. Qualitative findings suggest that although learning opportunities exist, community members may require more structured guidance in applying knowledge. This reinforces the need for stronger support systems to help communities interpret and utilize research outputs effectively.

Most (66.97%) respondents agreed that capacity-building programs improve stakeholders’ problem-solving skills and 6.06% strongly agreed, while 21.21% were neutral. The mean score of 3.733 (SD = 0.658) indicates a high perception that training programs contribute to practical skill development. The qualitative findings support this result. Participants indicated that university-led training activities often improve livelihoods and practical skills. For instance, one respondent noted that **“the university activities help people learn practical ways of improving their livelihoods” (FGD003, R5).** The results show strong agreement that knowledge translation activities promote sustained stakeholder competencies. 70.00% agreed and 4.55% strongly agreed, with 20.61% neutral responses. The mean score of 3.730 (SD = 0.659) reflects high confidence in long-term capacity effects. Similarly, qualitative evidence demonstrates how students and staff contribute to knowledge transfer through demonstrations and training sessions. For example, one participant explained that **“students come out to teach the community new ideas in farming” (FGD003, R6),** highlighting the practical and sustained impact of knowledge-sharing initiatives. Training and learning activities improve knowledge uptake-This item received one of the highest levels of agreement. 77.27% agreed and 8.18% strongly agreed, while only 12.42% were neutral. The mean score of 3.912 (SD = 0.547) indicates strong consensus that training activities enhance the adoption of university knowledge. The qualitative findings reinforce this perception by illustrating how community members learn practical skills through university programs such as agricultural demonstrations and community engagement initiatives.

c) Structural Mechanisms

Most (63.33%) respondents agreed that institutional policies encourage translating research into community action and 5.45% strongly agreed, with 23.03% neutral responses. The mean score of 3.658 (SD = 0.715) indicates high institutional support for knowledge translation. However, qualitative findings suggest that communities sometimes perceive universities as operating independently when developing policies. One participant stated that **“Makerere acts independently and makes its own policies without consultation with the community” (FGD001, R4),** highlighting the need for greater policy-level collaboration.

Dedicated structures facilitate stakeholder engagement-Respondents agreed that offices or organizational structures support engagement with external stakeholders. 63.33% agreed and 4.85% strongly agreed, while 23.94% were neutral. The mean score of 3.648 (SD = 0.704) suggests that structural support for engagement is generally available. Nevertheless, qualitative evidence suggests that formal mechanisms for collaboration may still be limited. One participant proposed that **“the university and community should form a committee that acts as a communication vessel between both sides” (FGD003, R3),** indicating the need for structured platforms to facilitate engagement. Incentives exist for staff engagement in knowledge translation-The findings show moderate-to-high agreement regarding incentives for participation in knowledge translation activities. However, 14.55% disagreed, the highest disagreement rate among structural items. The mean score of 3.573

(SD = 0.848) indicates positive perception but with notable variability. This variation may reflect differences in institutional support across departments or institutions.

On “resources to support sustained community engagement”, the study found that this had the lowest mean within the table. While most (60.30%) agreed and 3.94% strongly agreed, 15.76% disagreed and 17.27% were neutral. The mean score of 3.470 (SD = 0.900) suggests that resource availability for engagement may need strengthening. Qualitative findings further highlight the need for stronger institutional collaboration and planning structures. For example, one participant emphasized that *“there is need to have representatives of both the community and the university on management councils”* (FGD001, R7), suggesting that stronger institutional arrangements could enhance engagement.

Institutional frameworks promote long-term collaboration—Most respondents agreed that institutional frameworks support long-term community partnerships. 63.03% agreed and 5.15% strongly agreed, with 23.03% neutral responses. The mean score of 3.621 (SD = 0.783) indicates high perception of collaborative institutional arrangements. However, qualitative findings suggest that stronger collaborative platforms are still desired. For example, a participant noted that *“the university does not participate in planning and dialogue because they believe they are a different community”* (FGD001, R7), highlighting the importance of strengthening institutional collaboration.

The **overall mean score of 3.631 (SD = 0.546)** indicates a high perception of knowledge translation services among respondents. This suggests that the university generally performs well in communication of research findings, capacity building, and structural support for knowledge translation. However, the relatively lower mean for community support in interpreting knowledge (**Mean = 3.418**) and resource provision indicates areas that may require institutional strengthening. The qualitative findings complement these results by revealing challenges related to communication gaps, limited feedback mechanisms, and the need for stronger collaborative structures between universities and communities.

Overall, the findings indicate that knowledge translation mechanisms play an important role in bridging the gap between university research and community application. The quantitative results demonstrate generally high perceptions of communication practices, capacity-building initiatives, and institutional support structures for knowledge translation. At the same time, the qualitative findings highlight practical challenges experienced by community members, including limited feedback after research activities, inadequate communication channels, and the need for stronger collaborative platforms.

The integration of both quantitative and qualitative evidence suggests that while universities have established several mechanisms for translating knowledge into community practice, further efforts are required to strengthen communication accessibility, institutional collaboration, and resource allocation. Enhancing these mechanisms would improve the effectiveness of knowledge translation and promote stronger, more sustainable partnerships between universities and the communities they serve.

Community Engagement outcomes

Universities engage with communities through various knowledge exchange mechanisms that connect teaching, research, and service to broader societal needs. This section presents descriptive statistics on respondents’ perceptions of community engagement outcomes in selected universities in Central Uganda. The analysis is structured around three key dimensions: policy change, community improvement, and stakeholder satisfaction and perception. The results are summarized using frequencies and percentages to show the distribution of responses, while mean scores and standard deviations are used to assess the central tendency and variability based on a 5-point Likert scale. This analysis provides insight into the extent to which university research activities and related academic practices contribute to measurable and meaningful community engagement outcomes.

Table 6: Descriptive statistics on respondents' perception of Community engagement outcomes

COMMUNITY ENGAGEMENT OUTCOMES	n	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)	Standard Deviation	Interpretation
Policy Changes									
University research has informed policy decisions at local or national level.	330	—	4.24%	14.85%	73.33%	7.58%	3.842	0.608	High
Research outputs from my institution are used in planning or implementation.	330	0.30%	3.64%	16.36%	74.55%	5.15%	3.806	0.593	High
University knowledge has influenced professional or institutional practices (guidelines, local by laws, program adoption, ministry policy..)	330	—	1.82%	9.39%	81.52%	7.27%	3.942	0.487	High
Research findings are cited or referenced in policy or technical documents.	330	—	1.82%	14.24%	79.70%	4.24%	3.864	0.490	High
Community Decision-makers actively seek evidence from the university.	330	1.82%	3.64%	11.82%	75.15%	7.58%	3.830	0.690	High
My research findings are accessible and actionable by community policy makers	330	0.61%	7.58%	13.33%	72.12%	6.36%	3.761	0.706	High
Community Improvements									
University knowledge has contributed to improved community livelihoods (e.g improved health outcomes, improved farming practices, adoption of new technology)	330	—	0.61%	10.91%	81.21%	7.27%	3.952	0.452	High
Your Research activities have led to positive health, social, or environmental outcomes.	330	—	1.52%	15.15%	76.97%	6.36%	3.882	0.512	High
Community practices have changed as a result of university engagement.	330	—	1.52%	18.79%	74.55%	5.15%	3.833	0.523	High
Communities have adopted innovations introduced through university research.	330	0.30%	2.42%	15.45%	73.94%	7.88%	3.867	0.584	High
University activities (teaching and research)	330	0.61%	0.30%	11.82%	79.70%	7.58%	3.933	0.507	High

have contributed to sustainable community development.									
Satisfaction and Perception									
Community stakeholders are satisfied with the university's engagement efforts.	330	—	5.45%	26.67%	60.91%	6.97%	3.694	0.680	High
Communities perceive the university as responsive to their needs.	330	0.61%	10.00%	21.82%	64.24%	3.33%	3.597	0.738	High
Stakeholders trust the university as a credible source of knowledge.	330	—	0.30%	6.06%	75.45%	18.18%	4.115	0.492	High
Community partners value the relevance of university-generated knowledge.	330	—	—	6.36%	81.82%	11.82%	4.055	0.424	High
Stakeholders are willing to collaborate with the university again.	330	0.30%	—	11.52%	76.97%	11.21%	3.988	0.505	High
Overall	330						3.873	0.341	High

Key:

- Likert Scale :5= Strongly agree (SA) , 4= Agree (A) , 3= Neutral (N) , 2= Disagree (D) and 1= Strongly disagree (SD).
- Likert Mean: less 3- Disagreement and greater than 3- Agreement.
- Legend: Very high (4.24 – 5.00), High (3.43 – 4.23), Moderate (2.62 – 3.42), Low (1.81 – 2. 61), Very Low (1.00 – 1.80)

Source: Primary data, 2026

a) Policy Changes

According to McKenzie *et al* (2020), academic research and community policy change is rarely a linear transfer of knowledge. It is characterised by two communities which have two different incentives for research. To Bohacova (2023), research often is limited in its impact on community policy because academic timelines are typically measured in years, while policy is based on budget cycles or election periods. This often is the case where research is not consistent with the political-economy of the community. The findings indicate that university research significantly contributes to policy-related outcomes. A large majority of respondents agreed (73.33%) or strongly agreed (7.58%) that university research has informed policy decisions at local or national levels (Mean = 3.842, SD = 0.608), indicating a high perceived policy influence. Qualitative findings support this perception, as community participants acknowledged that university research has contributed to policy reforms and environmental governance. For instance, one participant explained, ***“The local council adopted new waste management rules based on the university’s research and the district implemented strict environmental regulations” (FGD002, R4)***, illustrating how academic evidence can directly influence policy decisions and regulatory frameworks.

Similarly, 74.55% agreed and 5.15% strongly agreed that institutional research outputs are used in planning and implementation (Mean = 3.806, SD = 0.593), suggesting practical utilization of research findings in governance processes. Qualitative evidence indicates that the presence of the university can shape local development planning and infrastructure expansion. One participant noted, ***“Roads and electricity came because of the university and the community developed faster” (FGD003, R3)***, demonstrating how university activities can influence development priorities and policy implementation within local communities.

Influence on professional or institutional practices received strong support, with 81.52% agreeing and 7.27% strongly agreeing (Mean = 3.942, SD = 0.487), demonstrating that university knowledge contributes to guidelines, by-laws, and policy frameworks. Community members also acknowledged the institutional authority of universities in shaping local decisions. For example, a participant observed, ***“The university is a very big institution and sometimes their decisions influence what happens in the community” (FGD001, R4)***, highlighting the institutional influence of universities in local governance contexts.

Research citation in policy or technical documents was also highly rated (79.70% agree; 4.24% strongly agree; Mean = 3.864, SD = 0.490), confirming formal recognition of university research. Similarly, community decision-makers actively seeking university evidence was supported by 75.15% agreement and 7.58% strong agreement (Mean = 3.830, SD = 0.690), indicating strong demand for academic expertise. Accessibility and actionability of research findings were also highly rated (72.12% agree; 6.36% strongly agree; Mean = 3.761, SD = 0.706), suggesting effective knowledge translation mechanisms that enable research to inform governance processes. Overall, policy-related outcomes demonstrate a strong influence of university research on governance and decision-making processes.

b) Community Improvements

University research has the potential to result into both direct and indirect improvements in the community imperatives like jobs and health. However, this can happen once universities go beyond being purely extractive (e.g for data collection) and move towards engagement with communities to ensure that research outcomes are consistent with local research agenda or local challenges (APLU, 2025; IHEP, 2025). The results show strong evidence that university activities contribute to tangible community improvements. An overwhelming majority agreed (81.21%) or strongly agreed (7.27%) that university knowledge has improved community livelihoods (Mean = 3.952, SD = 0.452), indicating substantial developmental impact. Qualitative findings confirm these perceptions, particularly through economic opportunities generated by university presence. For example, one participant explained, ***“Students are the highest percentage of our customers in our communities and this has boosted businesses” (FGD001, R1)***, demonstrating how universities stimulate local economic activity.

Positive health, social, and environmental outcomes were also widely reported (76.97% agree; 6.36% strongly agree; Mean = 3.882, SD = 0.512). Participants described how the university’s presence has stimulated local enterprise development. One respondent noted, ***“Stationary printing shops, restaurants, hostels and rentals have grown because of the university population” (FGD002, R3)***, highlighting how universities create demand for goods and services within surrounding communities. Changes in community practices due to university engagement were supported by 74.55% agreement (Mean = 3.833, SD = 0.523), reflecting behavioral and practical shifts among community members. For instance, the university’s influence on employment and mobility was evident in the testimony of one participant who stated, ***“The university has led to an increased number of bodas from 3 to 20 and above because many people move around the area” (FGD003, R7)***, demonstrating how university presence can stimulate local employment opportunities.

Adoption of innovations introduced through university research was strongly affirmed (73.94% agree; 7.88% strongly agree; Mean = 3.867, SD = 0.584). Participants particularly highlighted agricultural innovations and knowledge-sharing initiatives. One respondent explained, ***“People go to the model farm to learn different techniques and skills needed for better production” (FGD003, R6)***, illustrating how universities support community capacity building through practical learning platforms. Furthermore, contributions to sustainable community development received strong support (79.70% agree; 7.58% strongly agree; Mean = 3.933, SD = 0.507). Universities also provide market opportunities for local producers. As one participant stated, ***“Farmers with food stuff sell to the university and it supports them as a marketplace at an affordable price” (FGD003,***

R5). In addition, the presence of the university has motivated community members to prioritize education. One respondent remarked, ***“The university has motivated parents to educate their children because they see students graduating” (FGD003, R2)***, indicating broader social and educational impacts.

c) Satisfaction and Perception

The relationship between university research and the community has shifted from a "broadcast" model of knowledge to a "co-creation" model centered on mutual wellbeing. This co-dependence is reflective in how universities craft research problems to characterise the lived realities of the surrounding population. However, gaps still persist. Omodan *et al.* (2019) has noted a "Two Communities" Gap in which communities perceive academic research as highly “theoretical”. Moreover, the persistence of societal challenges like unemployment make communities have negative perceptions of university work. Even then, stakeholder satisfaction and trust in university engagement were also rated highly. A majority agreed (60.91%) or strongly agreed (6.97%) that community stakeholders are satisfied with university engagement efforts (Mean = 3.694, SD = 0.680). Qualitative findings indicate that community members generally perceive the university as a positive driver of economic and social development. One participant stated, ***“The university has helped the community to grow economically because many businesses depend on students” (FGD001, R3)***, demonstrating positive perceptions of the university’s local contributions.

Perceptions of responsiveness to community needs were similarly positive (64.24% agree; Mean = 3.597, SD = 0.738), though comparatively lower than other items. Qualitative evidence reveals that some community members feel that stronger communication and engagement mechanisms are needed. For example, one respondent noted, ***“There is a very big gap between the institution and the community and this needs to change” (FGD001, R1)***, indicating areas where universities could strengthen responsiveness and dialogue with local stakeholders.

Trust in the university as a credible source of knowledge recorded one of the highest ratings (75.45% agree; 18.18% strongly agree; Mean = 4.115, SD = 0.492), indicating very strong institutional credibility. Qualitative findings support this perception, with participants acknowledging the value of university expertise. One respondent explained, ***“Students have knowledge and skills that help communities improve the way they do things” (FGD002, R5)***, demonstrating confidence in academic knowledge and its practical relevance. Stakeholders valuing the relevance of university-generated knowledge also received strong endorsement (81.82% agree; 11.82% strongly agree; Mean = 4.055, SD = 0.424). Similarly, willingness to collaborate again was high (76.97% agree; 11.21% strongly agree; Mean = 3.988, SD = 0.505). Qualitative findings reinforce this, with community members expressing interest in stronger partnerships. For instance, one participant emphasized, ***“The university and community should work together more because both sides benefit” (FGD003, R3)***, indicating strong potential for sustained collaboration.

Overall, community engagement outcomes were rated highly (Mean = 3.873, SD = 0.341), indicating that universities in Central Uganda are perceived to make a significant contribution to policy processes, community development, and stakeholder satisfaction. The quantitative findings reveal strong outcomes in areas such as policy influence, livelihood improvements, and stakeholder trust. Complementary qualitative evidence provides practical illustrations of how these outcomes are realized. Community members reported improvements in local businesses, employment opportunities, agricultural productivity, and policy initiatives influenced by university research activities.

However, qualitative insights also point to areas that require improvement, particularly in relation to communication, feedback mechanisms, and responsiveness to community needs. These gaps suggest that while research activities are generating positive outcomes, the processes through which research findings are shared and applied could be further strengthened.

In conclusion, the findings demonstrate that research activities within the selected universities generate meaningful and measurable community engagement outcomes, reinforcing the critical role of higher education institutions in societal transformation. Through research, universities contribute to policy development, economic advancement, knowledge dissemination, and social change within surrounding communities. The

high levels of stakeholder trust and willingness to collaborate further underscore the importance of strengthening university–community partnerships. Nonetheless, enhancing communication channels, institutionalizing feedback mechanisms, and improving responsiveness to community priorities would further increase the effectiveness, inclusiveness, and sustainability of these engagements. By addressing these areas, universities can deepen the impact of their research activities and strengthen their role as key drivers of inclusive and sustainable community development.

Regression and Correlation analysis

Table 7: Correlational analysis showing the relationship between Knowledge Production Practices and Knowledge Translation Mechanisms

KNOWLEDGE PRODUCTION PRACTICES	KNOWLEDGE TRANSLATION MECHANISMS
TEACHING_or_LEARNING	0.4627 (p=0.000)
KNOWLEDGE_APPLICATION_SERVICES	0.6193 (p=0.000)
KNOWLEDGE_TRANSLATION_MECHANISMS	0.4819 (p=0.000)

Source: Primary data, 2026

The correlation analysis presented in Table 8 shows that knowledge production practices are significantly and positively associated with knowledge translation mechanisms. The composite variable knowledge application services demonstrated the strongest relationship with knowledge translation mechanisms ($r = 0.6193$, $p = 0.000$), indicating that effective application of knowledge within academic and community settings strongly supports the processes involved in translating research findings into practical use. This suggests that when universities actively promote the application of knowledge through teaching, learning, and service-oriented academic activities, the effectiveness of knowledge translation mechanisms is enhanced.

Furthermore, teaching and learning practices also showed a moderate positive relationship with knowledge translation mechanisms ($r = 0.4627$, $p = 0.000$), indicating that pedagogical approaches that integrate research-based knowledge and community-oriented learning contribute to more effective knowledge dissemination and utilization. Similarly, overall knowledge production practices were positively correlated with knowledge translation mechanisms ($r = 0.4819$, $p = 0.000$), confirming that strengthening research, teaching, and knowledge application activities is essential for improving knowledge translation processes. The statistical significance of all correlations suggests that these relationships are reliable and unlikely to be due to random variation, highlighting the importance of institutional strategies that support integrated knowledge production and translation systems.

Table 8: Regression Analysis of Knowledge Production Practices on Knowledge Translation Mechanisms

Predictor	B	SE	β	t	p
Research Activities	0.116	0.052	.116	2.25	.025
Teaching and Learning	0.534	0.070	.534	7.61	< .001
Knowledge Services	0.345	0.063	.345	5.52	< .001
Constant	-0.144	0.238	—	-0.60	.546

Note. $N = 330$. $R^2 = .453$, Adjusted $R^2 = .448$, $F(3, 326) = 89.94$, $p < .001$.

Source: Primary data, 2026

A multiple linear regression analysis was conducted to determine the influence of research activities, teaching and learning, and knowledge services on knowledge translation mechanisms. The overall regression model was statistically significant, $F(3, 326) = 89.94$, $p < .001$, explaining approximately 45.3% of the variation in knowledge translation mechanisms ($R^2 = .453$, Adjusted $R^2 = .448$).

The results revealed that research activities had a positive and statistically significant influence on knowledge translation mechanisms ($\beta = .116$, $t = 2.25$, $p = .025$). Similarly, teaching and learning had a positive and significant effect on knowledge translation mechanisms ($\beta = .534$, $t = 7.61$, $p < .001$), representing the strongest predictor in the model. In addition, knowledge services significantly influenced knowledge translation mechanisms ($\beta = .345$, $t = 5.52$, $p < .001$).

These findings indicate that improvements in research activities, teaching and learning, and knowledge services are associated with enhanced knowledge translation mechanisms within universities. Among the three predictors, teaching and learning exhibited the greatest contribution to knowledge translation mechanisms, followed by knowledge services and research activities. The findings suggest that effective knowledge production practices play a critical role in strengthening the mechanisms through which university knowledge is translated and applied beyond academic settings.

Table 9: Correlational analysis showing the relationship between Knowledge translation mechanisms and community engagement outcomes

Variable	COMMUNITY ENGAGEMENT OUTCOMES
KNOWLEDGE_TRANSLATION_MECHANISMS	0.6083 ($p=0.000$)

Source: Primary data, 2026

The correlation analysis in Table 8 shows a strong positive and significant relationship between knowledge translation mechanisms and community engagement outcomes. The composite variable knowledge translation mechanisms exhibited a strong correlation with community engagement outcomes ($r = 0.6083$, $p = 0.000$), indicating that effective processes for communicating, applying, and sharing knowledge significantly enhance community engagement performance. This suggests that when universities establish efficient communication channels, support capacity-building initiatives, and develop structural systems for knowledge dissemination, community participation and collaboration tend to improve.

The statistical significance of the relationship ($p = 0.000$) confirms that the association between knowledge translation mechanisms and community engagement outcomes is not due to chance. The result implies that strengthening institutional knowledge translation systems is critical for promoting sustainable community engagement. In particular, improving interactive communication, training support, and organizational structures that facilitate knowledge sharing can enhance the university's ability to translate academic knowledge into practical community benefits. Overall, the findings highlight knowledge translation mechanisms as a key driver of effective community engagement.

Table 10: Regression Analysis of Knowledge Translation Mechanisms on Community Engagement Outcomes

Predictor	B	SE	t	p	95% CI
Knowledge Translation Mechanisms	0.381	0.027	13.88	$< .001$	[0.327, 0.434]
Constant	2.491	0.101	24.74	$< .001$	[2.293, 2.689]

Note. $N = 330$. $R^2 = .370$, Adjusted $R^2 = .368$, $F(1, 328) = 192.63$, $p < .001$.

Source: Primary data, 2026

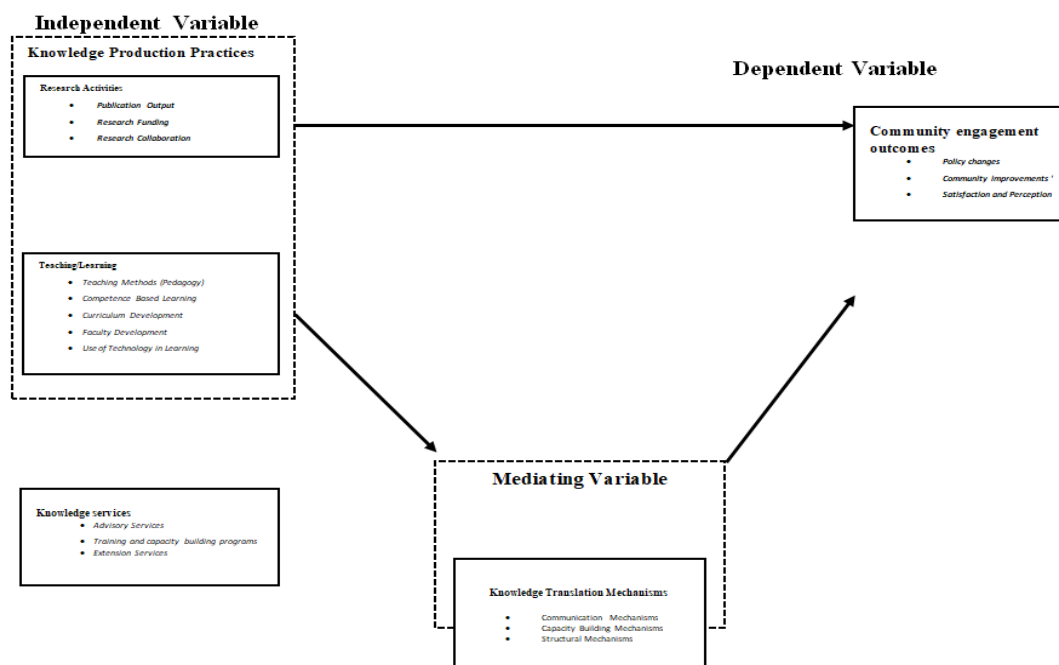
A simple linear regression analysis was conducted to determine the influence of knowledge translation mechanisms on community engagement outcomes in universities in Central Uganda. The results indicate that the regression model was statistically significant, $F(1, 328) = 192.63, p < .001$, suggesting that knowledge translation mechanisms significantly predict community engagement outcomes. The model explained **37.0%** of the variation in community engagement outcomes ($R^2 = .370$, Adjusted $R^2 = .368$), indicating a moderate explanatory power. The findings further revealed that knowledge translation mechanisms had a positive and statistically significant effect on community engagement outcomes ($\beta = .381, t = 13.88, p < .001$). This implies that a one-unit increase in knowledge translation mechanisms is associated with a 0.381-unit increase in community engagement outcomes.

These findings suggest that effective knowledge translation mechanisms enhance the ability of universities to generate meaningful community engagement outcomes. Therefore, universities that invest in communication channels, capacity-building initiatives, and supportive institutional structures for knowledge transfer are more likely to achieve positive policy influence, community improvements, and stakeholder satisfaction.

Path Analysis

This section presents the path analysis showing the mediating role of knowledge translation mechanisms in the relationship between knowledge production practices and community engagement outcomes in selected universities in Central Uganda. Path analysis was used to examine the direct and indirect relationships among the study variables and to determine the extent to which knowledge translation mechanisms transmit the effects of knowledge production practices to community engagement outcomes. The analysis provides empirical evidence on the structural pathways through which university teaching practices and knowledge services influence community engagement performance.

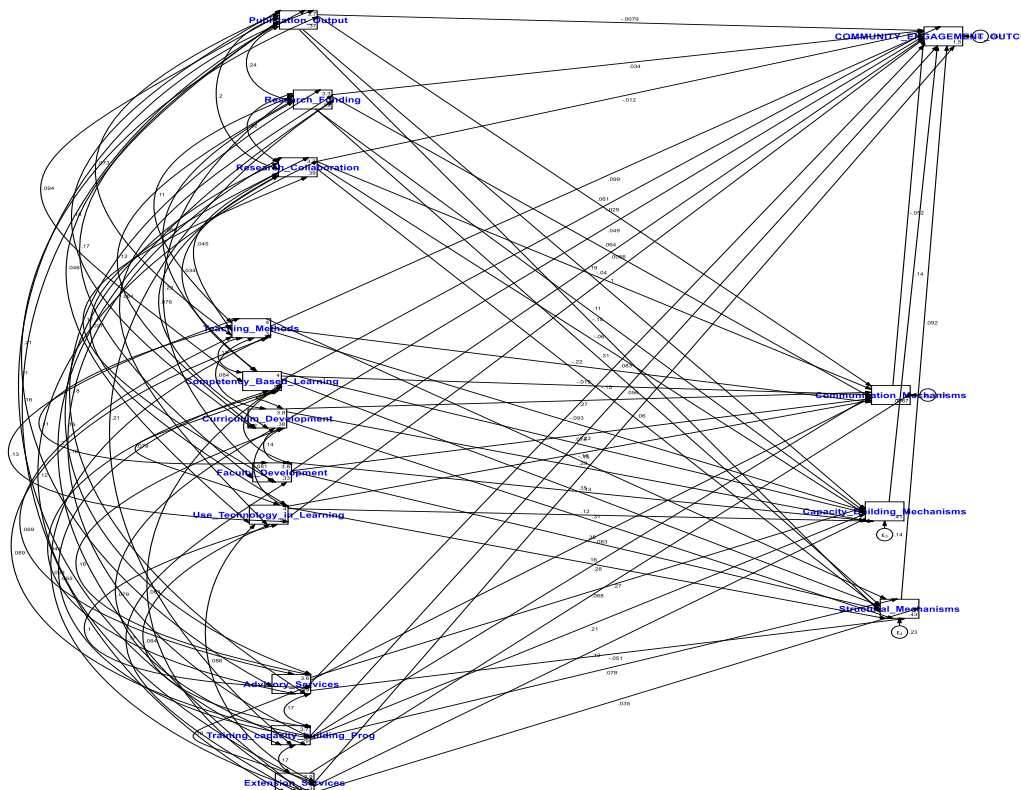
Figure 1: Hypothesized model showing the mediating role of knowledge translation mechanisms on knowledge production practices and community engagement outcomes



The figure presents a hypothesized conceptual model illustrating how knowledge production practices influence community engagement outcomes, both directly and indirectly through knowledge translation mechanisms. The independent variable, knowledge production practices, consists of three main components: research activities (publication output, research funding, and research collaboration), teaching and learning practices (teaching methods, curriculum development, faculty development, and use of technology in learning), and knowledge services (advisory services, training and capacity-building programs, and extension services). These practices are expected to contribute to improved community engagement outcomes, such as

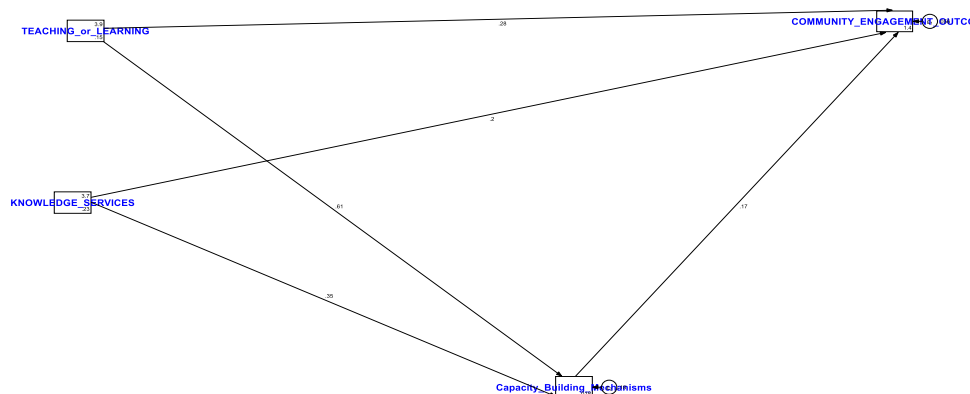
policy changes, community improvements, and increased satisfaction and positive perceptions among community members. However, the model proposes that this relationship is partly mediated by knowledge translation mechanisms, which include communication mechanisms, capacity-building mechanisms, and structural mechanisms that help convert academic knowledge into practical applications for communities. Therefore, effective translation processes strengthen the link between knowledge generated within institutions and meaningful community-level outcomes.

Figure 2: Full model showing the mediating role of knowledge translation mechanisms on knowledge production practices and community engagement outcomes



Source: Primary data, 2026

Figure 3: Final model showing the mediating role of knowledge translation mechanisms on knowledge production practices and community engagement outcomes



Source: Primary data, 2026

Table 11: Path coefficients for the full model showing the mediating role of knowledge translation mechanisms on knowledge production practices and community engagement outcomes

Path	Full Model β (p, 95% CI)	Reduced Model 1 β (p, 95% CI)	Reduced Model 2 β (p, 95% CI)	Reduced Model 3 β (p, 95% CI)	Reduced Model 4 β (p, 95% CI)	Reduced Model 5 β (p, 95% CI)	Final Model β (p, 95% CI)
Communication Mechanisms → Community Engagement Outcomes	-0.052 (.122, [-0.118, 0.014])	—	—	-0.065 (.043, [-0.128, 0.002])	-0.066 (.040, [-0.128, 0.003])	—	—
Capacity-Building Mechanisms → Community Engagement Outcomes	0.144 (<.001, [0.066, 0.222])	0.170 (<.001, [0.103, 0.238])	0.170 (<.001, [0.103, 0.238])	0.139 (<.001, [0.063, 0.215])	0.140 (<.001, [0.064, 0.215])	0.112 (.002, [0.041, 0.183])	0.169 (<.001, [0.110, 0.228])
Structural Mechanisms → Community Engagement Outcomes	0.092 (.003, [0.032, 0.153])	0.100 (<.001, [0.044, 0.156])	0.100 (<.001, [0.044, 0.156])	0.100 (.001, [0.040, 0.159])	0.099 (.001, [0.040, 0.158])	0.081 (.005, [0.024, 0.137])	—
Publication Output → Community Engagement Outcomes	-0.008 (.801, [-0.070, 0.054])	—	—	—	—	—	—
Research Funding → Community Engagement Outcomes	0.034 (.192, [-0.017, 0.085])	—	—	—	—	—	—
Research Collaboration → Community Engagement Outcomes	-0.012 (.695, [-0.070, 0.047])	—	—	—	—	—	—
Teaching Methods → Community Engagement Outcomes	0.099 (.002, [0.036, 0.163])	0.118 (<.001, [0.067, 0.169])	0.118 (<.001, [0.067, 0.169])	—	—	—	—
Competence-Based Learning → Community Engagement Outcomes	-0.029 (.513, [-0.114, 0.057])	—	—	—	—	—	—
Curriculum Development →	0.049 (.086, [-	—	—	—	—	—	—

<i>Community Engagement Outcomes</i>	0.007, 0.105])						
<i>Faculty Development → Community Engagement Outcomes</i>	0.007 (.853, [-0.063, 0.076])	—	—	—	—	—	—
<i>Use of Technology in Learning → Community Engagement Outcomes</i>	0.101 (.001, [0.042, 0.160])	0.093 (.001, [0.036, 0.150])	0.093 (.001, [0.036, 0.150])	—	—	—	—
<i>Advisory Services → Community Engagement Outcomes</i>	0.083 (<.001, [0.036, 0.130])	0.120 (<.001, [0.081, 0.159])	0.120 (<.001, [0.081, 0.159])	—	—	—	—
<i>Training Programs → Community Engagement Outcomes</i>	0.056 (.098, [-0.010, 0.123])	—	—	—	—	—	—
<i>Extension Services → Community Engagement Outcomes</i>	0.060 (.067, [-0.004, 0.125])	—	—	—	—	—	—
<i>Publication Output → Communication Mechanisms</i>	0.061 (.295, [-0.053, 0.175])	—	—	—	—	—	—
<i>Research Funding → Communication Mechanisms</i>	0.064 (.176, [-0.029, 0.156])	—	—	—	—	—	—
<i>Research Collaboration → Communication Mechanisms</i>	-0.040 (.482, [-0.151, 0.071])	—	—	—	—	—	—
<i>Teaching Methods → Communication Mechanisms</i>	-0.223 (<.001, [-0.343, -0.104])	-0.215 (<.001, [-0.314, -0.116])	—	—	—	—	—
<i>Competence-Based Learning → Communication</i>	-0.019 (.823, [-0.182,	—	—	—	—	—	—

<i>Mechanisms</i>	0.145))						
<i>Curriculum Development → Communication Mechanisms</i>	0.274 (<.001, [0.175, 0.374])	0.289 (<.001, [0.202, 0.376])	—	—	—	—	—
<i>Faculty Development → Communication Mechanisms</i>	0.230 (<.001, [0.105, 0.355])	0.252 (<.001, [0.134, 0.370])	—	—	—	—	—
<i>Use of Technology in Learning → Communication Mechanisms</i>	0.155 (.006, [0.043, 0.266])	0.134 (.015, [0.027, 0.242])	—	—	—	—	—
<i>Advisory Services → Communication Mechanisms</i>	-0.083 (.066, [- 0.172, 0.006])	-0.074 (.090, [- 0.159, 0.011])	—	—	—	—	—
<i>Training Programs → Communication Mechanisms</i>	0.275 (<.001, [0.152, 0.398])	0.283 (<.001, [0.167, 0.400])	—	—	—	—	—
<i>Extension Services → Communication Mechanisms</i>	0.275 (<.001, [0.155, 0.395])	0.305 (<.001, [0.190, 0.420])	—	—	—	—	—
<i>Research Activities → Communication Mechanisms</i>	—	—	—	0.159 (.011, [0.036, 0.282])	0.159 (.011, [0.036, 0.282])	—	—
<i>Teaching or Learning → Communication Mechanisms</i>	—	—	—	0.339 (<.001, [0.172, 0.505])	0.339 (<.001, [0.172, 0.505])	—	—
<i>Knowledge Services → Communication Mechanisms</i>	—	—	—	0.520 (<.001, [0.372, 0.668])	0.520 (<.001, [0.372, 0.668])	—	—
<i>Publication Output → Capacity-Building Mechanisms</i>	-0.188 (<.001, [- 0.287, - 0.090])	-0.221 (<.001, [- 0.313, - 0.129])	-0.221 (<.001, [- 0.313, - 0.129])	—	—	—	—
<i>Research Funding → Capacity-Building</i>	0.109 (.007, [0.029,	0.091 (.013, [0.019,	0.091 (.013, [0.019,	—	—	—	—

<i>Mechanisms</i>	0.189))	0.162))	0.162))				
<i>Research Collaboration → Capacity-Building Mechanisms</i>	-0.060 (.219, [- 0.156, 0.036))	—	—	—	—	—	—
<i>Teaching Methods → Capacity-Building Mechanisms</i>	-0.093 (.080, [- 0.196, 0.011))	—	—	—	—	—	—
<i>Competence-Based Learning → Capacity-Building Mechanisms</i>	0.075 (.296, [- 0.066, 0.217))	—	—	—	—	—	—
<i>Curriculum Development → Capacity-Building Mechanisms</i>	0.290 (<.001, [0.204, 0.376))	0.301 (<.001, [0.222, 0.381))	0.301 (<.001, [0.222, 0.381))	—	—	—	—
<i>Faculty Development → Capacity-Building Mechanisms</i>	0.352 (<.001, [0.244, 0.460))	0.312 (<.001, [0.207, 0.417))	0.312 (<.001, [0.207, 0.417))	—	—	—	—
<i>Use of Technology in Learning → Capacity-Building Mechanisms</i>	0.124 (.011, [0.028, 0.221))	0.112 (.016, [0.021, 0.203))	0.112 (.016, [0.021, 0.203))	—	—	—	—
<i>Advisory Services → Capacity-Building Mechanisms</i>	-0.068 (.081, [- 0.145, 0.009))	—	—	—	—	—	—
<i>Training Programs → Capacity-Building Mechanisms</i>	0.215 (<.001, [0.108, 0.321))	0.176 (.001, [0.073, 0.279))	0.176 (.001, [0.073, 0.279))	—	—	—	—
<i>Extension Services → Capacity-Building Mechanisms</i>	0.116 (.027, [0.013, 0.220))	0.118 (.023, [0.017, 0.220))	0.118 (.023, [0.017, 0.220))	—	—	—	—
<i>Research Activities → Capacity-Building Mechanisms</i>	—	—	—	0.004 (.945, [- 0.104, 0.111))	—	—	—
<i>Teaching or Learning → Capacity-Building</i>	—	—	—	0.606 (<.001, [0.460,	0.607 (<.001, [0.465,	0.607 (<.001, [0.465,	0.607 (<.001, [0.465,

<i>Mechanisms</i>				0.752])	0.750])	0.750])	0.750])
<i>Knowledge Services</i> → <i>Capacity-Building Mechanisms</i>	—	—	—	0.348 ($<.001$, [0.218, 0.478])	0.350 ($<.001$, [0.238, 0.463])	0.350 ($<.001$, [0.238, 0.463])	0.350 ($<.001$, [0.238, 0.463])
<i>Publication Output</i> → <i>Structural Mechanisms</i>	-0.148 (.020, [- 0.273, - 0.023])	-0.148 (.013, [- 0.264, - 0.032])	-0.152 (.011, [- 0.269, - 0.035])	—	—	—	—
<i>Research Funding</i> → <i>Structural Mechanisms</i>	0.309 ($<.001$, [0.208, 0.410])	0.335 ($<.001$, [0.237, 0.433])	0.320 ($<.001$, [0.223, 0.418])	—	—	—	—
<i>Research Collaboration</i> → <i>Structural Mechanisms</i>	-0.147 (.018, [- 0.268, - 0.025])	-0.145 (.017, [- 0.265, - 0.026])	-0.135 (.026, [- 0.255, - 0.016])	—	—	—	—
<i>Teaching Methods</i> → <i>Structural Mechanisms</i>	-0.161 (.016, [- 0.293, - 0.030])	-0.098 (.079, [- 0.207, 0.011])	—	—	—	—	—
<i>Competence-Based Learning</i> → <i>Structural Mechanisms</i>	0.135 (.141, [- 0.045, 0.313])	—	—	—	—	—	—
<i>Curriculum Development</i> → <i>Structural Mechanisms</i>	0.307 ($<.001$, [0.198, 0.416])	0.334 ($<.001$, [0.233, 0.435])	0.327 ($<.001$, [0.226, 0.428])	—	—	—	—
<i>Faculty Development</i> → <i>Structural Mechanisms</i>	0.347 ($<.001$, [0.210, 0.483])	0.345 ($<.001$, [0.216, 0.475])	0.337 ($<.001$, [0.208, 0.467])	—	—	—	—
<i>Use of Technology in Learning</i> → <i>Structural Mechanisms</i>	0.163 (.009, [0.041, 0.285])	0.175 (.005, [0.054, 0.296])	0.141 (.017, [0.025, 0.256])	—	—	—	—
<i>Advisory Services</i> → <i>Structural Mechanisms</i>	-0.051 (.301, [- 0.149, 0.046])	—	—	—	—	—	—
<i>Training Programs</i> → <i>Structural Mechanisms</i>	0.078 (.254, [- 0.056,	—	—	—	—	—	—

<i>Mechanisms</i>	0.213))						
<i>Extension Services</i> → <i>Structural Mechanisms</i>	0.035 (.597, [-0.096, 0.166])	—	—	—	—	—	—
<i>Research Activities</i> → <i>Structural Mechanisms</i>	—	—	—	0.186 (.006, [0.052, 0.319])	0.186 (.006, [0.052, 0.319])	0.186 (.006, [0.052, 0.319])	—
<i>Teaching or Learning</i> → <i>Structural Mechanisms</i>	—	—	—	0.656 (<.001, [0.476, 0.837])	0.656 (<.001, [0.476, 0.837])	0.656 (<.001, [0.476, 0.837])	—
<i>Knowledge Services</i> → <i>Structural Mechanisms</i>	—	—	—	0.166 (.043, [0.005, 0.328])	0.166 (.043, [0.005, 0.328])	0.166 (.043, [0.005, 0.328])	—

Note. β = standardized path coefficient. "—" indicates that the path was not specified or was removed in that model during model refinement.

Source: Primary data, 2026

Table 11 presents the evolution of path coefficients across the full model and successive reduced models used to evaluate the mediating role of knowledge translation mechanisms in the relationship between knowledge production practices and community engagement outcomes. The model refinement process involved the systematic removal of statistically insignificant paths and constructs that contributed minimally to the explanatory power of the model. This approach allowed the study to identify the most parsimonious model while retaining theoretically meaningful and statistically significant relationships.

The results of the full model show that community engagement outcomes were significantly influenced by capacity-building mechanisms ($\beta = 0.144, p < .001$), structural mechanisms ($\beta = 0.092, p = .003$), teaching methods ($\beta = 0.099, p = .002$), use of technology in learning ($\beta = 0.101, p = .001$), and advisory services ($\beta = 0.083, p < .001$). However, several research-related variables, including publication output, research funding, and research collaboration, showed statistically insignificant direct effects on community engagement outcomes. This finding suggests that knowledge production activities do not necessarily translate directly into community benefits unless supported by effective knowledge translation mechanisms.

As the models were progressively refined, several paths were removed due to lack of statistical significance. In Reduced Models 1 and 2, the strongest predictors of community engagement outcomes remained capacity-building mechanisms, structural mechanisms, teaching methods, use of technology in learning, and advisory services. The persistence of these relationships indicated that educational and service-oriented activities are more closely linked to community engagement than traditional research outputs.

The transition from Reduced Model 2 to Reduced Model 3 involved collapsing sub-constructs into broader dimensions of research activities, teaching or learning, and knowledge services. This restructuring revealed that teaching or learning and knowledge services emerged as the most influential dimensions of knowledge production practices. Teaching or learning significantly influenced communication mechanisms ($\beta = 0.339, p < .001$), capacity-building mechanisms ($\beta = 0.606, p < .001$), structural mechanisms ($\beta = 0.656, p < .001$), and community engagement outcomes ($\beta = 0.253, p < .001$). Similarly, knowledge services significantly predicted

communication mechanisms ($\beta = 0.520, p < .001$), capacity-building mechanisms ($\beta = 0.348, p < .001$), structural mechanisms ($\beta = 0.166, p = .043$), and community engagement outcomes ($\beta = 0.222, p < .001$).

The results further reveal that communication mechanisms had a weak negative relationship with community engagement outcomes in Reduced Models 3 and 4 ($\beta = -0.065$ and $\beta = -0.066$ respectively). Although statistically significant, this relationship suggests that communication alone may not be sufficient to enhance community engagement unless accompanied by institutional support systems and stakeholder capacity development. Consequently, communication mechanisms were removed from subsequent models, leaving capacity-building and structural mechanisms as the primary mediating pathways.

Reduced Model 5 demonstrated that both capacity-building mechanisms ($\beta = 0.112, p = .002$) and structural mechanisms ($\beta = 0.081, p = .005$) significantly contributed to community engagement outcomes. Teaching or learning ($\beta = 0.257, p < .001$) and knowledge services ($\beta = 0.194, p < .001$) continued to exert strong direct effects on community engagement outcomes while simultaneously influencing the mediating mechanisms. These findings provide evidence that university core functions contribute to community engagement both directly and indirectly through institutional capacity development and supportive organizational structures.

The final model retained only the statistically significant pathways necessary to explain the mediating process. Teaching or learning remained the strongest predictor of capacity-building mechanisms ($\beta = 0.607, p < .001$), followed by knowledge services ($\beta = 0.350, p < .001$). Capacity-building mechanisms, in turn, significantly influenced community engagement outcomes ($\beta = 0.169, p < .001$). In addition, teaching or learning ($\beta = 0.280, p < .001$) and knowledge services ($\beta = 0.197, p < .001$) maintained significant direct effects on community engagement outcomes.

Overall, the model refinement process demonstrates that the influence of knowledge production practices on community engagement outcomes occurs primarily through capacity-building mechanisms. Teaching or learning and knowledge services emerged as the most consistent and influential predictors throughout all model iterations, while traditional research-related activities showed limited direct contributions. These findings provide strong evidence that knowledge translation mechanisms, particularly capacity-building processes, play a critical mediating role in transforming university knowledge into meaningful community engagement outcomes. Consequently, universities seeking to enhance societal impact should prioritize teaching innovations, knowledge-sharing services, and stakeholder capacity development as key strategies for strengthening community engagement.

Table 12: Comparison of Goodness-of-Fit Statistics Across the Full, Reduced, and Final Structural Models

Fit Index	Full Model	Reduced Model 2	Reduced Model 3	Reduced Model 4	Reduced Model 5	Final Model
χ^2 (Model vs. Saturated)	188.677	110.492	270.434	270.459	129.742	0.000
p-value	.000	.000	.000	.000	.000	—
χ^2 (Baseline vs. Saturated)	1154.924	800.260	990.496	990.496	677.434	411.450
Baseline p-value	.000	.000	.000	.000	.000	.000
RMSEA	.434	.139	.521	.402	.358	.000
RMSEA 90% CI Lower	.382	.115	.469	.362	.307	.000

RMSEA 90% CI Upper	.487	.164	.574	.443	.412	.000
Pclose	.000	.000	.000	.000	.000	1.000
CFI	.832	.876	.725	.727	.810	1.000
TLI	-1.801	.726	-0.650	.017	.238	1.000
SRMR	.037	.034	.113	.114	.082	.000
CD	.833	.738	.718	.718	.629	.550
AIC	6167.506	5477.457	2419.191	2415.216	1940.673	1032.875
BIC	6668.986	5568.635	2506.571	2494.997	1997.659	1067.067

Note. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker–Lewis Index; SRMR = Standardized Root Mean Square Residual; CD = Coefficient of Determination; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion. Lower values of χ^2 , RMSEA, SRMR, AIC, and BIC indicate better model fit, whereas higher values of CFI and TLI indicate improved model fit. The final model is a just-identified (saturated) model; therefore, its perfect fit indices should be interpreted with caution.

Table 12 presents the goodness-of-fit statistics for the full model and the successive reduced models developed to examine the mediating role of knowledge translation mechanisms in the relationship between knowledge production practices and community engagement outcomes. The results indicate a progressive improvement in model fit as non-significant paths were removed and related constructs were consolidated. Compared to the full model, Reduced Model 2 showed notable improvement, with RMSEA decreasing from .434 to .139, CFI increasing from .832 to .876, and SRMR improving from .037 to .034. In addition, both AIC and BIC values declined substantially across model refinements, suggesting increased model parsimony. However, Reduced Models 3 and 4 exhibited poorer fit characteristics, reflected by high RMSEA values (.521 and .402 respectively), low CFI values (.725 and .727), and SRMR values exceeding recommended thresholds. Although Reduced Model 5 demonstrated some improvement relative to Models 3 and 4, the model still failed to achieve acceptable levels of overall fit, as evidenced by an RMSEA of .358, CFI of .810, and SRMR of .082.

The final model produced perfect fit indices, including $\chi^2 = 0.000$, RMSEA = .000, CFI = 1.000, TLI = 1.000, and SRMR = .000, alongside the lowest AIC (1032.875) and BIC (1067.067) values among all models. While these statistics appear to indicate an excellent model fit, they should be interpreted with caution because the final model is a just-identified (saturated) model. In such models, the number of estimated parameters equals the number of available data points, resulting in perfect fit indices by definition. Consequently, the adequacy of the final model should be evaluated primarily on the basis of the significance and theoretical relevance of its structural paths rather than the goodness-of-fit indices alone. Overall, the model refinement process demonstrates that simplifying the model by retaining only the most meaningful relationships resulted in a more parsimonious structure that provides clearer evidence of the mediating role of capacity-building mechanisms in linking knowledge production practices to community engagement outcomes.

Hypothesis testing

The mediation analysis provides sufficient statistical evidence to reject the null hypothesis that knowledge translation mechanisms do not mediate the relationship between knowledge production practices and community engagement outcomes in selected universities in Central Uganda. The results show that knowledge production practices significantly influence capacity-building mechanisms, particularly teaching or learning ($\beta = 0.607$, $p < 0.001$) and knowledge services ($\beta = 0.350$, $p < 0.001$), while capacity-building mechanisms

significantly affect community engagement outcomes ($\beta = 0.169$, $p < 0.001$). Furthermore, teaching or learning ($\beta = 0.280$, $p < 0.001$) and knowledge services ($\beta = 0.197$, $p < 0.001$) also have significant direct effects on community engagement outcomes, indicating partial mediation. Therefore, knowledge translation mechanisms partially mediate the relationship between knowledge production practices and community engagement outcomes, leading to the rejection of the null hypothesis.

DISCUSSION

The findings of this study indicate that knowledge production practices significantly influence community engagement outcomes in universities in Central Uganda. However, the influence varies across the different dimensions of knowledge production practices. The results revealed that teaching or learning and knowledge services were significant predictors of community engagement outcomes, while research activities did not exert a significant direct effect in the final structural model. These findings suggest that the contribution of universities to community development depends not only on the generation of knowledge but also on the extent to which such knowledge is applied, disseminated, and utilized by communities. This finding supports the Knowledge Translation Theory, which posits that knowledge creates societal value when it is transformed into accessible and practical forms that address real-world challenges.

The significant positive effect of teaching or learning on community engagement outcomes confirms the important role of educational processes in promoting university–community interactions. Teaching or learning emerged as the strongest predictor in the final model, both directly and indirectly through capacity-building mechanisms. This finding is consistent with Bringle and Hatcher (2016), who argue that service learning and community-based learning strengthen civic engagement, social responsibility, and knowledge exchange between universities and communities. The findings further suggest that curriculum development, experiential learning, and community-oriented teaching approaches provide opportunities for universities to address societal challenges while enhancing students' practical competencies and community awareness.

Similarly, knowledge services significantly influenced community engagement outcomes. The findings indicate that activities such as advisory services, training programmes, outreach activities, and extension services provide essential channels through which academic knowledge is transferred and applied within communities. This finding supports Compagnucci and Spigarelli (2024), who contend that knowledge exchange mechanisms enable universities to contribute directly to local development by making specialized knowledge available to external stakeholders. Through these services, universities strengthen community problem-solving capacity and enhance the practical utilization of knowledge generated within higher education institutions.

A major contribution of this study is the identification of capacity-building mechanisms as the primary mediator between knowledge production practices and community engagement outcomes. The results demonstrate that teaching or learning and knowledge services significantly strengthen capacity-building mechanisms, which subsequently improve community engagement outcomes. This finding suggests that the development of stakeholder competencies, skills, and knowledge is a critical pathway through which universities generate societal impact. The results are consistent with Bock et al. (2025), who found that capacity development initiatives improve collaborative problem-solving and strengthen university–community partnerships. Therefore, capacity-building mechanisms provide an effective means of translating academic knowledge into sustainable community benefits.

The findings further reveal that communication mechanisms alone were insufficient to generate positive community engagement outcomes. Although communication mechanisms facilitated knowledge dissemination, their direct effect on community engagement outcomes was weak and negative in some model iterations. This suggests that information sharing by itself may not produce meaningful engagement unless communities possess the capacity and institutional support needed to apply the knowledge received. Similarly, structural mechanisms contributed positively to community engagement outcomes in several model iterations, highlighting the importance of institutional policies, frameworks, and support systems in facilitating knowledge translation. However, their influence was less substantial than that of capacity-building

mechanisms, indicating that investment in stakeholder capabilities may be more critical than investment in structures alone.

The study also provides important insights regarding the role of research activities in promoting community engagement. Although research is a fundamental university function, the findings indicate that research activities did not have a significant direct effect on community engagement outcomes in the final model. This finding suggests that research outputs alone do not automatically create societal impact. Instead, research findings must be translated through teaching activities, training programmes, advisory services, extension initiatives, and other knowledge-sharing platforms before they can effectively benefit communities. This observation supports the argument by Benneworth et al. (2016) that the societal value of research depends largely on the mechanisms used to disseminate and apply knowledge rather than on knowledge production alone.

Overall, the findings confirm that knowledge translation mechanisms mediate the relationship between knowledge production practices and community engagement outcomes. In particular, capacity-building mechanisms emerged as the most important pathway through which universities transform knowledge into community benefits. Teaching or learning and knowledge services were found to be the most influential dimensions of knowledge production practices, exerting both direct and indirect effects on community engagement outcomes. These findings suggest that universities seeking to strengthen their societal relevance should invest in capacity-building programmes, community-based learning initiatives, advisory services, and other knowledge translation strategies that facilitate the practical application of academic knowledge. Such investments would enhance the contribution of universities to sustainable community development and societal transformation.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study established that knowledge translation mechanisms play a pivotal role in mediating the relationship between knowledge production practices and community engagement outcomes in universities in Central Uganda. The findings revealed that the contribution of universities to community development depends not only on the generation of knowledge through research, teaching, and knowledge services but also on the effectiveness of mechanisms that facilitate the translation of such knowledge into practical and accessible forms for community use.

Furthermore, the study found that capacity-building mechanisms constitute the most important pathway through which knowledge production practices influence community engagement outcomes. Teaching or learning and knowledge services emerged as the strongest contributors to both knowledge translation and community engagement. The study therefore concludes that the effectiveness of knowledge production practices in promoting community engagement is largely determined by the extent to which knowledge is translated into relevant, usable, and actionable interventions. Consequently, strengthening institutional frameworks and mechanisms for knowledge translation is essential for enhancing the societal relevance and developmental impact of universities in Central Uganda.

Recommendations

1. Universities should establish formal knowledge translation structures, such as innovation hubs, knowledge-brokering units, and community engagement centers, to facilitate the systematic transfer of knowledge from research and teaching into practical community interventions.
2. Government and policymakers should develop supportive policies and collaborative platforms that strengthen partnerships among universities, communities, industry, and civil society organizations to enhance knowledge sharing, co-creation, and utilization for community development.

3. Universities should prioritize capacity-building initiatives for community stakeholders through training programmes, advisory services, extension activities, and community-based learning approaches. Such initiatives will enhance the ability of communities to access, understand, adapt, and apply university-generated knowledge to address local development challenges and improve community engagement outcomes.
4. Universities, research funding agencies, development partners, and government institutions should establish dedicated funding mechanisms to support knowledge translation activities, including community-engaged research, stakeholder engagement workshops, policy dialogues, dissemination events, and extension programmes. Increased investment in knowledge translation will strengthen the conversion of research outputs into tangible community and developmental outcomes.
5. Universities should strengthen research communication and dissemination practices by promoting the use of policy briefs, executive summaries, community reports, infographics, digital platforms, and media engagements to communicate research findings to diverse stakeholders. Effective research communication will improve the accessibility, visibility, and utilization of university-generated knowledge by communities, policymakers, and practitioners, thereby enhancing community engagement outcomes.

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