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# Impact of Industrial Attachment Program and Collaboration between Rwandan Industry-Educational Institutions

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## Abstract

**Objectives:** In today's competitive job market, many graduates in Rwanda struggle to find meaningful employment due to a lack of practical skills and work experience. This research aimed to understand the real impact of industrial attachment programs on student development and to evaluate how well Rwandan industries collaborate with educational institutions in bridging the gap between classroom knowledge and workplace skills. **Methods:** A cross-sectional study design was used, and data were collected from 566 participants through structured questionnaires, with a 90% response rate. The sample included university students, recent graduates, employees, and employers from various sectors such as education, health, manufacturing, and finance. SPSS version 22 was used for data analysis and descriptive statistics was used for data analysis and data were summarized in tables. **Findings:** The findings show that 94.1% of respondents had participated in internship programs, with 66.6% reporting that they joined mainly to gain hands-on experience. Key benefits of these programs included improvement in teamwork (66%), problem-solving skills (63.8%), and application of theoretical knowledge in real-world tasks (57.4%). From the industry perspective, 70.2% agreed that internships improved their organizational productivity, while 66.4% mentioned access to a more skilled workforce as a major benefit. However, industries also reported challenges such as limited resources (73.3%), insufficient support from educational institutions (46%), and lack of government involvement (34%). **Novelty:** The novelty of this study lies in its dual focus: analyzing both the individual-level outcomes for students and the institutional-level collaboration between industry and academia, which is often overlooked in Rwandan policy debates. Unlike previous studies that focused only on internship benefits, this research provides a comprehensive picture including numerical data on challenges, skill gaps, mentorship quality, and collaboration levels. Future studies should explore the long-term career impact of internships and

customize internship models for different sectors in Rwanda. Higher learning institutions should design programs that promote industrial cooperation and highlights the clear guidelines of internship required during the final year completion of the program of study.

**Keywords:** Industrial attachment; internship; student development; collaboration; industry-academia; Rwanda; skills gap; mentorship; employment readiness

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## 1 INTRODUCTION

The transition from academic learning to real-world employment demands not only theoretical knowledge but also practical skills for global job market of 21<sup>st</sup> century. Industrial attachment programs or work-integrated learning have emerged as vital bridges between classroom instructions and industry expectations<sup>(1)</sup>. For decades, it was observed in different countries, from developed economies like the United States to emerging nations in Africa, that there is a growing recognition that practical experience equips students with relevant skills, which enhances employability, and fosters innovation for both hosting institutions and home institution, but also to students engaged internship activities<sup>(2)</sup>.

Several studies have reported the role of industrial attachment globally, and the majority focused on isolated case studies or presented general findings without examining the dynamics of collaboration between educational institutions and industries in depth. It was documented that internship benefits in Kenya but did not explore systemic coordination challenges<sup>(3)</sup>, similarly, another study examined student outcomes in Uganda but omitted employer perspectives<sup>(4)</sup>. In Kenya, a study carried out focused on Student learning outcomes but Lacked employer/industry collaboration analysis<sup>(5)</sup>, another study in Uganda focused on Graduate employability post-internship No framework for structured placement & mentoring<sup>(6)</sup>, OECD Report conducted globally study the role of WIL in youth employment Broad global overview; limited context-specific data<sup>(7)</sup>.

ILO report for Africa-wide focused on the Internships for labor market readiness and Weak enforcement of standards and supervision<sup>(8)</sup>. PAGE report in Rwanda focused on TVET and skills alignment but does not address student internship challenges<sup>(9)</sup>, NISR in Rwanda focused on Youth unemployment and skills gap but no focus on collaboration between sectors<sup>(10)</sup>. Another study focused on Rwanda Industrial training effectiveness in universities but no national supervision model discussed<sup>(11)</sup>, in MINEDUC Policy Rwanda focused on Skills development strategy present; implementation remains fragmented<sup>(12)</sup>, in Zimbabwe, a conducted study on Academia-industry partnerships focused on strong theory but limited practical application<sup>(13)</sup>. A study carried out in East Africa focused on Employer perspectives on internships but Employers' needs not reflected in curriculum<sup>(14)</sup>.

In Rwanda, available literature is often descriptive, offering limited empirical analysis on collaboration frameworks and lacking policy-oriented recommendations<sup>(15)</sup>, and again industrial attachment programs are strategically positioned to support the country's Vision 2050 agenda, which aims to transform the nation into a knowledge-based economy. Despite ambitious policy reforms, including the Rwanda National Skills Development and Employment Promotion Strategy challenges persist<sup>(16)</sup>. Many students report inadequate mentorship, poor coordination between universities and industries, and limited placement opportunities. Similarly, industries express dissatisfaction with the job readiness of graduates, citing misalignment between academic curricula and workplace demands<sup>(17)</sup>.

Moreover, there is little critical discussion about what remains unsolved: How can institutions ensure that attachment programs truly serve both student development and industry innovation? What frameworks exist or are missing; to regulate and strengthen these collaborations? No previous study, to our knowledge, provides a robust diagnosis of the partnership mechanisms that enable or hinder effective industry-academia collaboration in Rwanda. This paper addresses these gaps by providing: A holistic assessment of the impact of industrial attachment on students' professional and personal development, an evaluation of how industries benefit from and contribute to these programs, An analysis of collaboration structures, incentives, and obstacles between industries and educational institutions in Rwanda. Unlike previous works, this study integrates perspectives from students, academic institutions, and employers while also examining policy frameworks and institutional readiness. The findings offer actionable recommendations that contribute to Rwanda's national goals and can inform broader regional practices.

From the reviewed literature, it is evident that while industrial attachment programs are recognized as important, there is a persistent gap in how effectively universities and industries collaborate to deliver high-quality internship experiences. Existing models often lack unified supervision, formal evaluation metrics, and clear incentive structures for stakeholders. Furthermore, no Rwandan-based study has sufficiently integrated the voices of students, employers, and education policymakers into a single analysis. Despite government efforts and the recognized importance of industrial attachment programs in Rwanda, collaboration between educational institutions and industry remains weak, fragmented, and largely unregulated.

This undermines the potential impact of the programs on graduate employability, innovation capacity, and national economic transformation.

## 2 METHODOLOGY

This was a cross-sectional survey design, allowing data collection from a diverse group of respondents at one point in time November 2023, and the population including the final university students and recent graduates from INES Ruhengeri, industry employees who works or have ever worked with interns, and industry employers. The simple random sampling was used to recruit the final-year university students and Fresh graduates who recently completed their attachments while purposive sampling was used to recruit the Industry employees working with interns, Industry employers hosting or managing the programs. A total of 566 individuals were recruited based on power analysis calculations to ensure the results were statistically significant. Out of these, we successfully received 510 completed responses, yielding a high and reliable response rate.

The data collection was carried out using a structured Google Form questionnaire, and was extracted in google spreadsheet. To reach the intended respondents, facilitators were placed both within university (to engage students and graduates) and industrial organizations (to engage employers and employees). This hybrid distribution approach improved accessibility and encouraged honest participation from all key actors. Before full rollout, the questionnaire underwent a pilot test to ensure its reliability and clarity. The Cronbach's Alpha for internal consistency was calculated at 0.7809, which is considered significant in social science research. Additionally, the tool was reviewed by four academic and industry experts, who validated its relevance and quality, confirming that it accurately measured the impact of industrial attachment programs and the nature of collaboration between Rwandan institutions.

The questionnaire focused on the following key parameters: For students and graduates: skill acquisition, mentorship experience, relevance of attachment to academic field, challenges faced. For employers and employees: intern performance, challenges hosting students, benefits received, expectations for collaboration. For both: level of engagement between institutions and industries, presence of supervision, and improvement suggestions. After collection, all data were exported into Microsoft Excel for initial cleaning and arrangement, especially for multiple-choice and matrix questions. From there, the data was coded and analyzed using SPSS version 20. We applied descriptive statistics to summarize frequencies for all responses provided.

## 3 RESULTS AND DISCUSSION

Our study recorded a 90 % response rate (510/566), showing strong engagement across a diverse pool of respondents similar to recent Rwandan internship surveys. Most respondents were young (80.4 % under 35), largely male (58.6 %), held bachelor's degrees (47.1 %), and were employed (58.8 %), reflecting a well-educated and engaged participant base. It was also reported that youth-dominated sample attentive to employability concerns<sup>(18)</sup>. A large majority (94.1 %) had participated in internships, with 70.6 % undertaking academic attachments. Perceptions vary: 53.2 % affirmed positive academic contribution, while 38.3 % noticed moderate benefit, a result consistent with similar Rwandan studies where internship influence was noticeable but uneven<sup>(18)</sup>. Skills development showed strong improvement in teamwork (66 %), problem-solving (63.8 %), and real-world application (57.4 %). In Kenya and Rwanda tracer studies showed that internships drove growth in soft and technical competences<sup>(18)</sup>.

Sixty-one percent of participants reported that internships met their expectations, a result consistent with global findings that only well-structured programs fully satisfy student goals. Similarly, over 61 % believed their attachments improved job prospects, supporting assertions by Nkundabaramye et al reported that internships boost employability<sup>(19)</sup>. Motivations were led by practical experience (66.6 %) and academic requirements (55.3 %), aligned with the core aims of Rwanda's Ministry of Public Service Internship Programme<sup>(20)</sup>,<sup>(21)</sup>. Nevertheless, significant challenges also emerged 62.2 % noted poor networking, 42.2 % observed skill mismatches, and 33.3 % experienced weak mentorship. These mirror national gaps cited in implementation reviews: fewer placement opportunities, undertrained supervisors, and no unified quality standards.

A high 90.2 % of respondents confirmed collaboration between educational institutions and industry in attachment programs. However, depth varied: 13.2 % rated it comprehensive, 45.3 % moderate, reflecting limited engagement often documented in Rwandan studies. Mechanisms such as mentorship (59.1 %), shared objectives (56.8 %), and joint program design (43.8 %) were in place, yet components like evaluation systems (43.2 %) and quality assurance (40.9 %) remained underdeveloped. This pattern is similar to findings by Mutwarasibo et al., where dialogue and co-design were acknowledged, but formal systems for collaboration were weak. Theme This Study National/Regional Studies. Response & Demographics 90 % response, youth-led Similar participant profile. Academic & Skill Impact 53 % academic benefit; soft skills 60–66 % Echoes<sup>(19)</sup>. Employability & Motivation 61 % improved job prospects; practical + requirement-led National goals aligned. Industry Gains & Challenges High productivity gains; mentoring weak Matches national reviews.

This study sought to understand how industrial attachment programs influence student development and how well Rwandan industry collaborates with educational institutions. From a sample of 566 targeted individuals, 510 fully completed the survey, giving a strong response rate of 90%. This suggests high relevance and interest in this topic across sectors, comparable to similar studies in Kenya and Uganda, which reported response rates between 80–92%<sup>(20)</sup>. The data showed that 66% of respondents reported gaining strong teamwork skills during their internships, followed closely by improved problem-solving (63.8%) and the ability to apply knowledge in real-world contexts (57.4%). These findings are very similar to results from the National Internship Programme where employers rated communication and collaboration as the top outcomes of student attachments<sup>(1)</sup>. Additionally, research from South Africa also found that teamwork and critical thinking were the most improved skills among interns, reinforcing the idea that internships serve as powerful learning spaces for soft skill development<sup>(22)</sup>. More than half of the respondents also reported improved punctuality and time management (57.4%), better networking opportunities (57.4%), and clearer career goals (48.9%). These numbers are aligned with findings by Nkundabaramye et al who found that structured internships directly help Rwandan youth set professional targets<sup>(19)</sup>. Improved work ethic (46.8%), exposure to workplace standards (42.6%), and clearer understanding of industry trends (21.3%) suggest that even short attachments can lead to transformative experiences when well-managed.

Comparatively, a tracer study in Nigeria showed similar trends, where students claimed that industrial attachment helped them transition from theoretical to practical problem-solving<sup>(23)</sup>,<sup>(24)</sup>. an area where this Rwandan study also observed gaps, as discussed below. From the industry perspective, many respondents recognized clear value in hosting interns. Around 70% acknowledged that internship programs improved productivity in their organizations, while 66.4% mentioned that the presence of interns helped build a more skilled workforce. Other frequently cited benefits included reduced recruitment costs (42.6%), enhanced employer branding, and partnerships with educational institutions (47%). In Rwanda specifically, companies participating in the National Industrial Attachment Framework pilot project in 2022 reported that interns contributed positively to innovation and service delivery<sup>(19)</sup>. However, challenges remain, for example, about 62.2% of participants felt that internship programs lacked sufficient networking opportunities. Skills mismatch was a major concern (42.2%), as was the quality of mentorship (33.3%) and poor coordination from institutions (31.1%) (Table ??). These issues reflect gaps also identified in studies by the World Bank noted that many African internship programs suffer from lack of structure, minimal feedback systems, and weak institution industry dialogue<sup>(25)</sup>.

Another important point raised was the limited involvement of government and inadequate financial or logistical support. For example, 34% of respondents mentioned that government support is lacking, while 46% said their own universities did not offer enough help in navigating the internship process. These findings align with another study, which concluded that Rwanda needs stronger legal frameworks and national standards to ensure internships are accessible and beneficial to all students regardless of location or institution<sup>(26)</sup>. From the current findings, authors observed that industrial attachment is a pearly to applied skills among the candidates and increases the chance of employments among graduates. Students are equipped with enough theoretical knowledge and transferred to applied skills during internship. Collaboration between industries and universities was reported to be among the significant framework to provide the knowledge and skills required for the students. Quality education encloses both class attendance and industrial attachments.

Out of the 450 respondents who had participated in internship programs, 67.4% reported being treated well during their placements. This shows that the majority of students felt welcomed and respected in their host organizations. However, 8.7% said they were not treated fairly, which points to a need for stronger intern protection and monitoring systems. These findings are in line with a study carried out in Rwanda, which highlighted that while most interns have positive experiences, a significant minority face challenges like lack of support or being given tasks unrelated to their field of study<sup>(27)</sup>. A similar study in Uganda found that although 72% of students were satisfied with their treatment, around 10% experienced exclusion or discrimination<sup>(28)</sup>. This comparison suggests that Rwanda's situation is not unique, but also emphasizes the urgency of creating guidelines that promote fairness and accountability in all hosting institutions. Several important challenges were highlighted by interns during the study. The most common challenge, cited by 62.2% of respondents, was limited networking opportunities. Internships are not only for learning tasks; they are also for building professional relationships. Unfortunately, many students found it hard to connect with mentors or other professionals in their field.

In comparison, a 2022 report by the Rwanda Development Board (RDB) on the National Internship Program showed that most students wanted more structured networking events and mentorship during their attachments<sup>(29)</sup>. Skills mismatch was another issue 42.2% of respondents felt that what they learned in class did not match the tasks given at work. This finding mirrors results from a World Bank study (2019), which reported that across Sub-Saharan Africa, one of the biggest gaps in workforce development is the misalignment between university curricula and industry expectations<sup>(30)</sup>. Another major issue raised in this study is the quality of internships. About 37.8% of interns said they were not given meaningful tasks or proper guidance. 33.3% said supervision and mentorship were weak, which made their internships less productive. These findings support the

conclusions of another study carried out in Rwanda, which found that in Rwanda, many internship programs are run without clear learning objectives or defined roles for mentors, making it hard for students to gain real value<sup>(19)</sup>.

The study also found that many interns felt confused about their responsibilities. 31.1% reported a lack of clear objectives, and 33.3% mentioned limited awareness about what the internship program was really meant to achieve. This problem is echoed in the Higher Education Council (HEC) Rwanda 2021 review, which recommended that universities provide clearer pre-internship orientation and ongoing support. In South Africa, a study showed that interns were more likely to succeed when they had written learning goals and regular feedback from supervisors<sup>(31)</sup>. Rwanda can benefit from adopting such models, where students, mentors, and universities sign structured internship agreements at the start of the attachment. About 31.1% of respondents struggled to fit into the work culture of their host institutions. They felt that the expectations of behaviour and communication were not always explained clearly. This is a soft but important barrier, especially for students entering formal workplaces for the first time. Research conducted in Malawi also showed that many interns face challenges adapting to workplace culture due to a lack of guidance on professional ethics and norms<sup>(32)</sup>.

In addition, legal and regulatory challenges were reported by 20.0% of respondents, especially concerning unpaid internships, lack of formal contracts, or unclear rights for interns. Evaluation and feedback mechanisms were also weak only 24.4% said they received proper feedback during their attachment. This is consistent with the African Union's Agenda 2063 education report, which calls for more standardization of internship evaluation across member countries<sup>(33)</sup>. Finally, 22.2% of students said they were not given equal opportunities to contribute in the workplace. This can happen when interns are ignored, or when only students from well-connected schools or urban areas get access to good placements. The misconnection between interns and industry supervisors was highlighted by the industrial attachment attendants which could be a result from the improper communication between higher learning institutions and industries. Students that are sent in industrial attachment will always need a support resulting from the best collaboration.

A study highlighted that public-private partnerships in technical and vocational education boost innovation and help close skill gaps in Africa. Despite these benefits, not all industries are convinced. A considerable number still face challenges like poor mentorship, lack of readiness from interns, or misalignment between academic training and actual work needs (Table ??). The partnership between public and private are signed in papers and implementation is well not coordinated which results in misinformation between employees of the two institutions in collaboration, it seems they are not aware of the memorandum of understanding signed, and lead to the challenge when they are requested to supervisor students in industrial attachment. Interns also are not informed and sometimes are not advised on the positive behavior required during internship leading to the difficulties in management of the interns for the hosting companies. Curriculum that are being taught in higher learning institutions are sometimes compromising the industrial needs which could be a result of the low inclusion in curriculum development. In a study conducted in Rwanda highlighted that many Rwandan industries complained that some interns lacked discipline and basic workplace skills, which made internships less effective<sup>(14)</sup>. Our study also found that 42.6% of industries valued internship programs for mentorship and learning, while 23% appreciated the fresh ideas interns bring. However, only 16.5% noted legal compliance as a benefit, which shows that few industries see internships as part of their corporate responsibility or labor policy. This contrasts with ILO findings, which emphasized the importance of internships in preparing youth for decent work in line with labor standards<sup>(34)</sup>.

The results from this study show that there is a strong and growing relationship between Rwandan industries and educational institutions when it comes to industrial attachment. Out of 440 participants surveyed, an impressive 90.2% recognized that some form of collaboration exists in the design, support, or implementation of internship programs. However, only 13.2% said the collaboration was extensive, while 45.3% described it as moderate, and 21.6% viewed it as limited. These mixed opinions reveal that while many industries and institutions work together, there is still room to strengthen the partnership (Table ??). The fact of the lack of funding of internship has been a pending issue as per experience, students are not supported enough either by the home institutions or the hosting institution during internship, which could affect the knowledge transfer among the interns. The consideration of the financial aspects could be important to improve the industrial attachment among the students but also two institutions can sign on this agreement and consider it as part of concern to transfer knowledge. Comparing our findings to a recent study carried out in Kenya, where only 68% of university-industry stakeholders reported active collaboration on internships<sup>(35)</sup>, Rwanda seems to be ahead in terms of inclusion and participation. Similarly, in Ghana, only about 60% of firms collaborate with academic institutions, mainly due to lack of communication and structured agreements<sup>(36)</sup>. These comparisons suggest that Rwanda has made meaningful progress but must now focus on improving the depth and quality of that engagement.

Our research also found that 34.1% of students secured internships through their institutions, while 29.5% relied on personal connections. This is consistent with findings which argued that many African students still depend on informal networks to access industrial placements due to weak institutional coordination<sup>(37)</sup>. Encouragingly, 31.8% of participants in our study accessed internships through formal applications, showing that transparent systems are growing in Rwanda. Another key

finding is that 59.1% of respondents praised mentorship and supervision as key outcomes of collaboration. The same percentage said documentation and reporting practices were well structured. These are strong signs that educational institutions are not only placing students but also tracking their performance. 56.8% highlighted shared goals and objectives, suggesting that both sectors understand the importance of aligning education with market needs. This mirrors research from UNESCO-UNEVOC, which emphasizes that successful internship systems depend on mutual planning and evaluation between schools and employers<sup>(38)</sup>. Still, challenges remain for example, only 30% of participants felt that student selection and placement were collaborative, and fewer than half believed the evaluation process was consistently strong. This aligns with findings of a study carried out in Rwanda, where industry players raised concerns about receiving interns who were not well prepared or selected without input from the host organizations<sup>(14)</sup>.

Participants also identified areas that need more focus. Only 22.5% said continuous improvement mechanisms were in place, and even fewer acknowledged efforts to scale or expand the programs. Recognition and certification, important for boosting students' confidence and employability, were mentioned by only 20% of respondents. This contrasts with South Africa's Department of higher Education and Training (DHET) 2021 report, where formal certification of work-integrated learning is mandated, improving graduate outcomes significantly<sup>(39)</sup>. The findings from this study highlight the significant impact of industrial attachment programs on student development and the collaboration between Rwandan industry and educational institutions. The robust response rate of 90% indicates a high level of engagement from respondents, suggesting strong interest and relevance in the subject matter. The gender distribution observed in this study, where 58.6% of respondents were male and 41.4% were female, is consistent with trends in industrial and technical education, where male participation often outweighs female involvement. Moreover, the youthful demographic of the respondents, with 80.4% under the age of 35, mirrors global trends where younger individuals increasingly engage in internship programs to enhance employability. This suggests that industrial attachment programs primarily attract younger individuals seeking career development opportunities.

The predominance of participants holding a bachelor's degree (47.1%) underscores the importance of tertiary education in professional preparedness. This aligns with previous studies highlighting that higher education institutions play a pivotal role in equipping students with the skills required in the workforce<sup>(40)</sup>. The employment distribution, where 43.1% of respondents are full-time employees and 29.4% are students, suggests that internships serve as a transitional phase for students entering full-time employment. Moreover, the finding that 71.4% of employed participants have one year or more of experience suggests that industrial attachment programs effectively integrate students into long-term career paths. The high engagement in internship programs (94.1%) reinforces previous research indicating that internships significantly enhance student employability<sup>(41)</sup>. The variation in internship types, 70.6% academic internships and 29.4% industry-academic partnerships demonstrates the diversity in industrial attachment structures, supporting claims that experiential learning models should be flexible to accommodate various career paths.

The mixed perceptions regarding the linkage between internship experiences and field expertise, with 37% expressing skepticism, suggest that some students may not see direct applicability of their internship experiences to their career ambitions. This is consistent with studies indicating that internship effectiveness depends on alignment with industry needs and proper mentorship<sup>(42)</sup>. Nonetheless, the majority perception (82.6%) that internships align with workforce skills needs underscores their relevance in preparing students for industry roles. The study reveals that 6b 1.2% of participants found their internship expectations met, reinforcing prior research that well-structured internships enhance job readiness. Furthermore, the strong agreement (61.5% students, 61.8% employed) that internships improve job prospects aligns with studies highlighting that internship experiences provide competitive advantages in the labor market. The diverse motivations for participating in industrial attachment, particularly the dominant factor of gaining practical work experience (66.6%), support the experiential learning theory, which emphasizes hands-on experience as crucial for skill acquisition. The 55.3% participation driven by academic requirements aligns with research indicating that mandatory internships improve skill application.

The lower percentage of respondents motivated by financial incentives (3.6%) suggests that students primarily view internships as skill-building rather than income-generating opportunities. The study's findings on skill development align with global research emphasizing internships' role in fostering teamwork (66%), problem-solving (63.8%), and real-world knowledge application (57.4%). These skills are critical in today's labor market, where employers seek candidates with both technical and soft skills. The reported improvements in career clarity (48.9%) and work ethic (46.8%) further highlight the role of internships in shaping professional identities. From an industry perspective, the study identifies key challenges such as limited networking opportunities (62.2%) and skills mismatch (42.2%). These findings are consistent with prior research suggesting that effective internship programs require better industry-academic collaboration to bridge skill gap. The issue of inadequate mentorship (33.3%) and supervision supports findings that mentorship quality directly influences internship effectiveness. Additionally, legal and regulatory compliance challenges (20.0%) highlight the need for policy interventions to standardize internship frameworks.

## 4 CONCLUSION

This research brings a fresh understanding of how industrial attachment programs affect student development and how Rwandan industries collaborate with educational institutions. What makes this study different from others is the broad national sample and the focus on real experiences from both students and industry, supported by quantitative data. Over 94% of students had internship experience, and 66% confirmed improvement in teamwork, while 63.8% gained problem-solving skills. This shows clearly that attachment programs are more than academic, they develop real-world skills. A strong point of this research is its comprehensive view, where voices from both students and industry were captured. It also showed how collaboration between institutions and companies is functioning but still uneven, with 90.2% acknowledging collaboration, yet only 13.2% saying it's strong. This highlights an important gap in practice versus perception, which earlier studies in Kenya and Ghana did not explore at this depth. However, the study also had its limitations. It relied on self-reported data, which may have some bias, and did not deeply assess internship outcomes per sector or region. Also, challenges like limited resources, weak mentorship, and skills mismatch show that the current system still lacks structure and consistency. To improve, Rwanda needs a strong national policy for industrial attachment, with clear roles, quality assurance, and performance tracking. Institutions should increase awareness, student preparation, and monitoring. Industries need support in providing structured internships, and government agencies should play a more active coordination role. Open questions remain around how internship quality varies across fields like tech vs agriculture and how long-term career impacts can be measured. In conclusion, Rwanda has built a good foundation for industrial attachment, but to fully unlock its value, all stakeholders must invest more in structured collaboration, feedback systems, and inclusive planning. With the right changes, industrial attachment can become a strong driver of youth employment, innovation, and national development.

### 4.1 Limitation

This study was limited to the current students, fresh graduates, and internship supervisors from INES Ruhengeri institute of applied sciences. The study was also limited companies and institutions that have ever received the students from INES Ruhengeri, for this the study cannot reach the countrywide conclusion based on one university and few companies.

### 4.2 Recommendations

Based on the findings of this study, it is strongly recommended that both educational institutions and industry partners take active steps to improve the quality and impact of industrial attachment programs in Rwanda. One of the key areas needing attention is the limited networking opportunities. A practical strategy would be for host institutions to organize a structured introduction during the first week of the internship, where interns are formally introduced to staff and given a chance to understand the work environment and build relationships across departments. There is also a need to improve the alignment between academic training and industry skill requirements. This can be achieved by engaging industry professionals in curriculum reviews and designing industry-informed internship tasks.

Educational institutions should provide stronger logistical and supervisory support to hosting organizations, particularly in areas where resources are limited. Joint planning, shared mentorship, and regular communication can reduce the gap between theory and practice. Moreover, enhancing collaboration requires structured mentorship and feedback mechanisms, supported by clear documentation and reporting systems. This help ensures accountability and track progress for both students and host organizations. To maintain long-term success, ongoing coordination and open communication channels between universities, technical schools, and industries are essential.

Periodic stakeholder forums, evaluation reviews, and collaborative internship fairs can foster better partnerships. Finally, future research should go beyond general analysis to explore the sector-specific needs of industry and the long-term impact of internships on employment outcomes. Investigating how different industries benefit from and contribute to internship programs help tailor solutions and policies more effectively. By investing in practical improvements and policy-driven collaboration, Rwanda can ensure that industrial attachment programs become a powerful engine for youth skills development, workforce readiness, and national growth.

## 5 Funding

None

## 6 Conflicts of Interest

None

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