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ROLE OF UNIVERSITIES IN AFRICAN SMART LOGISTICS INNOVATION ECOSYSTEMS

RESULTS OF STAKEHOLDER ENGAGEMENT WITH AFRICAN UNIVERSITIES

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EXECUTIVE SUMMARY

- This report documents the findings from Digilogic's engagement with academia stakeholders in digital logistics in Africa. This stakeholder engagement activity focused on universities' role in supporting smart logistics innovation in Africa.
- The exploration of the role of African universities included several representatives from African universities, listed below.
 1. Ahmed Agyapong: KNUST, Ghana
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 10. Sylvester Kaukungua: Namibia University of Science and Technology, Namibia
- The stakeholder engagement involved the formulation of preliminary propositions for the role of universities in supporting smart logistics innovation in Africa and the development of the propositions with the university representatives listed above.
- Preliminary propositions were based on reviewing current work by universities to support smart logistics innovation in Africa. Development of the propositions involved the participants providing written responses to questions about the propositions and providing verbal recommendations during a focus group on 21st November 2023.
- The results of this report will be disseminated widely and the relationship between the universities will be leveraged for further stakeholder engagement.
- The stages in this stakeholder engagement are reported in five sections: Background, Preliminary Propositions, Stakeholders' Responses, Finalised Propositions, and Conclusion.



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1. BACKGROUND

Collaboration between universities and industry is recognised as essential for innovation ecosystems. However, it has been stated in the African Innovation Ecosystem Roundtables report¹ that the African innovation ecosystem exhibited a high degree of fragmentation, characterised by varying maturity levels among different regions and participating countries. Notably, a substantial contrast exists between the larger, well-organised ecosystems in Kenya, Ghana, and South Africa and the smaller nations in Sierra Leone, Gambia, and Namibia.

In the context of the increasingly knowledge-based economy, the synergy among government, industry, and universities is crucial for effectively addressing challenges. However, this synergy appears to be lacking in African economies, with various factors contributing to this gap, including differing perceptions of the university's mission, industry needs, and policymaker roles. As explained by Outamba & Belhacen², in many African countries, universities often operate independently from industry, leading to a reliance on foreign knowledge sources for sustaining production and competitiveness. Furthermore, African universities face dual pressures from governments and industries to provide human capital while conforming to global standards for producing research and responsive leaders in the knowledge-based society³. These circumstances suggest that university-industry linkages in Africa may not be as elaborate as those in developed economies.

Nevertheless, African universities are increasingly recognised as pivotal players in driving innovation and entrepreneurship ecosystems across the continent⁴. While their primary mission has been education and knowledge creation, African universities have expanded their roles to engage with industries and contribute to economic development actively⁵. The literature review, which included scientific papers, book chapters, news articles, policy documents, and NGO's and governmental reports, is summarised below.

- **Enhancing Research and Development:** As in most parts of the world, universities in African countries play a vital role in advancing research and development efforts that address local challenges and stimulate innovation. These research initiatives can contribute significantly to economic growth. However, the disconnection between scientific research conducted in academic institutions and developing commercial products and services is typical across the continent⁶. This disconnect presents significant challenges, particularly concerning the scalability of businesses and the acquisition of investment capital. An additional challenge is that research findings generated within academic institutions often remain isolated within the campus and do not extend to practical applications or broader dissemination⁷.
- **Reducing Gender Disparities:** Efforts to reduce gender disparities in education and STEM fields can be seen as a priority in many African countries, and universities have a central role in improving the current numbers of female students. Initiatives like increasing female enrollment in science and technology-related subjects are already evident in countries like Rwanda, where the African Institute of Mathematical Sciences (AIMS) Rwanda promotes gender diversity in its programs, encouraging more women to pursue STEM careers⁸.
- **Knowledge and Skill Development:** African universities are crucial in equipping the continent's workforce with knowledge and skills in science, technology, and innovation. And have a pivotal role in providing training and mentorship to the students that corresponds to market and industry partners' needs. Collaboration between academia and the private sector for mentorship and skills development is critical. Nigeria's Covenant University exemplifies an institution committed to this mission. It offers quality education and training, equipping graduates with skills needed for a rapidly evolving job market, thereby contributing to economic development and global competitiveness. In 2021, during regional roundtables with local representatives of the innovation ecosystems, Senegal, Zambia, Namibia, Botswana, and Burkina-Faso

¹ <https://afrilabs.com/wp-content/uploads/2021/10/Mozilla-Report...pdf>

² https://link.springer.com/chapter/10.1007/978-3-030-23898-8_26

³ Ibid.

⁴ <https://afrilabs.com/wp-content/uploads/2021/10/Mozilla-Report...pdf>;

https://www.npc.gov.na/wp-content/uploads/2021/11/vision_2030.pdf

⁵ Ibid; https://fingo.fi/wp-content/uploads/2021/01/innovation-ecosystem-kenya_0.pdf

⁶ https://link.springer.com/chapter/10.1007/978-3-030-23898-8_26

⁷ <https://hal.science/hal-02544891v1/file/oep-12487.pdf>

⁸ <https://aims.ac.rw/2022/03/15/the-aims-approach-to-breaking-the-bias/>

highlighted the need for mentorship programs that guide young entrepreneurs, helping them develop and implement innovative solutions⁹.

- **Digital Literacy:** Promoting digital literacy is vital for understanding the digital world and developing scalable digital solutions. The universities can directly contribute to digital skill development so students can become technologically experienced and empowered; however, even within a specific country, there are significant disparities between the level of digital literacy and the digital environment of different universities¹⁰. For instance, in South Africa, inequalities within higher education institutions were perpetuated by categorising historically white universities (e.g., University of Cape Town, University of Pretoria) separately from black universities (e.g., University of Fort Hare, University of Zululand)¹¹. This structural classification negatively impacted education quality, particularly in rural institutions with limited network connectivity, severely disrupting digital work and learning.
- **Connectivity among Stakeholders:** Connectivity plays a crucial role in the success of startups, as it affects their access to other ecosystem stakeholders and their networks¹². Supporting infrastructure for entrepreneurship, including networking assets and accelerators, serves as vital connectors within the ecosystem. Universities can facilitate community-building and skill training events, in addition to networks among various stakeholders, ultimately forming clusters that enhance the overall strength of the ecosystem. For instance, in Dar es Salaam's innovation ecosystem, the primary connectivity networks revolve around the Buni Innovation Hub and the University of Dar es Salaam¹³.
- **Creating a supportive environment for business and entrepreneurship:** African universities have recognised the symbiotic relationship between academia and industry in fostering innovation and driving economic growth. They are increasingly establishing innovation and entrepreneurship hubs to nurture startups and promote the commercialisation of research. For instance, in Kenya¹⁴, the University of Nairobi's Collaborative for Digital Innovations (C4DLab) exemplifies how academia can bridge the gap between research and market application. C4DLab serves as both a research and incubation hub, facilitating the acceleration of research outcomes into viable commercial products. Similarly, Strathmore University houses iLabAfrica, a centre of excellence for ICT innovation and development, promoting collaboration with industry for practical solutions and supporting students who want to become entrepreneurs. Tanzania has experienced a rapid transformation in its innovation ecosystems in the past decade, and universities have played a central role in this transformation. From a handful of innovation hubs in its capital to support entrepreneurs, the country now counts over 40, including those in rural areas. Several spaces, including Kiota Hub at Tumaini University, Data Lab at the University of Dar es Salaam, and AMCET Hub at the Al Maktoum College of Engineering, collaborate closely with academic institutions, fostering improved collaboration. Data Lab specialises in leveraging data for impactful purposes, Kiota Hub assists students in turning their ideas into early-stage businesses, and AMCET Hub enhances students' skills and capacity with on-demand skill development¹⁵. An innovation ecosystem creates a conducive environment for innovative actors and entities to engage in open interaction, idea exchange, and mutual support, thereby promoting a sustained culture of innovation. It plays a crucial role in identifying and nurturing innovators, empowering them to generate solutions for pressing social challenges. African universities are emerging as dynamic catalysts in innovation and entrepreneurship ecosystems. Their roles extend beyond traditional education and knowledge creation to active participation in collaborative research, skills development, and the promotion of entrepreneurship. Examples from Kenya, South Africa, Rwanda, Burkina Faso, Senegal, Zambia, and Uganda illustrate how African universities drive innovation, foster entrepreneurship, and contribute to economic growth. As Africa continues to evolve in the global innovation landscape, the roles of these institutions are poised to become even more critical in shaping the continent's future.

⁹ <https://afrilabs.com/wp-content/uploads/2021/10/Mozilla-Report...pdf>

¹⁰ https://link.springer.com/chapter/10.1007/978-3-031-26490-0_9#Sec5

¹¹ <https://journals.co.za/doi/abs/10.31920/2634-3649/2021/v11n2a3>

¹² <https://direct.mit.edu/itgg/article/11/1-2/98/9831/Boosting-Tech-Innovation-Ecosystems-in-Cities-A>

¹³ <https://documents1.worldbank.org/curated/en/905101503998069531/pdf/119132-REVISED-40p-Dar-es-Salaam-ecosystem-digital-002.pdf>

¹⁴ https://fingo.fi/wp-content/uploads/2021/01/innovation-ecosystem-kenya_0.pdf

¹⁵ <https://afuturist.medium.com/what-you-need-to-know-about-tanzania-innovation-ecosystem-why-we-are-the-fastest-12ebfc7c32ef>

2. PRELIMINARY PROPOSITIONS

As listed below, preliminary propositions and related questions were distilled from consideration of the background information reported in the Background section above.

The questions were asked in the pre-focus group meeting survey and also served as guiding questions during the online focus group meeting.

Preliminary Proposition 1

By research and development work that addresses local logistics challenges, universities could drive economic growth in the local logistics sector.

Questions

Q1.1) What challenges do universities face in aligning logistics research and development work with their local logistics industry?

Q1.2) How does your university contribute to research and development for your local logistics sector?

Preliminary Proposition 2

By promoting gender diversity in logistics-related programs, universities would reduce gender disparities in smart logistics.

Questions

Q2.1) How is your university working to promote gender diversity in its logistics programmes?

Q2.2) Does your university have existing successes and/or new initiatives related to increasing gender diversity in the logistics industry?

Preliminary Proposition 3

By equipping the workforce with knowledge and skills needed by the logistics industry, universities would improve the performance of the logistics industry.

Questions

Q3.1) What formal programmes does your university offer to equip students with the skills needed for careers in logistics?

Q3.2) What extra activities does your university offer to equip students with the skills needed for careers in logistics?

Preliminary Proposition 4

By promoting digital literacy among students, universities would equip them with the digital skills necessary for digital logistics.

Questions

Q4.1) How does your university promote digital literacy among its students?

Q4.2) How do these efforts translate into digital skills for the logistics industry?

Preliminary Proposition 5

By facilitating connectivity among various stakeholders involved in digital logistics, universities could contribute to establishing digital logistics ecosystems.

Questions

Q5.1) How does your university facilitate connectivity among various stakeholders such as students, researchers, industry partners, and startups?

Q5.2) What role does your university play in fostering digital logistics ecosystems?



Preliminary Proposition 6

By increasing collaboration with the private sector, universities could better prepare their students for working in digital logistics ecosystems.

Questions

Q6.1) How can universities collaborate with the private sector to improve students' development of digital logistics technical expertise?

Q6.2) How can universities collaborate with the private sector to improve students' development of digital logistics management skills?

Preliminary Proposition 7

By creating environments such as digital hubs, universities would foster innovation and entrepreneurship within digital logistics ecosystems.

Questions

Q7.1) What are the existing resources within your university that support digital logistics innovation?

Q7.2) What are the existing resources within your university that support entrepreneurship in digital logistics?



3. STAKEHOLDERS' RESPONSES

Preliminary propositions and related questions were distributed among the stakeholders in a written survey and during the focus group discussion. Responses to the questions are collected below.

Preliminary Proposition 1

By research and development work that addresses local logistics challenges, universities could drive economic growth in the local logistics sector.

Q1.1) What challenges do universities face in aligning logistics research and development work with their local logistics industry?

- There is a gap between the universities and the industry. This lack of working collaboration makes it difficult for the universities to align their research towards the needs of the logistics industry.
- The industry has not yet embraced academia, given that the logistics programmes have recently been introduced into the university sphere. The industry does not see academia as first responders to problem-solving in the industry. It opts for consultancy mostly.
- The lack of collaboration and partnerships with the industry also reduces the availability of data or cases from the local logistics industry and information for data analysis. Respondents offer minimum cooperation to surveys, partly because they do not seem to appreciate research participation.
- There is a lack of funding for research that specifically addresses the needs of the logistics industry. There is also an absence of officially commissioned research by the universities that address the needs of the logistics industry.
- There is also a lack of logistics expertise, skills to train and infrastructure for practical logistics research and teaching to meet the needs of the industry.

Q1.2) How does your university contribute to research and development for your local logistics sector?

One university replied that they have not conducted research in logistics yet. The replies of the others can be clustered as follows:

Publication driven research

- Individuals passionate about researching specific logistics industry challenges take it upon themselves to do so. Moreover, academic promotions are contingent upon knowledge promotion through research. Individual faculty members within the logistics sector, therefore, conduct research to address some challenges in the logistics industry.
- We serve on a capacity-building committee that is turning the tables in the industry by promoting the need for academia in its efforts. The university tries to host research paper competitions that are presented at the Annual Logistics Workshop and used to encourage students to engage in our programme to research topics pertinent to the industry.

Applied research

- Empirical research on various aspects of supply chain management has been conducted in the past and thus provided solutions to some local challenges in the industry.
- Researchers from the university partner with industry players to develop thematic areas of research in logistics, and findings and results are disseminated through industry seminars and workshops.
- The university localises the R&D system with industry partners.

Building linkages for research projects

- The university is offering training and conducting research that addresses the challenges of practitioners in the industry.
- The university is building relationships for student internships and faculty/industry research.
- The university works on incorporating strong linkages with the industry.

Preliminary Proposition 2

By promoting gender diversity in logistics-related programs, universities would reduce gender disparities in smart logistics.

Q2.1) How is your university working to promote gender diversity in its logistics programmes?

One university mentioned that 51% of students are female. The other replies are summarised below.

Equal access and healthy gender equality representation

- Equal access is given to both men and women in our logistics programmes. In both undergraduate and graduate programmes, women are well represented.
- We value gender equity and equality. There is no barrier for students who want to study logistics programmes.
- The intake into the programmes is geared at ensuring we have a healthy representation of gender equality. The university's logistics society body is set up to encourage more women representation in its management. The teaching staff of logistics qualification also represents what the university aims to achieve, as the ratio stands at about 3/5.

Promotion of women

- Within the working integrated placing programme, we prioritise placing women first by engaging the industry and interested parties to select previously disadvantaged groups like women. We worked on creating the woman in the logistics branch.
- The University encourages female students by prioritising them finding internships in logistics companies.
- Deliberate opportunities are provided, especially for women to participate and contribute.

Q2.2) Does your university have existing successes and/or new initiatives related to increasing gender diversity in the logistics industry?

One university said they had no initiatives so far.

Policies

- The university has a policy on gender enrollment for students and employment for staff and faculty. Each year, the gender diversity policy guides the fulfilment of this policy.
- Our University admits students based on merit.

Creating awareness and role models

- The university has also created the women in logistics affiliated body through the centre. Also, the composition of the management branch is dominated by women. We would like to start vocational courses to encourage women's participation in more men-dominated areas of work in logistics. (truck and forklift driving, crane operations etc.).
- We have general initiatives that encourage female students to do engineering courses. Female high school students are encouraged to apply for typically male-dominated programmes like logistics.
- The university identifies and incorporates female role models who are successful in the field by showing what women can achieve.
- The university incorporates awareness campaigns and female mentors to encourage female students in male-dominated sectors.

Tangible support

- Scholarships for training are being considered to enhance skills and knowledge, particularly for women.

Preliminary Proposition 3

By equipping the workforce with knowledge and skills needed by the logistics industry, universities would improve the performance of the logistics industry.

Q3.1) What formal programmes does your university offer to equip students with the skills needed for careers in logistics?

Bachelor and Master programmes

- The university offers BSc Business Administration (Logistics Option), MBA in Logistics and Supply Chain Management, MSC Logistics and Supply Chain Management, MPhil Logistics, and PhD Logistics and Supply Chain Management.
- The university offers a Bachelor of Science in Transport & Logistics, a Master of Science in Transport Logistics Management, and a Master of Science in Procurement, Logistics and Supply Chain.
- The university offers an MBA/MA in Procurement and Acquisitions Management.
- The university offers undergraduate, postgraduate, and professional programmes in logistics.
- The university offers logistics and supply chain management, Basics of Logistics, and Smart Transport Systems.
- The logistics and process management department offers the following courses for students: logistics and supply chain, project management, data analytics, production and operations management.

Short courses

- The university also offers short courses and certificate courses that are being run for the industry.

Building a cluster and connecting to the industry

- The university offers to establish logistics studies and build a logistics cluster.
- The university participates in different sectors and explores how it fits the idea of gearing towards achieving our Hub dream.
- The faculty organises case writing on industry trends to use in classes.

Q3.2) What extra activities does your university offer to equip students with the skills needed for careers in logistics?

Career Service Centre

- The University has just started a Career Services Centre to provide soft skills for all students in the Business School, including Logistics students.
- A career services centre was established to develop industry-specific skills identified as deficient among our students.
- Career Day, an initiative by the university, keeps growing in confidence to ensure we create a platform that ensures students are kept abreast of the different careers in the industry.

Relationship building and international exchange programmes to develop and provide more relevant teaching

- The university attends logistics workshops and breakfast meetings that foster engagements with pertinent industry players.
- Roundtable discussions with industry professionals discussing trends/needed innovations
- The industry-academia forum reviewed the Supply Chain & Logistics curriculum. This was productive as the gaps were identified in areas the University should focus on in training the students to address the expertise needed in the industry.
- Partnerships & exchanges with international universities for programs
- Visiting professors visit the university to share with students knowledge and experiences from advanced economies as part of exchange programmes



Practical skills building

- The logistics and process management department has partnered with the professional institute (CIPS) to help build the skills acquired for the industry. Students sometimes participate in competitions to sharpen their skills (e.g. GBSN – global business school network).

Internships

- At least five out of ten universities mention they organise and offer internships for their students.
- Some also have industry-led training workshops and work-based learning for students.

Field trips

Five universities mention that they organise field trips and excursions.

- We arrange industry excursions to visit different companies through the logistics society to showcase the available opportunities.

Guest lectures

Five universities mention that they invite industry experts and have training sessions led by practitioners.

- We invite industry experts to come and engage students as guest lecturers to convey messages on the requirements in the different areas of the industry.

Conferences and competitions

- Conferences that bring industry and academia together.
- Industry attachment, industry visits and employability are facilitated with the industry.
- Students sometimes engage in competitions to sharpen their skills (e.g. GBSN – Global Business School Network)

Preliminary Proposition 4

By promoting digital literacy among students, universities would equip them with the digital skills necessary for digital logistics.

Q4.1) How does your university promote digital literacy among its students?

Provision of IT infrastructure

- They are providing access to technology with support services.
- Every student is given a laptop.

Special IT courses

- The university is promoting digital literacy through professional add-on seminars and programmes. This is among the general efforts to develop employability.
- The university offers specialised courses in computer usage – computer basics, coding, cybersecurity, digital marketing etc.
- The university offers special courses by forming alliances with organisations and other universities to offer digital courses and specialised tools and systems for the industry. SAP system ESAFA. Through our German partners, we have engaged in the DIGI-FACE platform, whereby we engage students and industry alike to undertake short digital courses to close gaps in the industry.
- Practical training on digital literacy is provided using the Institution's computer labs, and specialised skills are developed by offering data analytics, automation and AI skills courses.
- They are taught IT courses that facilitate them to do modelling and simulation exercises in logistics.

Inclusion of tech / IT in the curriculum

- Through curriculum review, virtual realities, digital logistics, AI, and Business Analytics were included.
- Incorporating Digital Tools in education with training and workshops.
- Ensuring digital literacy initiatives across all disciplines.
- We run programs in Computer Science and Digital Marketing.



Tech-related events

- Hosting and encouraging participation in hackathons and digital events.

Q4.2) How do these efforts translate into digital skills for the logistics industry?

Applied (Digital) skills

- Students will acquire the digital skills needed to function well in logistics.
- Transferrable skills learnt can be applied in the logistics industry.
- Students can build models and simulation exercises in their logistics courses.
- Commitment to adapting to industry changes ensures graduates are proficient in current digital tools and agile in navigating the evolving digital landscape of logistics.
- A tailored approach bridges theory and practice, equipping students with the digital acumen demanded by the dynamic logistics industry
- Appreciation of the Internet of Things, data analytics, machine learning and automation.

Raise general employability and soft skills

- This is among general efforts to develop employability skills among the students. So upon graduating, student industry ready.

Soft skills development

- Practical Training and Experience;

Relationships

- Collaborative engagements with industry experts, including guest lectures and workshops, provide insights into the latest digital trends.
- Industry Partnerships and Internships;

Applied research

- Research initiatives to gain innovative insights into the industry;

Certification

- Getting certification from professional institutions;
- Certification of specific skills like dangerous goods handling, freight forwarding,

Preliminary Proposition 5

By facilitating connectivity among various stakeholders involved in digital logistics, universities could contribute to establishing digital logistics ecosystems.

Q5.1) How does your university facilitate connectivity among various stakeholders such as students, researchers, industry partners, and startups?

Logistics-related publications and research

- Through the Business School, the university has started conducting tracer studies, logistics index in Ghana, and running certificate courses. This brings together logistics industry players, students, alumni, and researchers.

Events and conferences

- The university organises and holds forums, town hall meetings, and business expo shows to connect students, faculty and industry participants for collaborations and networking.
- Through conferences
- Guest lectures and calls for topics of interest from the industry.
- Guest Lectures, seminars, conferences and MOUs with Industry.
- Regular networking events, industry conferences, and collaborative research projects provide platforms for students, researchers, industry partners, and startups to interact. These events are conduits for knowledge exchange, idea sharing, and potential collaboration.



Business Incubation

- The university has established a business incubation centre as a hub for developing startups. This is an avenue where the university connects student startups and innovators to the industry and other stakeholders.
- Entrepreneurial hub.

Relationships through networks, platforms and boards

- We encourage the alumni associations to stay involved in shaping courses and student engagement through social platforms and events specially designed for such purposes.
- Industry partnership Board
- Multifaceted approach to foster connectivity among diverse stakeholders within the logistics ecosystem

Internships and access to resources

- Internships
- Free internet is provided to students in the Centre, and free access to various research journals is provided.

Q5.2) What role does your university play in fostering digital logistics ecosystems?

Fostering and financing innovation

- The university has established an innovation centre that supports students in acquiring digital information in the logistics sector.
- The university provides seed capital, organises pitching, and develops MoUs with industry to facilitate coaching student innovators.

Relationship building and networking

- The university initiates and builds relationships, fosters collaborations, and embraces entrepreneurial innovations among students, faculty and industry.
- Liaising with stakeholders and industry players.
- MoU with the industry.
- Through strategic partnerships with leading industry players, startups, and technology firms, we facilitate the integration of cutting-edge technologies into logistics practices.

Capacity building

- Building capacity of the practitioners in the logistics industry in smart transport systems.
- By equipping individuals with the skills and knowledge needed to navigate and contribute to the rapidly evolving field of logistics and educating and preparing professionals for the challenges and opportunities presented by modern logistics practices.

Provision of infrastructure

- We intend to ensure we have the facilities and software needed to achieve these when they become available for our students. We had a virtual simulation game design software to test students on different logistics operations.

Conducted applied research

- Our university actively engages in collaborative research projects, addressing contemporary challenges and opportunities in the digital logistics landscape.
- Applied Research Projects as a capstone for our students



Preliminary Proposition 6

By increasing collaboration with the private sector, universities could better prepare their students for working in digital logistics ecosystems.

Q6.1) How can universities collaborate with the private sector to improve students' development of digital logistics technical expertise?

Q6.2) How can universities collaborate with the private sector to improve students' development of digital logistics management skills?¹⁶

General: Through the School of Business, the university has signed several MoUs with the private sector on this.

Practical experience and industry affiliation

- The private sector, particularly the logistics industry, must open up to the universities through student internship opportunities, joint curriculum review, and support logistics training through research sponsorships.
- Professional internships
- Through internship programmes and industry-led training workshops for students.
- Industrial attachment of staff and students.
- By facilitating student attachments with industry to practice and learn from experienced experts
- By encouraging student attachments with industry players.
- Technology Partnerships: Collaborate with technology companies that specialise in logistics solutions. This collaboration can provide access to the latest software, tools, and platforms used in the industry. Such partnerships offer students hands-on experience with the technologies they will likely encounter in their careers.
- Internship Programs: Partnerships with logistics companies to create internship programs. These programs provide students with hands-on experience, allowing them to apply theoretical knowledge to real-world digital logistics challenges. Internships also enable students to develop specific technical skills required by the industry.
- Universities can enhance students' digital logistics management skills development through collaborative initiatives with the private sector. This involves integrating industry perspectives into the curriculum, establishing internship programs, and organising joint workshops and training sessions with logistics professionals.
- Collaborations with industry to support BSc Supply Chain undergraduate students on work-based learning placement.

Curriculum development and review

- The private sector, particularly the logistics industry, must open up to the universities through a joint curriculum review.
- The curriculum design of digital courses should ensure continuous private-sector engagement. Facilities and equipment should be available for the evolution to take place.
- Advisory boards comprising industry experts can guide curriculum development, ensuring alignment with current industry needs
- Industry Certifications and Training Programs: Work with private sector partners to integrate industry certifications and training programs into the curriculum. This ensures that students acquire theoretical knowledge and gain recognised certifications that validate their technical expertise in digital logistics.

¹⁶ The replies had a lot of overlaps therefore they were merged.

Events, Conferences and workshops

- By holding workshops and forums and creating platforms for interactions.
- Through engagement and discussions.
- Guest lectures; Invitation to Seminars; Conferences
- Masterclasses
- Through adjunct lecturers from industry, workshops, and professional add-ons.

Information Sharing

- Create a knowledge hub platform for information and data sharing.
- Systems used by the private sector should be offered to universities to ensure they are available for perusal and to familiarise and scrutinise students.

(Sponsorship of) and collaboration in research

- The private sector, particularly the logistics industry, must open up to the university through support logistics training through research sponsorships.
- Research new and creative logistics structures and digital activities to enhance student learning and development.
- Research Collaboration
- Collaborative Research Centers: Establish joint research centres focused on digital logistics, where academia and the private sector can jointly explore innovative solutions. These centres can serve as hubs for sharing expertise, fostering innovation, and addressing common challenges academia and industry face.
- Industry-Academia Collaborative Projects: Collaborate on joint research projects with private sector partners. These projects can address industry-specific problems, allowing students to work on practical issues while gaining exposure to cutting-edge technologies and industry workflows.
- Involvement in industry activities, identifying problems, researching the problem areas, and recommending solutions to curb the problems. Innovatively build on industry practices while creating new and improved styles of management.



Preliminary Proposition 7

By creating environments, such as digital hubs, universities would foster innovation and entrepreneurship within digital logistics ecosystems.

Q7.1) What are the existing resources within your university that support digital logistics innovation?

One university mentions that they do not support this on campus.

Support Centres

- Digital Innovation Centre.
- There is a business incubator and funds allocated for this.
- ICT Laboratories; Incubation centres.
- We have recently created an entrepreneurship hub that aims to serve as a focal point for fostering innovation.
- Provision of free access to computer labs and fostering expertise in smart logistics
- Our university further supports digital logistics innovation through our research centre, where interdisciplinary teams collaborate on various projects.
- The teaching and learning office is available to ensure we anticipate and equip our respective departments with the necessary skills and know-how to use the different technologies available.

Publication in academic journals and online courses

- The university currently supports digital logistics innovation with academic journals and publications and online learning courses.

Q7.2) What are the existing resources within your university that support entrepreneurship in digital logistics?

Support Centres and competitions

- Business Incubation Center.
- Incubation centers
- The university currently supports entrepreneurial digital logistics with the following: Startup incubators, accelerators, and industry-specific competitions.
- There is the business incubator, and funds allocated for this
- Our research centres and interdisciplinary projects offer a platform for students and researchers to explore and develop ground-breaking solutions in digital logistics entrepreneurship.

Specialised courses

- Different departments like CED (Centre for Entrepreneurial development) continuously work on gaining a competitive advantage in various aspects that will benefit the industry.
- A course in entrepreneurship is provided across many programmes.
- All students, regardless of their specialisation, take an entrepreneurship course.
- Our academic programs are designed to instil an entrepreneurial mindset, encouraging students to explore and apply their ideas within the digital logistics sector.



4. FINALISED PROPOSITIONS

Propositions finalised after the online focus group with the stakeholders are shown below. Most were refined during the discussion to fit the respective environment.

They show the role of African universities in supporting innovation and entrepreneurship in smart logistics.

Finalised Proposition 1

By research and development work with industry, which addresses local logistics challenges, universities could drive economic growth in the local logistics sector.

Finalised Proposition 2

By promoting gender diversity in logistics-related programs, universities would reduce gender disparities in smart logistics.

Finalised Proposition 3

By equipping the workforce with the logistics knowledge and skills identified with the industry, universities would improve the performance of the logistics industry.

Finalised Proposition 4

By promoting digital literacy among students, universities would equip them with the digital skills necessary for digital logistics.

Finalised Proposition 5

By facilitating inclusive relationships along the supply chain and logistics sector among diverse stakeholders involved in digital logistics, universities could contribute to establishing digital logistics ecosystems.

Finalised Proposition 6

By increasing collaboration with the private sector, universities could better prepare their students for working in digital logistics ecosystems.

Finalised Proposition 7

By creating environments, such as digital hubs, universities would foster innovation and entrepreneurship within digital logistics ecosystems.



5. CONCLUSION

Some African universities are already active in supporting innovation and entrepreneurship in the logistics sector and fostering digital skills.

Yet, several universities, such as the University of Rwanda, just started their smart logistics programmes, and the university representatives all mentioned it was a challenge to work with companies from the logistics sector.

Thus, the university representatives mentioned that the DIGILOGIC network and the exchange of good practices were valuable assets for them.

As a result of this research and stakeholder engagement, DIGILOGIC will take the following steps:

- Disseminate the findings of this DIGILOGIC activity to the participants.
- Disseminate this report through DIGILOGIC communication channels.
- Introduce the universities with logistics programmes to the DIGILOGIC startups and key stakeholders.
- Ensure that the universities with logistics programmes are part of any logistics network following DIGILOGIC.

