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Vertical Vacancy and Spatial Continuity: Evaluating the impact of Visibility and Pedestrian Connectivity on Commercial Building Occupation in Kigali city, Rwanda

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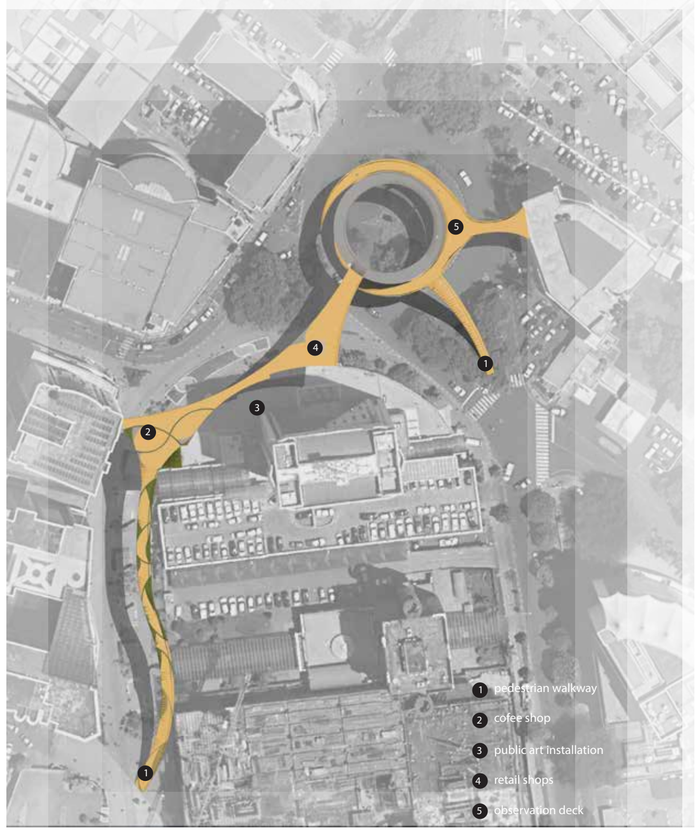
INTRODUCTION & AIM

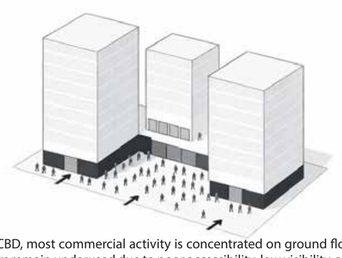
Cities in Africa are undergoing rapid urbanisation to cope with an influx of people, majorly seeking better jobs and amenities. Kigali City in Rwanda has evolved rapidly over the past two decades, becoming a hotspot for commerce, finance, and government services. As investment and construction surged, several modern office buildings and commercial spaces have been developed to augment the increasing demand. However, this rapid growth has also led to business concentration in some areas, while other buildings remain vacant, especially on upper floors.(Malunda, D., et al. 2020).

This study evaluates how visibility and occupation patterns on lower ground floors influence vacancy on upper floors of commercial buildings in Kigali City, while examining disruptions and spatial relationships between pedestrian crossings and transition stations. Using spatial analysis and architectural assessment, the research investigates how limited visibility, poor vertical circulation, and fragmented pedestrian connections reduce accessibility to upper levels, contributing to their underutilisation. Digital platforms such as ArcGIS, Revit, and Lumion were utilised to locate and design key points for these connections.

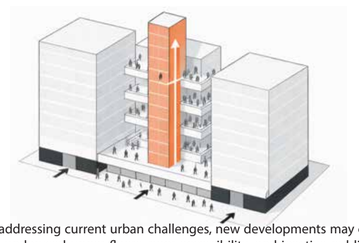
Findings indicate that lower-floor dominance in activity and visibility creates uneven spatial engagement, while discontinuities in pedestrian routes further limit access to elevated spaces. The research highlights the importance of integrated circulation systems, improved visual connectivity, and pedestrian-oriented linkages to support balanced occupation across building levels. These strategies aim to enhance accessibility, reactivate vacant upper floors, and strengthen spatial continuity, contributing to a more efficient and adaptive urban commercial environment.(Khotbehsara, E. M., Somasundaraswaran, K., Kolbe-Alexander, T., & Yu, R. 2025).

METHOD

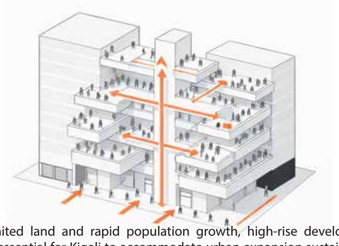




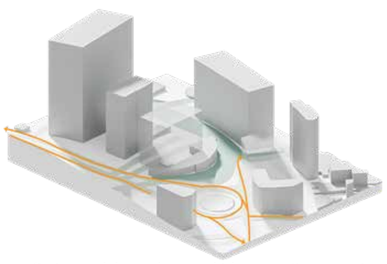
In Kigali's CBD, most commercial activity is concentrated on ground floors, while upper floors remain underused due to poor accessibility, low visibility, and limited public circulation.



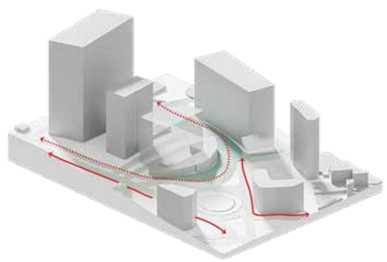
Without addressing current urban challenges, new developments may continue to create underused upper floors, poor accessibility, and inactive public spaces despite rapid urban growth.



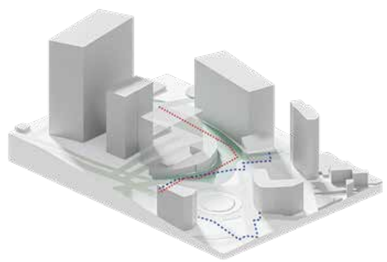
Due to limited land and rapid population growth, high-rise development is becoming essential for Kigali to accommodate urban expansion sustainably and reduce horizontal sprawl.



During peak hours, heavy vehicle congestion on main roads and intersections slows movement and creates delays for both drivers and pedestrians navigating the area.

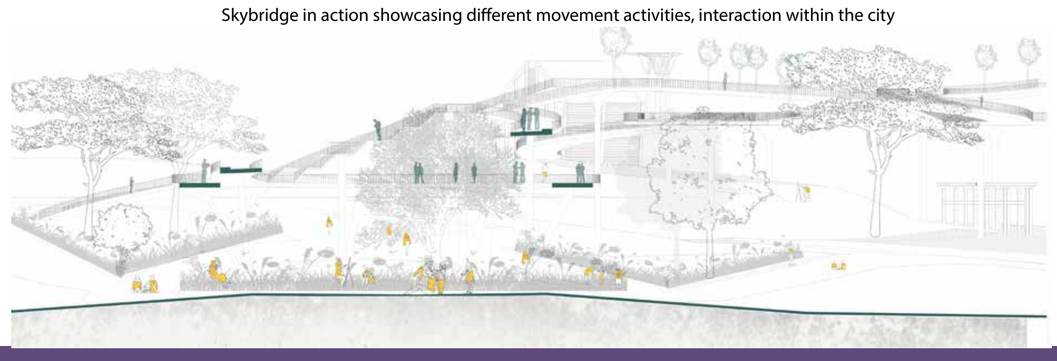


Wide car-free streets and connected pathways allow smooth pedestrian movement, providing easy access between shops, cafés, and public spaces without vehicle interference.

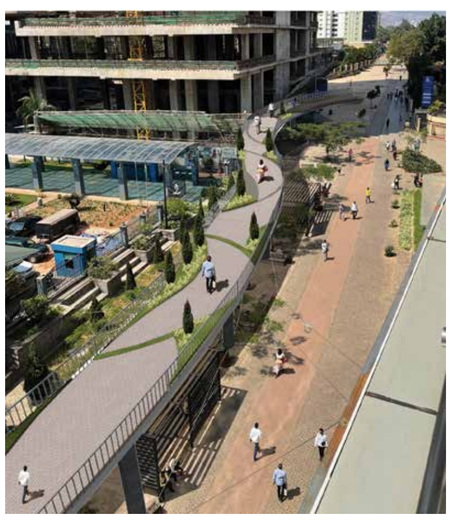


Heavy traffic and congested crossings disrupt pedestrian flow, causing delays, frequent stops, and reduced walkability.

Skybridge in action showcasing different movement activities, interaction within the city



RESULTS & DISCUSSION



CONCLUSION

The proposed skybridge improves connectivity in Kigali's CBD by creating direct and accessible links between different building levels, making movement and access to upper floors easier while activating underused spaces. The project also enhances the public walking experience by reducing congestion and disorder on street-level pathways, creating a safer, more organized, and people-centered urban environment for the community.

FUTURE WORK / REFERENCES

The project aims to become a model for future vertical urban connectivity in Kigali and other growing cities by encouraging the integration of skybridges between high-rise buildings. Future steps include promoting the concept through public awareness, architectural exhibitions, digital media, and visual storytelling such as short films or documentaries to highlight its social and urban impact. The long-term vision is to inspire more people-centered, connected, and walkable urban environments that improve accessibility, community interaction, and sustainable city growth.