



BOARD OF POSTGRADUATE STUDIES

The Board of Postgraduate Studies (BPS) plays a critical role in the realization of the university's mandate through the provision of a supportive ecosystem that promotes postgraduate students' research excellence. *My Research Granary101* is a series of simplified write-ups by Dr. Jackson Ndolo, that seek to build research capacity among KCA university postgraduate students, however, the information may be of help to any researcher who wishes to improve their academic writing skills with ease. This is in with the mantra, "BPS where students' research matters". This write-up provides information on; **Developing a Fundable and Commercializable Research Concept.**

Developing a Fundable and Commercializable Research Concept

1.0 Introduction

The capacity to develop a fundable and commercializable research concept is an essential skill for scholars, innovators, and professionals aiming to bridge the gap between academic inquiry and societal impact. In an era where research funding is increasingly competitive, and governments and private institutions emphasize innovation-driven growth, researchers must design concepts that not only contribute to knowledge but also attract investment and generate economic or social value. Developing such a concept requires strategic thinking, market awareness, methodological rigor, and an understanding of how to translate ideas into viable solutions.

2.0 Understanding Fundability and Commercializability

Fundability refers to the ability of a research concept to attract financial support from donors, governments, private investors, or research agencies. A fundable concept aligns with funding priorities, demonstrates feasibility, and promises significant outcomes or impact. **Commercializability**, on the other hand, refers to the potential of a research output to be transformed into a product, service, or process that meets a real-world need and can generate economic value. It reflects the market readiness and business potential of research findings. While not all research must be commercialized, understanding both dimensions enhances the

sustainability and relevance of research in addressing global and local challenges such as food security, health, energy, and climate adaptation.

3.0 Characteristics of a Fundable Research Concept

A fundable research concept typically possesses the following attributes:

Relevance and Alignment: It aligns with current national, regional, or global research agendas (e.g., Kenya Vision 2030, Africa Agenda 2063, UN Sustainable Development Goals).

Originality and Innovation: It presents a novel approach, idea, or application that advances the frontier of knowledge or practice.

Feasibility: The research design, resources, and expertise are realistic and achievable within the proposed timeframe and budget.

Impact Orientation: It addresses a significant social, environmental, or economic problem and clearly articulates expected outcomes.

Interdisciplinary and Collaborative Potential: Funders increasingly prefer projects that integrate multiple disciplines and involve partnerships with industry, government, or community stakeholders.

Sustainability: It shows how results will be scaled up, adopted, or sustained beyond the funding period.

4.0 Characteristics of a Commercializable Research Concept

A commercializable research concept must demonstrate clear potential for market translation. Its defining features include:

- a) **Market Need Identification:** The research addresses a clearly defined problem faced by potential users or industries.
- b) **Value Proposition:** It provides a tangible benefit such as cost reduction, productivity improvement, or enhanced quality of life.
- c) **Protectability:** The concept allows for intellectual property (IP) protection, such as patents, copyrights, or trademarks.
- d) **Scalability:** It has the potential to be scaled or replicated in different contexts or markets.

- e) **Business Model Fit:** It can be integrated into an existing or new business model that ensures profitability or sustainability.
- f) **Risk Management:** The potential technical, financial, or market risks are well-analyzed and mitigated.

5.0 Steps in Developing a Fundable and Commercializable Research Concept

Step 1: Problem Identification and Needs Assessment

A strong research concept begins with identifying a **real-world problem** that matters to both academic and practical audiences. Researchers should engage with stakeholders such as industry players, policymakers, and communities to understand existing challenges, gaps, and opportunities. Tools like design thinking, SWOT analysis, and problem tree analysis can guide this process.

Step 2: Idea Generation and Conceptualization

Transforming a problem into a viable research idea requires creativity and strategic thinking. The researcher should ask:

- a) What new insight or solution can I offer?
- b) How is my approach different from existing ones?
- c) What value does it add to society or industry?

This stage may involve brainstorming, literature scanning, benchmarking against global best practices, and assessing trends in innovation.

Step 3: Market and Stakeholder Analysis

Commercial potential is assessed through market research—identifying target users, estimating demand, and analyzing competitors. This ensures the concept is grounded in **market realities** rather than theoretical assumptions. Early stakeholder engagement also builds credibility and potential partnerships for co-funding or piloting.

Step 4: Designing a Robust Methodology and Implementation Plan

Funders prioritize methodological soundness. The research concept must specify clear objectives, hypotheses (if applicable), data sources, analytical tools, and timelines. For

commercialization-oriented projects, include a technology development roadmap, prototype testing, or proof-of-concept plan.

Step 5: Developing a Clear Business and Impact Model

To enhance commercial viability, the researcher should outline:

- a) The business model (e.g., licensing, startup, joint venture).
- b) The expected return on investment (ROI) or social impact.
- c) A sustainability plan showing how outcomes will continue post-funding.

This section demonstrates to investors that the concept is not only scientifically valid but also financially sound.

Step 6: Intellectual Property (IP) and Legal Considerations

Researchers must understand how to protect and manage intellectual property. Filing for patents, trademarks, or copyrights ensures that innovations are safeguarded and that commercial benefits accrue to the rightful owners. Institutions should establish Technology Transfer Offices (TTOs) or Research and Innovation Hubs to support this process. KCA University mentors and funds students towards commercializing their research output through the Division of Research Innovation and Outreach (RIO). The university has several innovation hubs.

Step 7: Proposal Packaging and Presentation

A well-written proposal must be clear, concise, and persuasive, showing how the concept aligns with the funder's objectives. It should include:

- a) Problem statement and rationale
- b) Research objectives and methodology
- c) Expected outcomes and impacts
- d) Budget and justification
- e) Monitoring and evaluation plan
- f) Risk and sustainability strategies

Professional presentation, storytelling, and visual aids (e.g., infographics, logic models) can increase funder engagement.

8. Linking Academia, Industry, and Policy

Successful commercialization often requires collaboration between universities, research institutions, industry, and government. University-industry linkages facilitate technology transfer, while policy alignment ensures regulatory support. Establishing innovation ecosystems such as science parks, incubation centers, and research consortiums can accelerate this process.

Challenges in Developing Fundable and Commercializable Research

Researchers, particularly in Africa, face several barriers:

- a) Limited access to funding and innovation infrastructure
- b) Weak intellectual property regimes
- c) Low industry-academia collaboration
- d) Skills gaps in commercialization and entrepreneurship
- e) Inadequate mentorship and policy incentives

Addressing these challenges requires institutional reforms, targeted training, and supportive policies that promote applied research and innovation.

Strategies for Enhancing Fundability and Commercial Potential

- a) Align research with national and global funding priorities (e.g., climate resilience, health innovation, AI, or digital transformation).
- b) Build interdisciplinary teams combining technical, business, and social expertise.
- c) Develop prototype demonstrations or pilot studies to showcase feasibility.
- d) Network with investors, incubators, and innovation agencies early in the project.
- e) Integrate entrepreneurship education and commercialization mentorship in postgraduate programs.

In conclusion

Developing a fundable and commercializable research concept demands more than academic excellence. It requires strategic alignment, creativity, and a deep understanding of market and societal needs. For African researchers, this approach offers a pathway toward self-reliant, innovation-driven economies where research outcomes are not confined to libraries but translated into products, policies, and solutions that transform lives. The future of research lies in its capacity to attract funding, create value, and inspire change.

An Example;

Smart Cold Chain Logistics for Reducing Post-Harvest Losses in Kenya's Fresh Produce Supply Chain

Jackson Ndolo,

jndolo@kcau.ac.ke

Msc in Logistics Systems Management with AI,
School of Business,
KCA University

Abstract

Post-harvest losses continue to undermine agricultural productivity, food security, and farmer incomes in sub-Saharan Africa. In Kenya, over 40% of fresh produce is lost along the supply chain due to weak cold chain systems, poor transport infrastructure, and minimal integration of digital technologies. This research proposes the development of a Smart Cold Chain Logistics Model (SCCLM) that integrates Internet of Things (IoT) sensors, solar-powered refrigeration, and blockchain-based traceability to enhance supply chain performance and reduce waste. The study will adopt a mixed-methods design, combining quantitative analysis and qualitative interviews among farmers, exporters, and logistics firms in Kiambu, Meru, and Nakuru counties. The concept is both fundable and commercializable, aligning with national priorities under Kenya Vision 2030, the Big Four Agenda, and SDGs 2 and 9. The expected outcome is a validated, scalable model capable of improving cold chain efficiency, enhancing farmer income, and stimulating agritech entrepreneurship in Africa.

1.0 Introduction

The section takes care the concept, context, background, current debates, problem, objectives, justification and fundability of the study

Agriculture forms the backbone of Kenya's economy, contributing over 33% of GDP and employing more than 40% of the population (World Bank, 2024). Despite this, the country faces persistent challenges in post-harvest management, particularly in the horticultural sector, where losses of fruits and vegetables exceed 40% due to poor cold chain infrastructure and temperature

mismanagement (Ambuko, 2023). The integration of smart logistics technologies such as IoT-enabled temperature monitoring, blockchain traceability, and solar-powered cold storage presents a transformative opportunity for the sector (Omondi & Wekesa, 2024). These technologies enhance transparency, real-time visibility, and operational efficiency across the supply chain. Globally, debates in supply chain sustainability emphasize technology adoption, green logistics, and digital inclusion for smallholder farmers (Gebresenbet & Bosona, 2022). However, empirical evidence from Africa remains limited, especially regarding the adaptation of smart cold chain technologies under infrastructural and financial constraints. This research addresses this gap by conceptualizing and empirically testing a context-sensitive Smart Cold Chain Logistics Model (SCCLM) for Kenya.

Despite significant investment in agricultural productivity, inadequate cold chain infrastructure continues to undermine Kenya's horticultural export potential. Perishable goods experience delays and spoilage due to inefficient transport and poor coordination among supply chain actors. The lack of traceability further limits access to international markets. While global evidence supports digital cold chain innovations, contextualized African solutions remain scarce (Ngeno, 2023). Therefore, this study seeks to design and test a smart cold chain logistics model tailored for smallholder-based supply chains in Kenya. The research objectives include;

- a) To assess the current challenges affecting cold chain logistics in Kenya's fresh produce sector.
- b) To evaluate the potential of IoT, blockchain, and solar-powered systems in improving cold chain performance.
- c) To develop and validate a smart cold chain logistics model for smallholder-based value chains.
- d) To analyze the economic and environmental impacts of adopting smart cold chain technologies.

The proposed study aligns with key policy frameworks, including Kenya Vision 2030, the Big Four Agenda on Food Security, and SDGs 2 and 9. Donor agencies such as USAID, FAO, and AGRA have prioritized funding for agricultural digitalization and value chain efficiency. Given its multidisciplinary approach integrating technology, logistics, and sustainability, this concept is highly fundable. Moreover, it has the potential to attract collaboration with innovation hubs and agribusiness accelerators for scaling.

2.0 Literature Review

2.1 Theoretical Review

The study is anchored on two theories: Resource-Based View (RBV) posits that sustainable competitive advantage arises from unique resources and capabilities (Barney, 1991). Smart cold chain systems represent such resources, enabling firms to achieve superior logistics performance. Technology Acceptance Model (TAM) explains the behavioral intention to adopt technology based on perceived usefulness and ease of use (Davis, 1989). It provides a framework for analyzing how farmers and logistics firms adopt digital cold chain systems.

2.2 Empirical Review

Recent studies emphasize the transformative role of digitalization in agri-supply chains. Ambuko (2023) demonstrated that smart temperature monitoring systems reduced post-harvest losses by 25% in pilot programs in Kenya. Omondi and Wekesa (2024) found that integrating IoT sensors enhanced logistics visibility and reduced operational costs in export firms. Similarly, Gebresenbet and Bosona (2022) highlighted the potential of solar refrigeration to promote sustainability and cost-efficiency in sub-Saharan Africa. However, empirical evidence on integrated models combining IoT, blockchain, and renewable energy remains limited. This study fills this gap by developing a holistic model applicable to Kenya's smallholder systems.

2.3 Conceptual Framework

The study independent Variables include IoT-enabled temperature monitoring, blockchain traceability, solar-powered refrigeration. The mediating Variables: Adoption readiness, cost efficiency, stakeholder collaboration and the dependent Variable: Supply chain performance (loss reduction, delivery reliability, cost-effectiveness).

(Draw the diagram if need be)

3.0 Methodology

3.1 Research Design

The study will adopt a mixed-methods design, integrating descriptive and exploratory approaches. Quantitative data will assess the performance impact of technology adoption, while qualitative insights will capture behavioral and institutional dynamics.

3.2 Population and Sampling

The target population includes fresh produce exporters, logistics firms, and smallholder cooperatives in Kiambu, Meru, and Nakuru counties. A sample of 120 respondents will be selected through stratified random sampling.

3.3 Data Collection

Primary data will be gathered via surveys, semi-structured interviews, and IoT pilot testing. Secondary data will be sourced from industry reports and government documents.

3.4 Data Analysis

Quantitative data will be analyzed using regression and structural equation modeling (SEM), while qualitative data will undergo thematic analysis. Triangulation will ensure validity and reliability.

4.0 Commercializability of the Concept

The research is designed for practical commercialization. Potential products include:

- a) IoT-based temperature monitoring systems to be licensed to logistics firms.
- b) Solar-powered cold storage units, commercial prototypes for county governments and agritech firms.
- c) Blockchain-based traceability apps that are marketable to exporters and supermarkets.

The university's innovation hub through RIO will support patent registration, incubation, and commercialization partnerships.

5.0 Expected Outcomes and Impact

The project is expected to:

- a) Reduce post-harvest losses by 30%.
- b) Increase smallholder incomes by 25%.
- c) Promote green logistics practices through renewable energy integration.
- d) Generate commercial opportunities for startups and SMEs in agritech.
- e) Inform evidence-based policy development for cold chain modernization.

6.0 Budget Estimate (Kenya Shillings)

Budget Item	Estimated Cost (KES)
Research design and approvals	150,000
Field data collection and IoT sensors	400,000
Software development (Blockchain prototype)	350,000
Data analysis and reporting	150,000
Dissemination workshops and policy briefs	200,000
Contingency (10%)	125,000
Total	1,375,000

7.0 Work Plan (can draw a Gantt chart)

Activity	Duration	Period
Proposal development and ethics approval	1 month	Jan 2026
Literature review and instrument design	1 month	Feb 2026
Data collection	2 months	Mar–Apr 2026
Data analysis	1 month	May 2026
Model development and validation	1 month	June 2026
Report writing and dissemination	1 month	July 2026

8.0 Logical Framework (Logframe Matrix) (May include if required)

Objective	Indicators	Means of Verification	Assumptions
Reduce post-harvest losses	% reduction in spoilage	Field survey reports	Cooperation from farmers
Improve logistics performance	Delivery time and cost metrics	IoT data logs	Stable power supply
Promote technology adoption	Number of firms using SCCLM	Adoption reports	Stakeholder buy-in
Enhance income and sustainability	Change in farmer income	Financial records	Policy continuity

9.0 Potential Sources of Funding

- National Research Fund (NRF), Kenya
- USAID Feed the Future Initiative
- African Development Bank (AfDB) Agri-Tech Grants
- Food and Agriculture Organization (FAO)
- AGRA and Rockefeller Foundation Agricultural Innovation Programs

References

Put the list of references in the desired referencing style

NOTE: The example is not a fit to all disciplines and call for funding opportunities. Always read the funders instructions and formatting guidelines (Concept template etc).

NOTE: *My Research Granary 101/05/2025 will present From Research, (Commercialisation)Marketplace and Impact*

Dr. Jackson Ndolo, PhD.

Director BPS@2025