MARITIME INNOVATION FOR ECONOMIC GROWTH IN KWAZULU-NATAL

A COMPARATIVE BENCHMARKING APPROACH

Moses Kotane Research Institute
Research · Innovation · Excellence

PROJECT OVERVIEW

The study investigated maritime innovation trends, emerging technologies, the impact of digitalisation, barriers to adoption, current innovation projects, support mechanisms for small enterprises, policy interventions, and the role of research institutions and collaboration models.
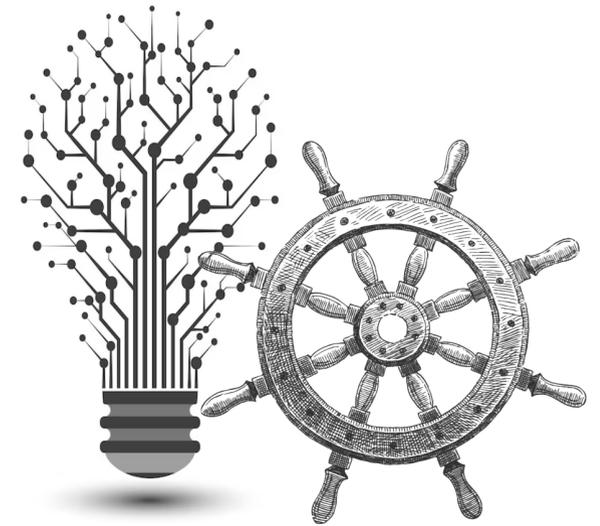
1 DEMOGRAPHICS

Country/Region

Respondents came from diverse regions

Kenya	South Africa	Tanzania
22.4%	20.4%	14.3%

Smaller contributions came from Nigeria, Namibia, United States of America, and others.

Roles In Maritime Industry

Government/Policy & Regulation
24.5%

Research & Innovation
18.4%

Education & Training
12.2%

This spread of respondents ensured perspectives from both governance and technical expertise.

Years of Experience

6–10 years	36.7%
0–5 years	24.5%
11–15 years	22.4%

Showing a balance of early-career, mid-career, and experienced professionals.

2 GLOBAL MARITIME TRENDS

Innovation Trends

Digitalisation in Ports & Logistics
40.8%

Skills Development & Training
38.8%

Aquaculture Innovations
32.7%

Emerging Technologies (5-Year Impact)
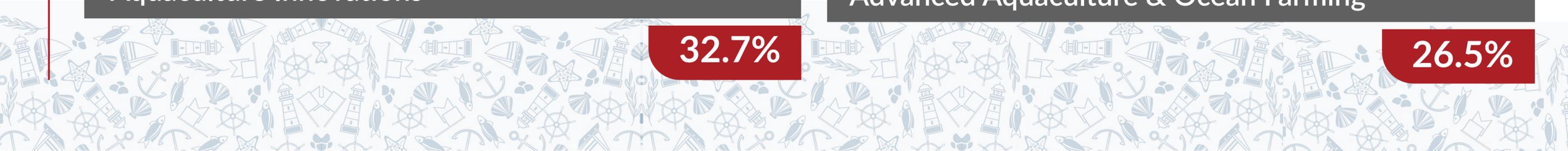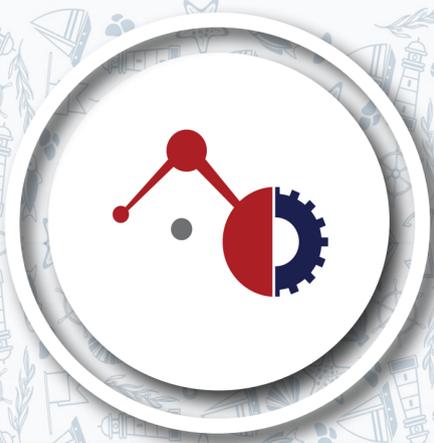
Green Shipping Technologies
46.9%

Autonomous/Remote-Controlled Vessels
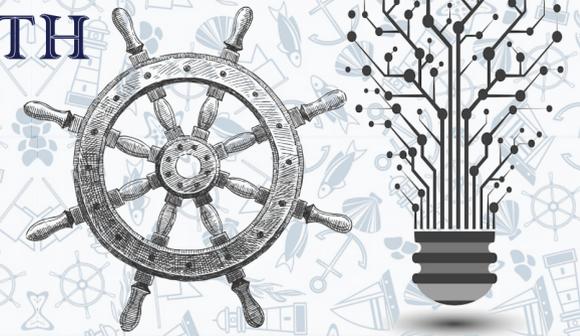**38.8%**

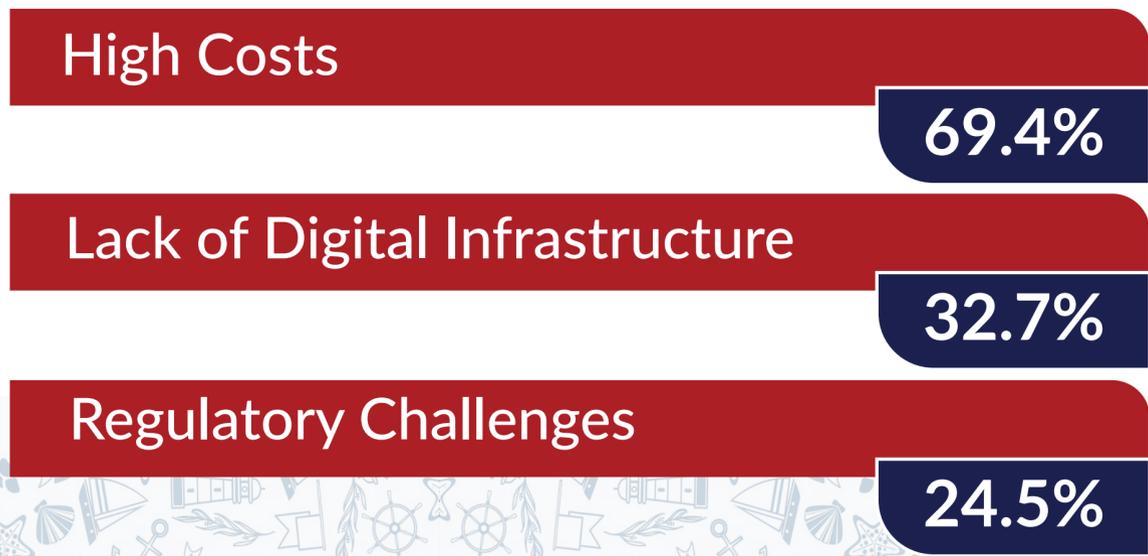Advanced Aquaculture & Ocean Farming
26.5%

② GLOBAL MARITIME TRENDS

Impact of Digitalisation

Respondents reported improved efficiency, cost reduction, transparency, compliance, research outputs, and inclusivity. However, some noted challenges such as increased costs and uneven adoption.

Examples of Innovation Projects

Maritime Research/Innovation Hubs
16.3%

Port Digitalisation & Automation
16.3%

AI-Driven Ocean Monitoring
14.3%

Barriers to Tech Adoption

High Costs
69.4%

Lack of Digital Infrastructure
32.7%

Regulatory Challenges
24.5%

Support for Small Enterprises
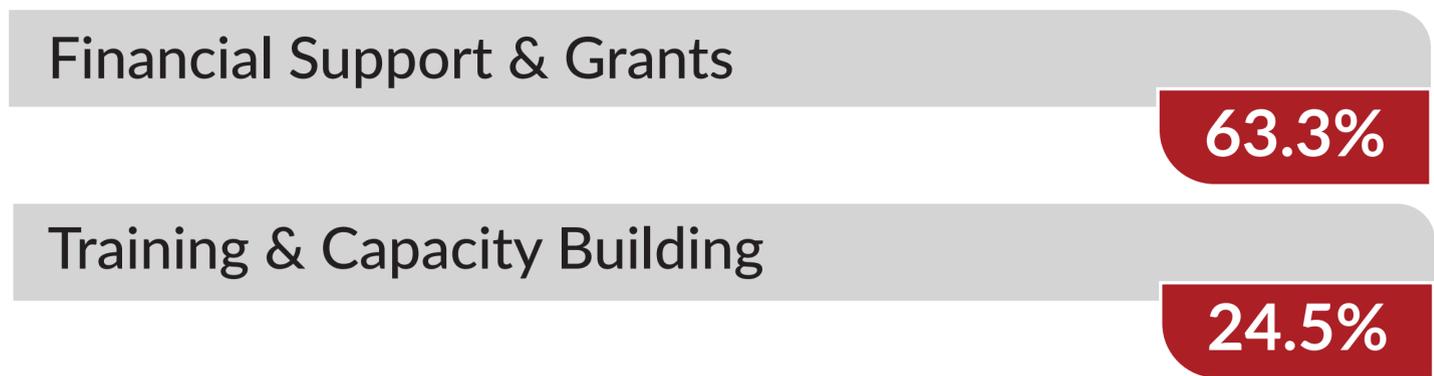
Financial Support & Grants
63.3%

Training & Capacity Building
24.5%

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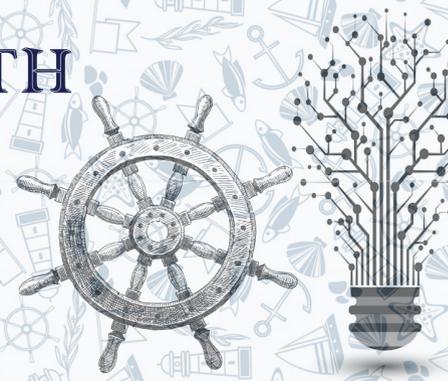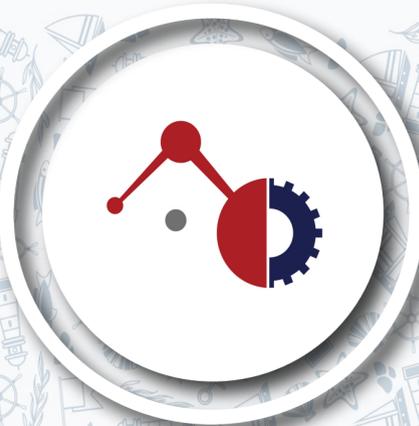## A COMPARATIVE BENCHMARKING APPROACH

③ POLICY INTERVENTIONS FOR MARITIME

Effective Policies

- Blue Economy Strategies (Kenya, Seychelles, South Africa)
- Comprehensive Maritime Transport Policies
- Operation Phakisa (South Africa)
- IMO/International frameworks

Policy Gaps

44.9% LACK OF A CLEAR MARITIME INNOVATION POLICY

38.8% INCONSISTENT IMPLEMENTATION

28.6% SLOW REGULATORY APPROVALS

36.7%
38.8%
46.9%

Government Incentives Needed

- ■ RESEARCH & DEVELOPMENT FUNDING
- ■ SUBSIDIES/GRANTS
- ■ TRAINING GRANTS

④ RESEARCH COLLABORATIONS AND PARTNERSHIPS

- **Role of Research Institutions:** Seen as knowledge generators, innovation hubs, and capacity builders, linking government, industry, and communities. They support policy advocacy, develop technologies, and train future professionals.

- **Effective Collaboration Models:** The most effective were Industry–Academia Partnerships (46.9%) and Public–Private Partnerships (42.9%), followed by Research Consortiums (22.4%) and International Cooperation Platforms (20.4%).

⑤ RECOMMENDATIONS

- Strengthen policy frameworks and develop a clear maritime innovation policy that is aligned with broader blue economy strategies.

- Expand financial support mechanisms, prioritising targeted funding for research and development, subsidies, and low-interest loans for maritime SMMEs.

- Investment in digital infrastructure, particularly in expanding broadband, sensor networks, and monitoring technologies to remote coastal areas.

- Strengthening skills development and training must be a priority, with emphasis on modern technologies such as artificial intelligence (AI), internet of things (IoT), and sustainable aquaculture, while also extending community-based training programs to broaden participation and inclusivity.

- Scale up industry–academia partnerships and public–private collaborations to foster innovation, while regional and international cooperation can help maritime actors share knowledge, technologies, and best practices.

- Enhance research and innovation ecosystems, with research institutions positioned as hubs for evidence-based policy, prototyping, and testing.