



Ignatius Ajuru University of Education, Port Harcourt, Nigeria
Research and Development Centre

1st International Conference and Exhibition on Research, Innovation and Development (ICERID 2026)
Proceedings URL: <https://iauejournals.com/index.php/ICERID> Website: <https://icerid.online>



ISBN: 978-978-63205-1-9

June 2026; Page No. 268-279

From Thesis to Startup: Statistical Analysis of Factors Affecting Commercialization Readiness of Science-Based Research Projects in Rivers State Universities

Zebulun, G. T.

Department of Statistics, Ignatius Ajuru University of Education, Port Harcourt, Nigeria

Corresponding author email: gladys.zebulun@iaue.edu.ng

Abstract

Many science-based research projects in Nigerian universities end as academic documents with limited progress toward patents, prototypes, startups, products, services, or industry solutions. In Rivers State, universities offer science, engineering, agriculture, health, environmental, and technology-related programmes with potential for innovation and commercialization. Yet, many students and graduates have limited knowledge of commercialization pathways, intellectual property protection, incubation, funding, and industry partnerships. This study examined the factors influencing commercialization readiness among students, recent graduates, and early-career researchers in selected Rivers State universities. Data were collected from 384 respondents using a structured questionnaire covering four predictors: commercialization awareness and knowledge, institutional support and university infrastructure, entrepreneurial orientation and personal capability, and access to funding and industry linkage. Descriptive statistics revealed low commercialisation awareness and knowledge (grand mean = 2.21), institutional support (grand mean = 2.34) and limited funding/industry linkage (grand mean = 2.18), while entrepreneurial orientation was high (grand mean = 3.50) and overall commercialisation readiness was moderate (grand mean = 3.43). Multiple linear regression analysis showed that all four predictors significantly influenced commercialization readiness, jointly explaining 56.4% of the variance ($R = 0.751$, $R^2 = 0.564$, Adjusted $R^2 = 0.559$, $F(4,379) = 122.60$, $p < 0.001$). Commercialization awareness and knowledge had the strongest effect ($\beta = 0.332$), followed by entrepreneurial orientation ($\beta = 0.265$), institutional support ($\beta = 0.228$), and funding/industry linkage ($\beta = 0.172$). The findings indicate that while students are motivated and capable of developing research-based solutions, low awareness, weak institutional support, and limited access to funding and industry partnerships constrain commercialisation efforts. Universities should prioritize awareness training, incubation support, mentorship, and industry linkage to enhance the readiness of students and graduates to translate research into viable startups, products, or services.

Keywords: Commercialisation Readiness, Science-Based Research, Thesis commercialisation, Intellectual Property, Statistical Analysis

Introduction

Universities are expected to produce knowledge, train skilled graduates, solve social problems, and support economic development (Compagnucci & Spigarelli, 2020). In science-based disciplines, undergraduate projects, master's dissertations, and doctoral theses often generate ideas with possible use in agriculture, engineering, environmental management, health sciences, biotechnology, computer science, and industrial production. Despite this potential, many research projects in Nigerian universities remain in libraries, on departmental shelves, on personal laptops, and in institutional repositories after graduation. The result is a gap between academic research output and practical economic value (Momoh et al., 2022). Research commercialization is the process by which research outputs are converted into usable products, services, technologies, processes, patents, licenses, startups, or industry solutions. It involves awareness, intellectual property protection, prototype development, market validation, funding, incubation,

268

Cite this paper as:

Zebulun, G. T. (2026). From thesis to startup: statistical analysis of factors affecting commercialisation readiness of science-based research projects in Rivers State universities. In *Proceedings of the 1st International Conference and Exhibition on Research, Innovation and Development (ICERID)*, Ignatius Ajuru University of Education, Port Harcourt, Nigeria (Vol. 1, pp. 246-279).

technology transfer, and university-industry-government collaboration. Commercialization does not mean that every thesis must become a company. It means assessing, protecting, developing, and connecting projects with practical value to users or markets where possible. The problem in many Nigerian university settings is that students complete research projects mainly for academic grading. Many do not know whether their projects have market value. Some do not understand patents, intellectual property rights, technology transfer offices, startup formation, prototype validation, or industry partnerships. Others may have business interests but lack institutional guidance, funding, laboratory support, mentorship, or contact with industry. This creates a weak transition from thesis to startup.

Rivers State provides a relevant setting for this study. The state hosts universities with science-based disciplines and research potential in agriculture, engineering, environmental sciences, medical sciences, natural sciences, computer science, and technology-related fields. Rivers State University lists faculties such as Agriculture, Basic Medical Sciences, Clinical Sciences, Engineering, Environmental Sciences, and Science. The University of Port Harcourt has an Intellectual Property and Technology Transfer Office with records of patent-related activity and a stated mandate to link research outputs to industry (Iwundu, 2022). Rivers State University also has an Intellectual Property and Technology Transfer Office established under NOTAP to promote knowledge transfer, patenting, and research development. These institutional features show that the infrastructure for research commercialization exists in some form, but student-level awareness and readiness remain uncertain.

The major concern of this paper is not actual commercialisation success. Measuring actual commercialization would exclude many students and recent graduates who have never patented, licensed, or launched a startup from their projects. A better dependent variable is commercialisation readiness (Liao et al., 2022). In this study, commercialization readiness refers to the willingness, preparedness, and perceived ability of students, recent graduates, and early-career researchers to transform a thesis or research project into a marketable product, process, service, startup, patent, prototype, or industry solution.

The study focuses on four explanatory factors. The first is awareness and knowledge of commercialisation. This covers knowledge of research commercialisation, patents, intellectual property rights, technology transfer, start-up development, product development, and market application. The second is institutional support and university commercialisation infrastructure. This includes entrepreneurship centres, technology transfer offices, incubation hubs, supervisor support, commercialisation training, laboratory access, and university policy support. The third is entrepreneurial orientation and personal capability. This covers an innovation mindset, opportunity recognition, risk-taking attitude, business interest, self-confidence, and willingness to transform academic work into a venture. The fourth is access to funding and industry linkage. This covers grants, seed funding, venture support, government support, private-sector linkage, industry collaboration, investors, and contact with science-based enterprises.

Commercialisation of university research is the conversion of academic knowledge into practical, economic, or social value. It includes patenting, licensing, spin-off formation, start-up creation, consultancy, prototype development, industry collaboration, and knowledge transfer. In science-based disciplines, commercialisation usually requires technical validation, intellectual property protection, market assessment, and partnerships with users or producers. The process also depends on policies, funding, facilities, and institutional support. Technology transfer is closely related to commercialisation. It refers to the movement of knowledge, inventions, skills, technologies, or research outputs from universities and research institutions to industry, government, communities, or new ventures. Padilla Bejarano et al. (2023) reviewed university technology transfer from a knowledge-flow approach and identified factors linked to knowledge management, resources and capabilities, transfer management, and university-industry relationships. This supports the view that commercialisation is not only a student decision. It is also an institutional and ecosystem issue. Science-based research projects are academic research outputs in areas such as the natural sciences, engineering, agriculture, environmental sciences, medical sciences, computer science, biotechnology, and applied technology. These projects may produce prototypes, laboratory methods, designs, software, devices, agricultural solutions, diagnostic ideas, environmental remediation methods, or processing techniques. Their commercial value depends on originality, technical feasibility, user need, market relevance, protection strategy, and readiness for adoption.

Commercialization readiness is the dependent variable in this study. It refers to the extent to which a student, graduate, or early-career researcher is prepared and willing to move a research project toward practical use. It includes perceived market relevance, willingness to seek patent protection, readiness to approach an incubation centre, intention to seek funding, willingness to form a startup team, and readiness to present the project to industry partners. This construct is appropriate because many respondents have not commercialized any project. It captures intention and preparedness rather than completed commercialization.

Commercialization Awareness And Knowledge

Commercialisation awareness is the extent to which students and researchers understand the meaning, process, and value of turning research into market- or user-oriented solutions. Knowledge includes understanding intellectual property rights, patents, copyrights, technology transfer offices, licensing, start-ups, prototype development, and market validation. Low awareness limits commercialisation readiness because students who do not understand the pathway are less likely to protect, improve, or market their research outputs. Ravi and Janodia (2022) found that awareness and practice of patents and research commercialisation are central issues in university technology transfer. Their study showed that universities may have support structures, but weak alignment with industry demand and limited commercialisation practices still restrict technology transfer. Fadeyi et al. (2019) reported that research outputs have often remained unused because of weak university-industry transfer mechanisms. This supports the inclusion of awareness as a central factor in the present study.

Institutional support and university commercialisation infrastructure

Institutional support refers to the structures, policies, and services within universities that help students and researchers develop their projects for external use. These include technology transfer offices, entrepreneurship centres, incubation hubs, patent support, business mentorship, supervisor guidance, laboratory access, commercialization training, innovation competitions, and university-industry partnership offices. Institutional support matters because commercialization requires more than academic supervision. Students need guidance on legal protection, prototype development, market testing, funding, and negotiation with external partners.

Jjagwe et al. (2024) identified infrastructural and systemic barriers, including weak technology transfer offices and limited innovation financing, as major constraints in Uganda's research and innovation institutions. In Rivers State, the existence of IPTTOs at the University of Port Harcourt and Rivers State University indicates that some commercialization infrastructure exists. Yet, the question remains whether students know about these offices and whether the offices are visible enough in the thesis supervision process.

Entrepreneurial orientation and personal capability

Entrepreneurial orientation refers to the student's willingness to think innovatively, take calculated risks, identify opportunities, and act on business ideas. Personal capability includes confidence, technical competence, teamwork ability, communication skills, and willingness to move from research writing to market engagement. A student may know about commercialization but still lack confidence or interest in business creation. This makes entrepreneurial orientation a key predictor of commercialization readiness.

The Theory of Planned Behaviour explains that intention is influenced by attitude, perceived social pressure, and perceived behavioural control (Ajzen, 1991). In entrepreneurship research, this theory is often used to explain why students intend to start businesses. Gao et al. (2022) found that the Theory of Planned Behaviour is a major theoretical foundation in studies of college students' entrepreneurial intention. Lihua (2022) also showed that entrepreneurial situational factors and implementation intention help explain the movement from intention toward entrepreneurial behaviour. These studies support the inclusion of entrepreneurial orientation in this study. Gao et al. (2022) conducted a bibliometric analysis of college students' entrepreneurial intention research. The study found that entrepreneurship education, personal traits, and the Theory of Planned Behaviour are important themes in the field. This supports the view that students' commercialization readiness should be examined through both knowledge and personal capability.

Access to funding and industry linkage

commercialization requires financial and external support. Funding is needed for prototype development, product testing, registration, patent filing, laboratory work, packaging, marketing, and startup operations. Industry linkage provides access to users, technical feedback, production capacity, mentorship, and market channels. Without funding and industry linkage, students may abandon promising projects after thesis submission.

Research from Uganda shows that innovation financing and public-private partnerships are key issues in commercialization (Jjagwe et al., 2024). Ravi and Janodia (2022) also found that university-industry technology transfer depends on structures that link academic research to industrial demand. WIPO Nigeria Office (2026) emphasized IP-aware venture development, market validation, and commercialization action planning for Nigerian university spin-offs and research-driven ventures. This supports the need to include funding and industry linkage as a major factor.

Existing literature has discussed university technology transfer, research commercialization, entrepreneurial intention, and university-industry collaboration. Yet, limited statistical evidence exists on the commercialization readiness of science-based research projects in Rivers State universities. Many studies focus on institutions, policy, patents, or technology transfer offices, while fewer studies examine whether students and recent graduates understand commercialization and feel ready to move their theses toward startups or market solutions. This study fills that gap by measuring commercialization readiness as an outcome and testing four major explanatory factors.

Nigerian universities produce many undergraduate projects, master's dissertations, and doctoral theses in science-based disciplines with possible value in agriculture, engineering, environmental management, health sciences, biotechnology, computer science, and industrial production. Yet, many of these outputs remain unused after graduation because students often write them for academic grading rather than practical application. Many students and recent graduates have insufficient knowledge of patents, intellectual property rights, technology transfer offices, startup formation, prototype validation, and industry partnerships. Others lack institutional guidance, funding, laboratory support, mentorship, and access to industry networks.

In Rivers State, the problem deserves attention because universities such as Rivers State University and the University of Port Harcourt have science-based disciplines and some commercialization support structures. Yet, student awareness of these structures and readiness to use them remain uncertain. Although previous studies have examined university-industry collaboration, patenting systems, technology transfer offices, and policy frameworks, less attention has been given to commercialization readiness among science-based students and recent graduates in Rivers State universities. This study, therefore, examines how commercialization awareness and knowledge, institutional support, entrepreneurial orientation, personal capability, funding access, and industry linkage influence the commercialization readiness of science-based research projects in Rivers State universities.

This study aims to statistically examine the factors affecting the commercialization readiness of science-based research projects among students, recent graduates, and early-career researchers in selected Rivers State universities. It is specific to the following objectives:

1. To assess the level of awareness and knowledge of commercialization among students, recent graduates, and early-career researchers.
2. To determine the effect of institutional support on commercialization readiness.
3. To examine the influence of entrepreneurial orientation and personal capability on commercialization readiness.
4. To assess the effect of access to funding and industry linkage on commercialization readiness.

Materials and Methods

The study adopted a quantitative cross-sectional survey research design. This design was suitable because the study aimed to collect measurable data from respondents at one point in time and test the statistical effect of selected factors on commercialization readiness. The study was conducted in Rivers State, Nigeria. The focus was on selected universities with science-based programmes. These included universities such as Ignatius Ajuru University of Education, University of Port Harcourt, Rivers State University, and Pamo University, offering disciplines like natural sciences, engineering, agriculture, health sciences, environmental sciences, computer science, and applied technology.

The target population comprised final-year undergraduate students, postgraduate students, recent graduates, and early-career researchers from science-based disciplines from the above-mentioned universities. Data were collected using a 30-item structured questionnaire with a Cronbach's alpha value of 0.70 and above, containing a five-point Likert scale question titled From Thesis to Startup: Commercialisation Readiness Questionnaire. A total of 500 questionnaires were administered physically and electronically, and 402 were retrieved; using Cochran's formula, 384 responses were used for the analysis. Cochran's formula was used to get the sample size because the population of eligible students, graduates, and early-career researchers across selected institutions was large. Data were analysed using descriptive and inferential statistics. Frequencies and percentages were used for demographic variables. Mean and standard deviation were used to assess the explanatory factors. The following decision rule was used: 1.00 to 2.49 = low; 2.50 to 3.49 = moderate; 3.50 to 5.00 = high. Pearson correlation was used to examine relationships among the variables. Multiple linear regression (least squares regression method) in SPSS was used to test the effect of the four independent variables on commercialization readiness. ANOVA was used to test overall model significance. Beta coefficients, t-values, p-values, R, R-square, adjusted R-square, and F-statistic were reported. The level of significance was 0.05.

Model Specification

$$CR = \beta_0 + \beta_1CAK + \beta_2ISU + \beta_3EOP + \beta_4FIL + \varepsilon$$

Where:

CR = commercialisation readiness

CAK = commercialisation awareness and Knowledge

ISU = Institutional Support and University commercialisation Infrastructure

EOP = Entrepreneurial Orientation and Personal Capability

FIL = Funding Access and Industry Linkage

β_0 = Constant

β_1 to β_4 = Regression coefficients

ε = Error term

Results

The results presented in this section are analytical results of the 384 respondents.

Table 1: Demographic profile of respondents

Variable	Category	Frequency	Percentage
Gender	Male	215	56.0
	Female	169	44.0
Age	18 to 24 years	154	40.1
	25 to 34 years	161	41.9
	35 years and above	69	18.0
Academic category	Final-year undergraduate students	107	27.9
	Postgraduate students	168	43.8
	Recent graduates	75	19.5
	Early-career researchers	34	8.8
Discipline	Natural and Applied Sciences	112	29.2
	Engineering and Technology	81	21.1
	Agriculture and Environmental Sciences	62	16.1
	Health and Medical Sciences	78	20.3
	Computer and ICT-related fields	51	13.3
Prior commercialization training	Yes	96	25.0
	No	288	75.0

Table 1 shows that 384 respondents participated in the study. Most respondents were within the age range of 18 to 34 years. Postgraduate students made up the largest group, followed by final-year undergraduate students and recent

graduates. The table also shows that 75% had not received prior commercialization training. This supports the assumption that many respondents may have limited exposure to commercialization concepts.

Descriptive Statistics Analysis

Decision Rule

The descriptive statistics were interpreted using a five-point Likert scale. Mean scores from 1.00 to 2.49 were regarded as low, 2.50 to 3.49 as moderate, and 3.50 to 5.00 as high.

Table 2: Descriptive statistics for commercialization awareness and knowledge

Item	Mean	Standard deviation	Decision
1. I understand what it means to commercialize a research project.	2.31	1.04	Low
2. I know how patents and intellectual property rights protect research ideas.	2.04	0.98	Low
3. I know where to seek help on intellectual property protection in my university.	1.92	0.91	Low
4. I understand how a thesis can become a prototype or startup.	2.29	1.02	Low
5. I know how to assess the market relevance of my research project.	2.45	1.08	Low
6. I am aware of technology transfer offices or innovation support units.	2.17	0.95	Low
7. I would attend training on how to commercialize my research project.	3.67	0.89	High
Overall awareness means	2.21	0.72	Low

Table 2 shows that commercialization awareness was low among respondents. The lowest mean score was recorded for knowledge of where to seek intellectual property support in the university. Awareness of technology transfer offices was also low. The only high-rated item was willingness to attend commercialization training. This means that respondents may not know enough about commercialization, but many are open to learning. This result supports the need to treat awareness as a central factor in commercialization readiness.

Table 3: Institutional Support and University commercialization Infrastructure

Items	Mean	Standard Deviation	Decision
8. My university provides training on research commercialization.	2.31	0.94	Low
9. My supervisor encourages students to consider the market relevance of their research.	2.88	1.03	Moderate
10. My university provides useful support for students who want to develop their research ideas	2.09	0.76	Low
11. My university has functional support for patenting and intellectual property protection.	2.18	0.91	Low
12. My university has incubation or entrepreneurship support for science-based ideas.	2.46	0.97	Low
13. My university connects students with companies that may use their research outputs.	2.11	0.89	Low
Grand Mean	2.34	0.95	Low

In Table 3, respondents reported generally low institutional support (grand mean = 2.34). Supervisor encouragement was moderate, but access to patent support, incubation services, and companies was weak. This suggests that universities provide limited structural and policy support to help students commercialise research. Without stronger infrastructure and guidance, science-based projects remain academic outputs rather than marketable products or startups.

Table 4: Entrepreneurial Orientation and Personal Capability

Items	Mean	SD	Decision
14. I am willing to develop my research project beyond academic submission.	3.71	0.86	High
15. I am willing to learn the business skills needed to develop my research project	3.45	0.82	Moderate
16. I am confident that I can work with others to turn my project into a product or service.	3.43	0.91	Moderate
17. I am interested in starting a business based on a science-based research idea.	3.56	0.88	High
18. I am willing to take calculated risks to develop a research-based startup.	3.28	0.96	Moderate
19. I can identify practical problems that my project can solve.	3.62	0.84	High
Grand Mean	3.50	0.89	High

In Table 4, entrepreneurial orientation and personal capability were high (grand mean = 3.50). Respondents showed strong willingness to develop projects beyond academic submission, interest in startups, and ability to identify practical problems. This indicates that students and graduates have the personal motivation and confidence needed for commercialization. The main barrier is not personal capability but external support and guidance.

Table 5: Access to Funding and Industry Linkage

Items	Mean	SD	Decision
20. I know funding sources for developing research-based innovations.	2.27	0.93	Low
21. Students in my university have access to grants or seed funding for innovation.	2.09	0.88	Low
22. Students are linked with industry partners during or after research projects.	2.16	0.91	Low
23. Industry experts are involved in assessing or improving student research projects.	2.34	0.96	Low
24. Funding is available for prototype development after project completion.	2.05	0.85	Low
Grand Mean	2.18	0.91	Low

Table 5 shows that access to funding and industry linkage was low (grand mean = 2.18). Respondents had limited knowledge of funding sources, weak connections to companies or investors, and minimal industry involvement in research projects. This shows that even motivated students face structural and financial barriers that limit their ability to move research toward commercialization. Funding and industry partnership gaps are a critical bottleneck.

Table 6: Commercialization Readiness

Items	Mean	SD	Decision
25. I am willing to seek intellectual property protection for my research project.	3.21	0.97	Moderate
26. I am prepared to improve my project into a prototype or product.	3.49	0.91	Moderate
27. I am ready to seek advice on how to protect and patent my research ideas	3.30	0.90	Moderate
28. I intend to seek mentorship on turning my thesis into a startup.	3.58	0.88	High
29. I am ready to present my research project to an investor or industry partner.	3.32	0.94	Moderate
30. I believe my project has potential for market or community application.	3.66	0.86	High
Grand Mean	3.43	0.91	Moderate

Table 6 shows that overall commercialisation readiness was moderate (grand mean = 3.43). Respondents were willing to improve projects, seek mentorship, and believe in their projects' market potential. However, readiness is constrained by low awareness, limited institutional support, and weak funding/industry linkage. The regression confirmed that all four predictors significantly influence readiness, with commercialization awareness having the strongest effect.

Table 7: Summary of the Descriptive Statistics

Section	Grand Mean	Standard Deviation	Decision
Commercialization awareness and knowledge	2.21	0.72	Low
Institutional support and university commercialization infrastructure	2.34	0.95	Low
Entrepreneurial orientation and personal capability	3.50	0.89	High
Access to funding and industry linkage	2.18	0.91	Low
Commercialization readiness	3.43	0.91	Moderate

Table 7, the summary table, shows that entrepreneurial orientation and personal capability had the highest grand mean (3.50), indicating that respondents are motivated and personally willing to develop their research projects into practical solutions. Commercialisation readiness was moderate (3.43), suggesting that students and graduates are somewhat willing to move their projects beyond academic submission, but their readiness is constrained by external factors. Commercialisation awareness and knowledge were low (2.21), highlighting that many respondents lack understanding of patents, intellectual property, and commercialisation pathways. Institutional support and university infrastructure were also low (2.34), while access to funding and industry linkage had the lowest mean (2.18), indicating that structural and financial barriers limit the translation of research into viable products or startups.

Overall, the findings suggest that while personal interest and entrepreneurial mindset are strong, institutional and structural constraints are the main barriers. Respondents face limited training, weak patent and incubation support, poor funding access, and insufficient industry connections. Enhancing commercialisation readiness will require universities to provide targeted awareness training, intellectual property guidance, incubation services, mentorship, and strengthened funding and industry linkage. Such measures will help students and graduates transform science-based research projects into marketable products, services, startups, and community solutions.

Table 8: Reliability analysis of study constructs

Construct	Number of items	Cronbach's alpha	Composite reliability	Average variance extracted
• Commercialisation Awareness and Knowledge	7	0.84	0.87	0.56
• Institutional Support and University Infrastructure	6	0.88	0.90	0.60
• Entrepreneurial Orientation and Personal Capability	6	0.82	0.85	0.53
• Funding Access and Industry Linkage	5	0.86	0.89	0.58
• commercialization Readiness	6	0.89	0.91	0.62

Table 8 shows that all constructs had Cronbach's alpha values above 0.70. This indicates acceptable internal consistency. Composite reliability values were also above 0.70, while average variance extracted values were above 0.50. The instrument has adequate reliability and convergent validity.

Table 9: Correlation matrix

Variable	Mean	SD	CAK	ISU	EOP	FIL	CR
CAK	2.21	0.72	1.00				
ISU	2.48	0.76	0.51	1.00			
EOP	3.19	0.69	0.47	0.44	1.00		
FIL	2.35	0.73	0.45	0.56	0.41	1.00	
CR	2.73	0.74	0.62	0.53	0.58	0.49	1.00

CAK = commercialization Awareness and Knowledge
 ISU = Institutional Support and University Infrastructure
 EOP = Entrepreneurial Orientation and Personal Capability
 FIL = Funding Access and Industry Linkage
 CR = commercialization Readiness

Table 9 shows positive relationships between all explanatory variables and commercialization readiness. commercialization awareness and knowledge had the strongest correlation with commercialization readiness at $r = 0.62$. Entrepreneurial orientation followed at $r = 0.58$. Institutional support had $r = 0.53$, while funding access and industry linkage had $r = 0.49$. The correlation values were below 0.80, which suggests that there is no severe multicollinearity.

Table 10: Multiple regression result

Dependent variable: commercialization Readiness

Predictor	B	Std. Error	Beta	t-value	p-value
• Constant	0.533	0.164		3.25	0.001
• commercialization Awareness and Knowledge	0.314	0.044	0.332	7.14	<0.001
• Institutional Support and University Infrastructure	0.208	0.043	0.228	4.84	<0.001
• Entrepreneurial Orientation and Personal Capability	0.277	0.049	0.265	5.65	<0.001
• Funding Access and Industry Linkage	0.151	0.039	0.172	3.87	<0.001

Note: * B is used to calculate expected values in the original scale.

* Beta is used to compare which predictors are most influential.

Regression Equation

$$CR = \beta_0 + \beta_1 CAK + \beta_2 ISU + \beta_3 EOP + \beta_4 FIL + \varepsilon$$

gives,

$$CR = 0.533 + 0.314(CAK) + 0.208(ISU) + 0.277(EOP) + 0.151(FIL) + \varepsilon$$

Model summary:

$R = 0.751$, $R\text{-square} = 0.564$, $\text{Adjusted } R\text{-square} = 0.559$, $F(4, 379) = 122.60$, $p < 0.001$

Table 10 shows that the four explanatory factors jointly explained 56.4 per cent of the variation in commercialisation readiness. The model was statistically significant, $F(4, 379) = 122.60$, $p < 0.001$. All four predictors had significant positive effects on commercialisation readiness. commercialization awareness and knowledge had the strongest standardized effect, $\beta = 0.332$, followed by entrepreneurial orientation, $\beta = 0.265$, institutional support, $\beta = 0.228$, and funding access and industry linkage, $\beta = 0.172$. The result implies that students and graduates who understand commercialisation, patents, intellectual property, startup pathways, and technology transfer are more likely to feel ready to transform their research projects into practical ventures or solutions. The finding also suggests that personal entrepreneurial capability, university support, funding access, and industry linkage improve readiness, but awareness remains the strongest predictor.

Discussion

The study examined four major factors affecting the commercialisation readiness of science-based research projects in selected Rivers State universities. The findings show that commercialisation awareness is low among respondents. Many respondents do not know where to seek intellectual property support, do not fully understand patents, and have

limited awareness of technology transfer offices or innovation support units. This supports the concern that many students and graduates approach research projects mainly as academic requirements rather than as possible sources of products, services, startups, or industry solutions.

Commercialization awareness and knowledge had the strongest influence on commercialization readiness. This finding agrees with Ravi and Janodia (2022), who identified awareness and patent-related practice as important issues in university technology transfer and commercialization. It also aligns with the Nigerian evidence reported by Fadeyi et al. (2019), where weak university-industry transfer structures limited the practical use of research outputs. The implication is clear. Students cannot move confidently toward commercialization when they do not understand the process.

Institutional support also had a significant effect on commercialization readiness. This means that universities influence commercialization through policies, offices, laboratories, incubation support, supervisor guidance, training, and industry exposure. This finding agrees with Jjagwe et al. (2024), who identified infrastructural and systemic barriers as major issues in innovation commercialization. Although some Rivers State universities have IPTTO-related structures, the low awareness result suggests that such structures may not be visible enough to students during project development.

Entrepreneurial orientation and personal capability had a significant positive effect on commercialization readiness. This means that students with higher confidence, innovation mindset, business interest, and opportunity recognition are more likely to consider moving their thesis beyond academic submission. This result agrees with Ajzen's (1991) Theory of Planned Behaviour, which links intention with attitude and perceived behavioural control. It also agrees with Lihua (2022) and Gao et al. (2022), who found that entrepreneurial intention among students is shaped by personal and contextual factors.

Funding access and industry linkage also had a significant effect on commercialisation readiness, though their standardised effect was the weakest among the four predictors. This does not mean funding and industry linkage are unimportant. Rather, it may mean that many respondents are still at an early stage where they first need awareness and confidence before seeking external finance or industry partners. Jjagwe et al. (2024) identified financing gaps as a major barrier in Uganda's research and innovation institutions. WIPO Nigeria Office (2026) also emphasised the need for IP-aware venture development, prototype validation, and commercialisation action planning among Nigerian university spin-offs and research-driven ventures.

The results suggest that awareness is the entry point. Institutional support, entrepreneurial orientation, and funding linkage become more useful when students first understand what commercialisation means and where to go for support. For Rivers State universities, the practical challenge is to move commercialisation education into the normal research process. Students should not first hear about patents, technology transfer, incubation, or industry partnership after graduation. They should learn these issues while choosing topics, designing methods, developing prototypes, and writing final reports.

Conclusion

This study examined the statistical analysis of factors affecting the commercialisation readiness of science-based research projects in Rivers State universities. The paper focused on four explanatory factors: commercialisation awareness and knowledge, institutional support and university commercialisation infrastructure, entrepreneurial orientation and personal capability, and access to funding and industry linkage. The findings show that commercialisation awareness is low among many students and graduates, while readiness to learn about commercialisation is high. The regression results show that all four factors significantly influence commercialisation readiness, with commercialisation awareness and knowledge having the strongest effect. This means that the movement from thesis to startup begins with understanding. Students who do not understand commercialisation, patents, intellectual property, technology transfer, incubation, and industry partnership are less likely to take action after completing their projects. The main contribution of the study is its student-centred measurement of commercialisation readiness. Instead of measuring actual commercialisation success, which many respondents have

not experienced, the study measures willingness, preparedness, and perceived ability to transform science-based projects into products, services, startups, prototypes, patents, or industry solutions. This provides a realistic framework for universities where many students are still unfamiliar with commercialisation pathways. The study concludes that Rivers State universities should strengthen the bridge between thesis writing and startup development. Science-based research projects should not end only as bound documents. Projects with practical potential should be identified, protected, refined, funded, mentored, and connected to users and industries.

Recommendations

Based on the above findings, the following recommendations are proposed:

1. Universities should introduce compulsory commercialisation awareness training for final-year undergraduate and postgraduate students in science-based disciplines.
2. Students should receive early exposure to intellectual property, patents, copyrights, prototype development, startup creation, licensing, and technology transfer.
3. Universities should strengthen technology transfer offices, entrepreneurship centres, and incubation hubs, and make them visible to students during project supervision.
4. Supervisors should guide students to select research topics with practical relevance, user value, technical feasibility, and commercialisation potential.
5. Universities should create project screening committees to identify student research outputs with patent, prototype, startup, or industry application potential.
6. Government agencies should provide seed funding, innovation grants, and prototype development support for promising student research projects.
7. Industry partners should be involved in research fairs, innovation exhibitions, final-year project showcases, and postgraduate research presentations.
8. Entrepreneurship centres should move from general entrepreneurship teaching to research-based venture development training.

References

- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Compagnucci, L., & Spigarelli, F. (2020). The Third Mission of the university: A systematic literature review on potentials and constraints. *Technological Forecasting and Social Change*, 161. <https://doi.org/10.1016/j.techfore.2020.120284>
- Fadeyi, O., Maresova, P., Stemberkova, R., Afolayan, M., & Adeoye, F. (2019). Perspectives of university-industry technology transfer in African emerging economies: Evaluating the Nigerian scenario via a data envelopment approach. *Social Sciences*, 8(10). <https://doi.org/10.3390/socsci8100286>
- Gao, T., Yang, J., & Ye, Y. (2022). A bibliometric analysis of college students' entrepreneurial intention from 2000 to 2020: Research trends and hotspots. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.865629>
- Iwundu, M. P. (2022). *Update on operations of Intellectual Property and Technology Transfer Office (IPTTO)*, University of Port Harcourt. University of Port Harcourt.
- Jjagwe, R., Kirabira, J. B., Mukasa, N., & Amany, L. (2024). The drivers and barriers influencing the commercialization of innovations at research and innovation institutions in Uganda: A systemic, infrastructural, and financial approach. *Journal of Innovation and Entrepreneurship*, 13. <https://doi.org/10.1186/s13731-024-00435-y>
- Liao, S., Javed, H., Sun, L., & Abbas, M. (2022). Influence of entrepreneurship support programs on nascent entrepreneurial intention among university students in China. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.955591>
- Lihua, D. (2022). An extended model of the Theory of Planned Behavior: An empirical study of entrepreneurial intention and entrepreneurial behavior in college students. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.627818>
- Momoh, O. A., Bala, A., & Sa'idu, A. (2022). A survey of commercialization potentials of research results from

- universities in Nigeria. *International Advanced Research Journal in Science, Engineering and Technology*, 9(6), 149–160. <https://doi.org/10.17148/IARJSET.2022.9621>
- Padilla Bejarano, J. B., Zartha Sossa, J. W., Ocampo-López, C., & Ramírez-Carmona, M. (2023). University technology transfer from a knowledge-flow approach: Systematic literature review. *Sustainability*, 15(8). <https://doi.org/10.3390/su15086550>
- Ravi, R., & Janodia, M. D. (2022). Factors affecting technology transfer and commercialization of university research in India: A cross-sectional study. *Journal of the Knowledge Economy*, 13, 787–803. <https://doi.org/10.1007/s13132-021-00747-4>
- World Intellectual Property Organization Nigeria Office. (2026, March 9). *Scale up your IP program*. WIPO. <https://www.wipo.int/en/web/office-nigeria/w/news/2026/scale-up-your-ip-program>