Here is a complete **project proposal** for your school recommender system tailored for the Kenyan Competency-Based Curriculum (CBC/CBE) and including school onboarding and monetization features.

**📄 PROJECT PROPOSAL: Outmatch — CBE Senior Secondary School Recommender System**

**1. Project Title**

**Outmatch**: A Smart, Psychometric-Based School Recommender System for Kenyan Senior Secondary Students and Schools

**2. Project Summary**

**Outmatch** is a digital platform designed to help Grade 9 students in Kenya identify the most suitable senior secondary schools based on personality, academic performance, regional preference, and career pathway alignment. It also allows schools to adopt the system for use with their own students by offering a self-service portal with licensing, M-PESA integration, and voucher management.

**3. Objectives**

* Help students identify suitable senior secondary schools using psychometric and academic data.
* Map students' personalities to relevant CBE career pathways (STEM, Arts & Sports, Social Sciences).
* Match students to appropriate schools based on geography, facilities, school type, and score.
* Provide schools with a tool to manage student psychometric assessments internally.
* Enable monetization via individual student payments and school-based licensing with vouchers.

**4. Target Users**

| **User** | **Use Case** |
| --- | --- |
| Grade 9 Students | Discover best-fit senior secondary schools |
| Parents/Guardians | Guide children in selecting a career-aligned school |
| School Administrators | Run psychometric tests for their students, manage results |
| Ministry of Education (Optional) | Access regional or national analytics on pathway preferences |

**5. Key Features**

**🧠 Student-Focused Features**

* MBTI-based personality test tailored to Kenyan culture
* CBE pathway recommendations
* School recommendations ranked by fit
* Region and infrastructure filtering
* Full report access via M-PESA payment

**🏫 School-Focused Features**

* School account registration and login
* Bulk upload or onboard students
* Purchase licenses via M-PESA
* Generate & manage voucher codes
* View student results dashboard
* Export PDF reports

**6. System Architecture Overview**

**🔧 Technical Stack**

| **Layer** | **Technology** |
| --- | --- |
| Frontend | React.js + Tailwind CSS |
| Backend | Django + Django REST Framework |
| Database | PostgreSQL |
| Authentication | Django Auth / Token Auth |
| Payments | Safaricom M-PESA Daraja API |
| Hosting | Render / Railway / DigitalOcean |

**🧱 Core Modules**

* Student Profile & Test Engine
* Recommender Engine (Multi-Criteria)
* School Database (Pathways, Infrastructure)
* School Admin Panel
* Voucher & Licensing System
* M-PESA Integration
* Analytics Dashboard (Admin Only)

**7. Recommender Logic Criteria**

| **Factor** | **Description** |
| --- | --- |
| Personality Fit | MBTI-like type → CBE pathway |
| Career Pathway Preference | Student-chosen preference |
| Geographic Location | County and Sub-county filtering |
| Performance | Match school’s entry score |
| Infrastructure | Labs, studios, sports grounds, etc. |
| School Type | National, Extra County, County, Sub-county |

**8. Revenue Model**

| **Channel** | **Description** |
| --- | --- |
| Pay-per-student | One-time M-PESA payment to unlock report |
| School Licenses | Schools buy licenses in bulk |
| Voucher Sales | Vouchers issued for student access |

**9. Timeline**

| **Phase** | **Tasks** | **Duration** |
| --- | --- | --- |
| Phase 1 | Psychometric Test + Recommender Engine | 2 weeks |
| Phase 2 | Student UI + Reports + M-PESA Integration | 2 weeks |
| Phase 3 | School Admin Portal + Voucher System | 2 weeks |
| Phase 4 | Testing + Deployment + Training | 1 week |

**10. Deliverables**

* Functional web-based platform (mobile-first)
* Django-based backend with full APIs
* Admin dashboard for system control
* M-PESA integration for payments
* Documentation (User, Admin, and Dev)
* Sample dataset of Kenyan schools (CSV/JSON)

**11. Risks & Mitigation**

| **Risk** | **Mitigation** |
| --- | --- |
| Incomplete school data | Partner with MoE or allow manual school signup |
| Regional access issues | Make system offline-compatible where possible |
| User hesitancy to pay | Offer limited free features and demos |

**12. Conclusion**

Outmatch provides a modern, data-driven approach to school selection and student guidance within the Competency-Based Education (CBE) framework in Kenya. It bridges the gap between psychometric insight, academic performance, and structured school data, offering value to both students and educational institutions.