**SWOT Analysis – Mobile-Based Attendance Management System**

SWOT stands for Strengths, Weaknesses, Opportunities, and Threats. It is a simple yet powerful tool used to assess a project or business idea from all angles. It helps identify what you do well, what needs improvement, where growth is possible, and what risks might affect your plans. By carrying out a SWOT analysis early in the project development, especially during the requirements gathering stage, you can create a clear roadmap and make more informed decisions.

In this analysis, we focus on a mobile attendance system that uses geofencing (location tracking) and facial recognition to ensure students are physically present in a classroom before their attendance is marked. This system is designed to solve problems like proxy attendance and manual check-ins, which are common challenges in educational institutions across Cameroon.

Below is a detailed SWOT analysis of the project to guide further development:

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| Strengths (Internal, Positive) | Weaknesses (Internal, Negative) |
| Combines geofencing and facial recognition for high-accuracy attendance tracking. | Requires strong internet connectivity and precise GPS accuracy to function properly. |
| Reduces administrative workload by automating attendance processes. | Facial recognition can struggle in low-light environments or with poor camera quality. |
| Prevents proxy attendance, enhancing integrity and trust in the system. | Some students may not own smartphones or may use incompatible devices. |
| Allows real-time data access and monitoring by instructors or admins. | Concerns over biometric data privacy and security must be addressed carefully. |

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| Opportunities (External, Positive) | Threats (External, Negative) |
| Expand usage to corporate settings, conferences, and events beyond schools. | Legal restrictions and school policies might limit the use of facial recognition technology. |
| Integrate with school information systems for automatic syncing of attendance records. | Presence of competitor applications offering similar features in the market. |
| Use AI for continuous improvement in facial recognition accuracy over time. | GPS or battery failure can lead to unsuccessful check-ins, affecting reliability. |
| Implement alert systems for parents or staff for real-time attendance updates. | Risks such as lost or shared devices could allow misuse of the check-in system. |

# Conclusion

This SWOT analysis provides a clear overview of the strengths, weaknesses, opportunities, and threats associated with the mobile-based attendance management system. By identifying these factors early in the requirements gathering phase, we can better prepare for challenges, leverage strengths, and explore opportunities for future growth.