**Background of the Study**

Ghana's telecommunications industry has witnessed significant growth in recent years, with companies like Vodafone Ghana playing a pivotal role in providing mobile and internet services nationwide (Bandim, 2022). The industry is characterized by intense competition, making customer retention crucial for maintaining market share and profitability. Customer churn, also known as customer attrition, refers to the phenomenon where subscribers or customers cease using a company's service or product within a given period (Koranchirath, 2024). Understanding the factors leading to customer churn is essential for developing effective retention strategies.

Vodafone Ghana, formerly known as Ghana Telecom, is the national telecommunications company of Ghana. As of January 2020, it had approximately 9.3 million mobile voice subscribers, representing 13.81% of Ghana's market share. Since acquiring a 70% stake in Ghana Telecom in 2008, Vodafone has become a significant player in the telecommunications sector, offering a range of services including mobile, internet, and satellite communications. In 2016, Vodafone partnered with Kwame Nkrumah University of Science and Technology (KNUST) to enhance internet and Wi-Fi connectivity across the university's campuses. This collaboration included providing telecommunications services to the student community, such as SIM cards and data plans. However, in February 2023, the Telecel Group acquired Vodafone's 70% shares in Ghana Telecom, rebranding the company as Telecel. This rebranding aimed to improve service offerings, including voice and data services, money transfers, and business solutions.

Despite efforts to provide affordable and accessible mobile communication services to students through the school-provided SIM card program, high rates of student churn persist. This issue not only results in revenue loss but also affects student experiences. Therefore, it is imperative to explore the factors contributing to student churn and retention and to develop predictive analytics models to identify at-risk students and devise strategies to enhance retention rates.

This study stems from the need to address the high rates of student churn in the telecom industry, specifically within the KNUST student population using Telecel services. By understanding the underlying factors driving student churn, Telecel can implement targeted retention strategies, thus improving service quality and student satisfaction. This research will benefit Telecel by enhancing customer loyalty and revenue and enriching the academic environment by ensuring students have reliable and effective telecommunications services.

This research endeavors to construct a predictive analytics framework to enhance student retention and mitigate churn within Telecel services at KNUST. It focuses on discerning and evaluating the factors that impact student churn and retention. By delving into various variables such as service quality, pricing, customer satisfaction, and engagement levels, the study aims to unveil insights crucial for preemptively addressing churn. Through advanced analytical techniques and data-driven methodologies, it seeks to develop a predictive model adept at forecasting potential churn instances and facilitating targeted interventions. This initiative aims to fortify Telecel's market position and contribute significantly to the advancement of retention strategies within the telecommunications sector.

**Problem Statement**

Despite the partnership between KNUST and Telecel to provide affordable mobile communication services to students, the school-provided SIM card program continues to face significant challenges with high rates of student churn. This ongoing issue results in substantial revenue loss and negatively impacts student experiences. The primary problem lies in the lack of a comprehensive understanding of the factors driving student churn and retention, which hampers the development of effective strategies to mitigate these issues. There are inadequate telecommunications services available to students, which affects their academic performance and overall well-being (Kapur, 2018). In a competitive telecom market, where students have multiple service provider options, retaining this demographic becomes increasingly challenging (Kapur, 2018). Previous studies have examined various factors influencing customer churn, such as network quality, pricing, and customer service (Mahajan et al., 2017; Banik and Sinha, 2020). Again, Khan et al., (2019) explored the factors affecting service quality, customer satisfaction, and customer churn in the Pakistan telecommunication services market. This study examines the various determinants of customer churn in telecommunications companies, providing insights into factors such as service quality, pricing strategies, and customer satisfaction. Also, Paterson and Guerrero, (2023) explored predictive analytics for student retention in higher education institutions. The research delves into predictive modeling techniques employed in higher education settings to forecast student attrition, identifying predictors such as academic performance, socio-economic factors, and engagement metrics. While existing studies offer valuable insights into customer churn in telecommunications and student retention in higher education, there remains a significant research gap at the intersection of these domains. Specifically, there is limited research focusing on the unique dynamics of student churn within telecommunications services tailored to the context of a specific institution, such as KNUST. Understanding the distinct factors influencing student churn in this context, including the interaction between academic commitments and telecommunications usage patterns, presents a gap for investigation. Consequently, there is a need for a targeted study that synthesizes insights from both telecommunications and higher education research to develop a comprehensive understanding of student churn within Telecel services at KNUST. By focusing on the KNUST student population, this study seeks to fill this gap by uncovering and analyzing data related to student demographics, usage patterns, and other relevant factors. The development of a predictive analytics model will aid in identifying at-risk students and formulating strategies to improve retention rates. This approach will contribute to the body of knowledge on customer churn in the telecommunications sector and provide actionable insights for Telecel and other telecom companies operating in similar contexts.

**Research Objectives**

**Main Objective**

To employ predictive analytics to enhance student retention and reduce churn within Telecel's telecommunications services at KNUST.

**Specific Objectives**

* To explore the factors that influence student churn and retention among students in KNUST.
* To identify how the quality of Telecel network and services influence student retention and churn in KNUST.
* To Identify strategies to improve retention rates and reduce churn among KNUST students.

**Research Questions**

**Main Research Question**

How can predictive analytics enhance student retention and mitigate churn within Telecel's telecommunications services at KNUST?

**Specific Research Questions**

* What factors influence student retention and churn for Telecel services at KNUST?
* How does the quality of Telecel network and services influence student retention and churn among KNUST students?
* What strategies can improve retention rates and reduce churn among students in KNUST?

**Significance of the study**

The study will offer a comprehensive understanding of the factors impacting student retention and churn for Vodafone. This will enable the development of precise strategies to enhance retention rates and minimize churn, directly benefiting Vodafone's customer base and revenue stream.

The study will empower KNUST to improve the telecom services offered to its students. By identifying the factors influencing student retention and churn, KNUST can work closely with Telecel to guarantee the delivery of top-notch, dependable services to its students, thereby solidifying the partnership between KNUST and Telecel.

The study is all about understanding what students want from Telecel services. By knowing their specific needs and preferences, we can make the services even better. This means improved connectivity, service plans, and less hassle from switching providers. Ultimately, it ensures a more stable and reliable service for students.

**Structure of the study**

The study on student retention and churn for Telecel services at KNUST aimed to investigate the factors influencing students’ decisions to use or stop using Telecel services. The study followed a structured approach; Chapter one of the study deals with the introduction of customer retention and churn in the telecommunications services sectors. Chapter two talks about review of existing literature on customer retention and churn prediction. Chapter three of the study discusses the methodology used in the study.

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