

# 1. Introduction

## 1.1 Background

Analytical Hierarchy Process (AHP) serves as a pivotal decision support model developed by Thomas L. Saaty to systematically break down complex problems or multi-criteria into a hierarchical structure. According to Saaty[14], this hierarchical representation spans from the primary goal to factors, criteria, sub-criteria, and finally, the alternatives.

PT Astha Cipta Property, a forward-thinking startup, is dedicated to supporting small-scale investors and developers in their business growth by prioritizing the digitization of marketing, agency, and record-keeping processes. Qirby, operating in the property application sector under PT Astha Cipta Property, seeks to broaden the promotion of its properties to consumers across diverse societal layers and regions. Currently, property information is constrained by a direct marketing approach.

Recognizing the pivotal role of accurate and relevant product recommendations in user decision-making, the integration of AHP into the Qirby application is poised to enhance the sophistication of the recommendation process. AHP's hierarchical decision-making aligns well with the intricate factors involved in product selection, promising a more nuanced and personalized user experience.

To facilitate the implementation of AHP, the Laravel framework serves as the foundation. Laravel, recognized for its elegant syntax and robust features, provides a structured and efficient environment for developing complex systems. The modular architecture of the framework enables developers to seamlessly integrate AHP into the existing recommendation system of Qirby. With Laravel as

The supporting framework, the Qirby application is well-positioned to leverage the full potential of AHP, delivering accurate and personalized product recommendations to its users.

## 1.2 Topics and Limitations

Several problems can be identified in this implementation: How to determining the criteria or factors that need to be considered in using AHP to determine product recommendations at Qirby; implementing the Analytical Hierarchy Process for product recommendations in the Qirby application; and assessing how accurate the implementation of the AHP algorithm is in improving the quality of product recommendations in the Qirby application.

The limitations in the decision-making process for using AHP in the Qirby application include the following aspects: the selection of parameter criteria for AHP product recommendations, which may be subjective and influence the final recommendations; the scope of products available in the Qirby application, as a limited product range can affect the effectiveness and accuracy of recommendations; and the implementation of the Qirby application using AHP, which may involve challenges related to integrating the algorithm with existing systems and ensuring it performs efficiently at scale.

## 1.3 Objective The Study

The objective of implementing AHP in Qirby's product recommendations is to address the challenges in determining and weighting the relevant decision-making criteria, ensuring that these factors are comprehensively considered in the recommendation process. Additionally, the focus is on evaluating the practical application of AHP within Qirby to improve the accuracy and relevance of product recommendations, while addressing any limitations in its implementatio