

CIT 591 – Team 53 - Final Project Proposal

Project Name:

Commercial Property Financing Application Screening Tool

Team members:

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Project Description:

The team will be developing a commercial property financing screening application for use by banks/lenders to evaluate the risk involved with a loan and calculate the interest rate on loans. This tool will be extracting public data such as the US Housing price index, housing statistics and corporate borrowers' company financial ratios. This data will then be combined with loan specific information such as loan amount, location and interest rates to conduct a feasibility assessment on the application.

This tool serves as an initial screening checkpoint for any commercial mortgage application for the lenders using the following metrics/risk variables for the assessment.

- **Key metrics involved in the assessment:**
 - **Loan-to-Value (LTV):** loan amount divided by overall property value. The property value is typically evaluated by a certified appraiser who has extensive knowledge of the local market. Most banks/lenders have a maximum ratio for LTV for different property types. We propose to find existing property data and create a regression analysis to estimate the property value. The higher the LTV, the riskier the loan for the lender.
 - **Capitalization Rate (cap rate):** the rate lenders use to calculate the property value. This is usually regarded as the rate of return on an annual basis from the investment property. CBRE publishes the cap rates for major markets: <https://www.cbre.us/research-and-reports/North-America-Cap-Rate-Survey-H1-2019>
 - **Net Operating Income (NOI):** Net Income generated by a property after deducting operating expenses. The NOI measured the ability of a property to generate income from operations. The value of the subject property equals the NOI divided by the cap rate.
 - **Debt Service Coverage Ratio (DSCR):** This ratio helped to determine the borrower's ability to make debt service payments. It is defined as the NOI divided by the Annual Debt Service on the proposed loan. The debt service is the total

principal and interest payment of the loan on an annual basis. The greater the DSCR, the more flexibility it provides (more income than expense).

- **Property Type:** Typical property types in commercial mortgages include: Multi-Residential (Apartments), Retail, Office, Industrial, etc.
- **Property Assessment:**
 - **Location Qualities:** Population, crime rate, accessibility to local malls, highway, main streets, schools, hospitals, etc.
 - **Vacancy Rate:** The vacant unit(s) divided by the total number of rental units. The lower the rate the better.
 - **Appraisal Report**
 - **Rent rolls**
 - **Environmental Assessments**
 - **Building Inspections**
 - **Neighborhood Inspections**
 - **Property condition and age**
 - **Tenant quality assessment:** Diversity of the tenants, percent of the top tenants' rent to the total rent amount
 - **Management experience**
- **Borrower Risk Assessment:**
 - **Relevant Experience:** Borrower's relevant experience in property construction, management or financing in the market.
 - **Financials:** Financial statements (cash flow, income and balance sheets) for borrowers and guarantors for at least the past three years.
 - **Compliance Checks**
 - **Connections:** Most of the lenders have a cap for the total exposure for one borrower and its subsidiary/affiliated companies.

Work Breakdown:

As this is a learning assignment, all team members have joined the team due to having similar interests in the topic. For everyone to learn to their fullest capacity, all members will combine skills and efforts to learn from each other's skills and assist in the teaching of their area of expertise to help build the remainder of the team.

We propose that all members will have a part in every aspect of the project but every task will have a lead (Manager) that oversees progress in that particular portion of the project and helps teach the other members on best principals. The management breakdown can be found below.

- **Product Manager: Kristin Xie**
 - Kristin will be leading the effort on defining the methodology for loan assessment, specifying the functional requirements for the tool, and testing the tool to ensure that the final outputs are reasonably sound.

- **Software Engineering Manager: Tarek El-Afifi**
 - Tarek will be leading the effort on java implementation and code design. His role will involve ensuring consistency between classes, designing classes to have low coupling and high cohesion, performing JUnit tests to oversee that the classes perform as expected and managing the GIT repository for proper collaboration between team members.
- **Data Analytics Manager: Yu Zhang**
 - Yu will be leading the effort in finding and interpreting real estate data and turning it into information that can be used for proper assessment within the tool. Her role will involve ensuring data integrity, designing the database design and ensuring that the data is sound (checking if it matches expected trends that is found within the market).