

The Creation of an Expert System for the Qualitative Evaluation of The Value of a Land Lot in the  
Perspective of Bank Collateral

MCO2 (Chatbot) Report  
for the course  
Introduction to Intelligent Systems (CSINTSY)

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## I. Introduction

The expert system the group has created was modeled after the duties of a bank manager. In general, a bank manager has many responsibilities related to the supervision of the branch they are assigned to. A big responsibility of a bank manager is to ensure the profitability of the bank through the creation of financial decisions, such as setting interest rates and managing the branch's budget. Other responsibilities would include customer service and marketing (Learn.org).

Bank managers may also involve themselves with the handling of money, allowing individuals to borrow money from the bank. When borrowing money from the bank, however, they need to ensure that the bank will not be scammed, losing the money in the process. Hence, collaterals are often required from the borrower to the lender, so to ensure that even if the lender may not be able to pay back the loan, the value of the money borrowed may still be collected. Collaterals often come in the form of pieces of land, and the evaluation of the overall value of this land is important in determining the viability of the loan the lender wishes to avail.

The task that the group decided to automate is the appraisal of lots, where a land area would be judged depending on criteria that would determine its value. These factors involve the state of the land such as its shape, frontage, and elevation. There are also other factors such as its proximity to areas such as commercial establishments, and the type of lot, being agricultural, residential, or commercial. Lot appraisal requires qualifications in the domain of financing, as it can be complicated due to the qualities a property has that are evaluated by the appraiser. The possibility of understating or overstating the value of the property could lead to a great loss of income; hence, the properties must be evaluated strictly to obtain the appropriate value. This task would require extensive research regarding the factors that would potentially affect the price of the property, such as future developments, recent sales, and even plate movement below the property during earthquakes as it can affect the future use of the lot.

The expert the group has interviewed is a Certified Public Accountant by profession and has been working in the domain of finances since 1996 until the current date. The expert worked in accounting for a local government, and different banks, namely Metrobank and Security Bank. In his experience in Metrobank, he was first assigned from 1997 to 2000 to the clearing department wherein the primary responsibility was to process outward checks for clearing. The expert was then moved to the Centralized Credit Unit of the Loans department from 2000 to 2004. This unit handles processing commercial loan applications which involve the work of judging collaterals. From 2005 to 2014, the expert was promoted to junior assistant manager for 4 years which was to manage the operation of a branch, then was promoted to a Branch Head that handles the overall branch operations, but specifically in the marketing aspect. From 2014 to 2019, the expert was employed at Security Bank, and in 2017, he was promoted as Cluster Head that handled 5 branches of the bank. Currently, he is an independent distributor of Riway International.

The expert system the group has created could be significant to those who would involve themselves in purchasing land. Since this expert system was created using the knowledge and rules of an expert who appraises land lots from the perspective that the lot will be used as collateral for a bank, the expert system will be beneficial for those who would perform the inspection and evaluation of properties that commercial loan applications use as collaterals.

This expert system can also be capable of catering to a wide range of individuals, such as families who are interested in buying a residential property, businesses who are interested in buying commercial properties, and government individuals who are interested in buying any properties that are deemed valuable to them.

## II. AI Features

The expert system was created in Prolog, a logical programming language wherein the logic behind the interviewed expert can then be interpreted as rules (See Listing 1).

### *Listing 1. Rules in the Expert System Knowledge Base*

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#### **HELPER RULES**

1. IF the lot type is NOT commercial AND the lot type is NOT residential AND the lot type is NOT agricultural THEN it is an unsupported lot type

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#### **VERY IDEAL LOTS**

2. IF the lot has a square shape AND the lot is above road level AND the lot has good drainage THEN the lot is a very ideal lot.

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#### **IDEAL LOTS**

3. IF the shape of the lot is NOT square AND the lot is above road level AND the lot has good drainage THEN the lot is an ideal lot.
4. IF the shape of the lot is a square AND the lot is NOT above road level AND the lot has good drainage THEN the lot is an ideal lot.
5. IF the shape of the lot is a square AND the lot is above road level AND the lot does NOT have good drainage THEN the lot is an ideal lot.

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#### **SEMI-IDEAL LOTS**

6. IF the shape of the lot is square AND the lot is NOT above road level AND the lot does NOT have good drainage THEN the lot is a semi-ideal lot.
  7. IF the shape of the lot is NOT square AND the lot is above road level AND the lot does NOT have good drainage THEN the lot is a semi-ideal lot.
  8. IF the shape of the lot is NOT square AND the lot is above road level AND the lot has good drainage THEN the lot is a semi-ideal lot.
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**NOT IDEAL LOTS**

9. IF the shape of the lot is NOT square AND the lot is NOT above road level AND the lot does NOT have good drainage THEN the lot is not an ideal lot.

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**VERY HIGH-VALUE LOTS**

10. IF the government is interested in the property THEN the value of that lot is very high.
11. IF the lot has a good opening AND the lot is very ideal AND the lot type is commercial THEN the value of that lot is very high.

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**HIGH-VALUE LOTS**

12. IF the lot has a good opening AND the lot is a very ideal lot AND the lot type is residential AND the lot is near commercial establishments THEN the value of that lot is high.
13. IF the lot has a good opening AND the lot is a very ideal lot AND the lot type is residential AND the lot is NOT near commercial establishments THEN the value of that lot is high.
14. IF the lot has a good opening AND the lot is an ideal lot AND the lot type is residential AND the lot is near commercial establishments THEN the value of that lot is high.
15. IF the lot has a good opening AND the lot is an ideal lot AND the lot type is residential AND the lot is NOT near commercial establishments THEN the value of that lot is high.
16. IF the lot has a good opening AND the lot is an ideal lot AND the lot type is commercial THEN the value of that lot is high.
17. IF the lot has a good opening AND the lot is a semi-ideal lot AND the lot type is commercial THEN the value of that lot is high.
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**LOW-VALUE LOTS**

18. IF the lot has a good opening AND the lot type is agricultural AND it is near commercial establishments THEN the value of that lot is low.
  19. IF the lot has a good opening AND the lot type is agricultural AND it is NOT near commercial establishments THEN the value of that lot is low.
  20. IF the lot has a good opening AND the lot is a semi-ideal lot AND the lot type is residential AND it is near commercial establishments THEN the value of that lot is low.
  21. IF the lot has a good opening AND the lot is a semi-ideal lot AND the lot type is residential AND it is NOT near commercial establishments THEN the value of that lot is low.
  22. IF the lot does not have a good opening AND the lot is a very ideal lot AND the lot type is agricultural AND it is near commercial establishments THEN the value of that lot is low.
  23. IF the lot does not have a good opening AND the lot is a very ideal lot AND the lot type is agricultural AND it is NOT near commercial establishments THEN the value of that lot is low.
  24. IF the lot does not have a good opening AND the lot is a very ideal lot AND the lot type is residential AND it is near commercial establishments THEN the value of that lot is low.
  25. IF the lot does not have a good opening AND the lot is a very ideal lot AND the lot type is residential AND it is NOT near commercial establishments THEN the value of that lot is low.
  26. IF the lot does not have a good opening AND the lot is a very ideal lot AND the lot type is commercial THEN the value of that lot is low.
  27. IF the lot does not have a good opening AND the lot is an ideal lot AND the lot type is agricultural AND it is near commercial establishments THEN the value of that lot is low.
  28. IF the lot does not have a good opening AND the lot is an ideal lot AND the lot type is agricultural AND it is NOT near commercial establishments THEN the value of that lot is low.
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29. IF the lot does not have a good opening AND the lot is an ideal lot AND the lot type is residential AND it is near commercial establishments THEN the value of that lot is low.
30. IF the lot does not have a good opening AND the lot is an ideal lot AND the lot type is residential AND it is NOT near commercial establishments THEN the value of that lot is low.
31. IF the lot does not have a good opening AND the lot is an ideal lot AND the lot type is commercial THEN the value of that lot is low.
32. IF the lot does not have a good opening AND the lot is a semi-ideal lot AND the lot type is commercial THEN the value of that lot is low.
33. IF the lot has a good opening AND the lot is not an ideal lot AND the lot type is commercial THEN the value of that lot is low.
- 

#### **VERY-LOW VALUE LOTS**

34. IF the lot does not have a good opening AND is a semi-ideal lot AND is an agricultural lot AND is near commercial establishments THEN it is a very low-value lot.
35. IF the lot does not have a good opening AND is a semi-ideal lot AND is an agricultural lot AND is NOT near commercial establishments THEN it is a very low-value lot.
36. IF the lot does not have a good opening AND is a semi-ideal lot AND is a residential lot AND near commercial establishments THEN it is a very low-value lot.
37. IF the lot does not have a good opening AND is a semi-ideal lot AND is a residential lot AND is NOT near commercial establishments THEN it is a very low-value lot.
38. IF the lot has a good opening AND is a not ideal lot AND is an agricultural lot AND near commercial establishments THEN it is a very low-value lot.
39. IF the lot has a good opening AND is a not ideal lot AND is an agricultural lot AND is NOT near commercial establishments THEN it is a very low-value lot.
40. IF the lot has a good opening AND is a not ideal lot AND is a residential lot AND near commercial establishments THEN it is a very low-value lot.
41. IF the lot has a good opening AND is a not ideal lot AND is a residential lot AND is NOT near commercial establishments THEN it is a very low-value lot.
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- 42. IF the lot does not have a good opening AND is a not ideal lot AND is an agricultural lot AND near commercial establishments THEN it is a very low-value lot.
  - 43. IF the lot does not have a good opening AND is a not ideal lot AND is an agricultural lot AND is NOT near commercial establishments THEN it is a very low-value lot.
  - 44. IF the lot does not have a good opening AND is a not ideal lot AND is a residential lot AND near commercial establishments THEN it is a very low-value lot.
  - 45. IF the lot does not have a good opening AND is a not ideal lot AND is a residential lot AND is NOT near commercial establishments THEN it is a very low-value lot.
  - 46. IF the lot does not have a good opening AND is a not ideal lot AND is a commercial lot THEN it is a very low-value lot.
- 

With the rules listed in Listing 1, the expert system's goal is to appraise a lot given its qualities and features inputted by a user. Using the information gathered, the expert system's logic processes through the list of rules until it finds a rule that matches all of the given inputs. The logical flow of the expert system starts by proving the qualities that make a very ideal lot. After which, the value of the lot would decrease proportionally to the number of qualities that the lot does not meet.

To determine the value of the lot, the expert system first asks about Rule 10 found in Listing 1, because a lot with government interest already implies that the lot can be bought for a very high price if sold to the government, as stated by the expert the group interviewed, which would conclude that the value of the lot is very high. If the user inputs that the lot does not have government interest, the system will then determine the state of the lot, whether it is very ideal, ideal, semi-ideal, or not ideal. The expert system checks rules 2 - 9 found in Listing 1 that would determine the quality of the land plot. The first quality, *shape(square)*, evaluates how confident the user is about the aspect ratio of the lot. The user would input a confidence score depending on how the shape of the lot is close to a 1:1 aspect ratio, or a square. The second quality, *above(road\_level)*, evaluates whether the lot is leveled with the road. The user has to input a confidence level that determines how sloped the lot is relative to the road, with the highest confidence score that it is leveled with the road. The last quality, *good(drainage)*, evaluates the drainage systems the lot has, where a good drainage system that prevents floods would have a higher confidence score.

After determining the quality of the land plot, the expert system will then ask what kind of type the land is, whether it is agricultural, residential, or commercial. For agricultural lots, it can be observed in Listing 1 that there are no rules that result in a high and very high lot value if the land plot is of an agricultural type because based on the expert's knowledge, it is expected that the agricultural land plots would have either low or very low land value, even if the quality of the lot is very ideal. For residential and commercial, the determined value will depend on the quality of the factors queried before asking the



querying the lot type. Another aspect that would instantly determine the value of the land lot to be either low or very low is the opening, or the accessibility of the lot from a road. If the lot has a bad opening that makes it hard to access the lot, it would imply that the value of the lot is of low or very-low value, as stated by the expert. In Listing 1, it can be also observed that there are no antecedents that state that the opening of the lot is not good, which results in consequents that state that the plot is very-high, or high value.

All of these factors are asked by the expert system, with different combinations of these factors being mapped to different confidence factors that were inquired from the interviewed professional.

Lastly, another query will be asked by the system that asks how close the lot is to commercial establishments. The proximity of the land plot from commercial establishments would affect the confidence level of the system's appraisal, as land lots with this quality would suggest that it is more appropriate that the land lot is at this certain value.

The parts of the knowledge that were the easiest to finalize were the rules related to determining the states of a lot, whether it was to be very ideal, ideal, semi or not-so-ideal, or a not ideal lot. The rules in this part of the knowledge are simple, as the system concludes the state of a lot depending on the description of a lot. The system can infer its state based on the following criteria: shape, above road level, and drainage. Having a very ideal lot would suggest that all features are of high quality: the shape of the lot is square, the lot is above road level, and the lot has good drainage (See Figure 1).

```
%Very ideal lot if all factors are TRUE
rule((very_ideal_lot :- shape(square), above(road_level), good(drainage)), 90).
```

*Figure 1. Rule in Prolog that determines if a lot is very ideal*

In the knowledge base, a lot is determined to be ideal when at most one of the features is not of high quality. This means that for each rule that determines an ideal lot, there would only be two rules that are not negated. The same rules apply when the expert system determines a semi-ideal lot, but there would only be one rule instead that is not negated. Lots that are not ideal at all do not exhibit any features that determine if it is ideal (See Figure 2).

```

/*
Ideal Lots: If the lot has at most 1 quality that is NOT satisfied.
*/
rule((ideal_lot :- not(shape(square)), above(road_level), good(drainage)), 90).
rule((ideal_lot :- shape(square), not(above(road_level)), good(drainage)), 80).
rule((ideal_lot :- shape(square), above(road_level), not(good(drainage))), 80).

/*
Semi-ideal Lots: If at least one quality is satisfied.
*/
rule((semi_ideal_lot :- shape(square), not(above(road_level)), not(good(drainage))), 80).
rule((semi_ideal_lot :- not(shape(square)), above(road_level), not(good(drainage))), 80).
rule((semi_ideal_lot :- not(shape(square)), not(above(road_level)), good(drainage)), 90).

/*
Not ideal lot: Does not satisfy any of the qualities.
*/
rule((not_ideal_lot :- not(shape(square)), not(above(road_level)), not(good(drainage))), 90).

```

*Figure 2. Rules in Prolog that determine if a lot is ideal, semi-ideal, or not ideal*

Appraising the lot by determining its value was the hardest part of the knowledge base that was implemented. It is easy to determine if a lot has a very high value since proving it only takes two rules. Either the government shows an interest in buying the lot, or the lot has a good opening, the lot is very ideal, the lot type is commercial, and the lot is near commercial establishments. However, the complications start when the rules about determining if a lot would fit under a high, low, or very low value. There are many ways to conclude that a lot would have one of these values as it depends on the state of the opening, status, lot type, and proximity to commercial establishments. Aside from the different factors, there is also the confidence level that differs per statement. For example, two rules state that a lot can be determined that it is of high value when the opening is good, the state of the lot is very ideal, and the lot type is residential, but there is a disparity between the last quality which is about whether the lot is near commercial establishments or not. In the knowledge base, these are two separate rules, that both determine that the lot is still high value, but the difference lies in the given confidence level of the system. If the lot is near commercial establishments, the system would give a confidence level of 90, but the system would give a confidence level of 80, indicating that the proximity of the lot to commercial establishments would affect the confidence level of the system when it answers that the lot has a high value.

Additionally, according to the interview with the group's interviewed professional, only 3 types of lots were considered, hence, an additional rule needed to be created to inform users that only commercial, residential, and agricultural lots are to be considered by the expert system (See Figure 3).

```
/*  
Error handling: Lot type is unsupported if  
1. Lot type is not commercial AND  
2. Lot type is not residential AND  
3. Lot type is not agricultural  
*/  
rule((determine unsupported_lot_type :- not(lot_type(commercial)), not(lot_type(residential)), not(lot_type(agricultural))), 100).
```

*Figure 3. Rules in Prolog that determine if a lot type is supported by the expert system*

### III. Results and Analysis

The implementation of the expert system worked as expected. The expert system was able to accurately evaluate the value of a lot based on the rules discussed previously. Among all the possible combinations of the characteristics of a lot, the following examples are enough in order to properly represent the distinct characteristics that would distinguish each of the possible value appraisals.

```
Query : government_interest ? 100.

X = 'The lot is of very high value',
CF = 90 .
```

*Figure 4. Very high-value appraisal (1)*

```
Query : government_interest ? -100.

Query : good(opening) ? |: 100.

Query : shape(square) ? |: 70.

Query : above(road_level) ? |: 50.

Query : good(drainage) ? |: 60.

Query : lot_type(commercial) ? |: 100.

X = 'The lot is of very high value',
CF = 40.5 .
```

*Figure 5. Very high-value appraisal (2)*

The two previous figures showcase the only two possible rules wherein a lot could be appraised as a very high-value lot. The first figure shows the only rule in the knowledge base that has one condition wherein if the government is interested in the lot then it is automatically appraised as a very high-value lot (See Figure 4). The next figure shows the other rule that would result in a very high-value lot appraisal when the government is otherwise not interested in the lot, which is when the lot has a good opening, it is very ideal, and it is a commercial type of lot which would also automatically imply that it is near commercial establishments, according to the group's interview with the professional (See Figure 5).

```

Query : government_interest ? -100.

Query : good(opening) ? |: 100.

Query : shape(square) ? |: 100.

Query : above(road_level) ? |: 100.

Query : good(drainage) ? |: -100.

Query : lot_type(residential) ? |: 100.

Query : near(commercial_establishments) ? |: 100.

X = 'The lot is of high value',
CF = 72 .

```

*Figure 6. High-value appraisal*

The next in the list would be when the lot has a high-value appraisal. To summarize, a high-value appraisal is given only when the lot has a good opening and if the lot is a residential lot with very ideal to ideal lot features or if the lot is a commercial lot with semi-ideal to ideal lot features (See Figure 6).

```

Query : government_interest ? -100.

Query : good(opening) ? |: 100.

Query : shape(square) ? |: 100.

Query : above(road_level) ? |: 100.

Query : good(drainage) ? |: 100.

Query : lot_type(commercial) ? |: -100.

Query : lot_type(residential) ? |: -100.

Query : lot_type(agricultural) ? |: 100.

Query : near(commercial_establishments) ? |: 100.

X = 'The lot is of low value',
CF = 70 .

```

*Figure 7. Low-value appraisal (1)*

```

Query : government_interest ? -100.

Query : good(opening) ? |: -100.

Query : shape(square) ? |: 100.

Query : above(road_level) ? |: 100.

Query : good(drainage) ? |: 100.

Query : lot_type(agricultural) ? |: -100.

Query : lot_type(residential) ? |: 100.

Query : near(commercial_establishments) ? |: 100.

X = 'The lot is of low value',
CF = 72 .

```

*Figure 8. Low-value appraisal (2)*

Residential and commercial lots without a good opening are automatically regarded as low-value lots even if they possess very ideal to ideal lot type features and agricultural lots are immediately considered low value if they possess very ideal to ideal lot features. There are some special rules where it would still produce a low-value evaluation and one of them is where a commercial lot has semi-ideal features but still does not have a good opening. The other rule is that even if it has a good opening if a commercial lot is not an ideal lot, then it is still considered a low-value lot (See Figures 7 & 8).

```

Query : government_interest ? -100.

Query : good(opening) ? |: -100.

Query : shape(square) ? |: -100.

Query : above(road_level) ? |: -100.

Query : good(drainage) ? |: 100.

Query : lot_type(commercial) ? |: -100.

Query : lot_type(agricultural) ? |: 100.

Query : near(commercial_establishments) ? |: 100.

X = 'The lot is of very low value',
CF = 90 .

```

*Figure 9. Very low-value appraisal (1)*

Very low-value lot evaluations are given if the lot is not ideal, regardless if the opening is good or it is near commercial establishments. Among these, agricultural and residential lots that are only semi-ideal and do not have a good opening are also evaluated as very low value (See Figure 9).

Upon analysis, the strength of the expert system is that it is able to provide a conclusion with high confidence when the user itself is certain of the answers to the questions given to them by the expert system. Since the confidence values were provided by a professional of the field upon reviewing the rules, the group is certain that the expert system is able to arrive at a conclusion with reasonable confidence values. The group also made sure that all of the possible combinations of inputs that the user can perform have their corresponding outcomes by ensuring that each rule includes all the necessary clauses to prevent incorrect conclusions.

```
Query : government_interest ? 20.  
Query : good(opening) ? |: 100.  
Query : shape(square) ? |: -100.  
Query : above(road_level) ? |: 100.  
Query : good(drainage) ? |: 100.  
Query : lot_type(residential) ? |: 100.  
Query : near(commercial_establishments) ? |: 100.  
X = 'The lot is of high value',  
CF = 81 .  
  
Query : government_interest ? 25.  
X = 'The lot is of very high value',  
CF = 22.5 .
```

*Figure 10. Low Confidence Value (1)*

```

Query : government_interest ? -100.

Query : good(opening) ? |: -20.

Query : shape(square) ? |: why.

I am trying to prove the following rule:
very_ideal_lot:-
  shape(square)
  above(road_level)
  good(drainage)
CF = 90

Query : shape(square) ? |: 100.

Query : above(road_level) ? |: 100.

Query : good(drainage) ? |: 100.

Query : lot_type(agricultural) ? |: 100.

Query : near(commercial_establishments) ? |: 100.

Query : lot_type(residential) ? |: 100.

Query : lot_type(commercial) ? |: 100.

false.

```

*Figure 11. Low Confidence Value (2)*

However, the expert system also has its limitations. The expert system can sometimes end without a conclusion in cases where the user enters a confidence value that is closer to zero. It may be because of the expert system interpreting that confidence levels under zero may be ambiguous rather than just a simple true or false value. This is increasingly evident when the confidence level of the user for that query is between -20 to +20. As seen in the first figure above, when the expert system receives a low positive confidence level from the user, the expert system might have interpreted the input as false so it arrives at a conclusion that the lot is high value instead of very high value (See Figure 10). In the second figure, the expert system fails to arrive at a conclusion because the user inputs a low confidence value on one of the clauses which are present in all of the rules and the expert system interprets the clause as neither true nor false due to lack of confidence (See Figure 11). Another limitation of the expert system is its scope. The expert system makes a conclusion based on a limited set of rules and clauses such as the criteria for an ideal lot only consists of four clauses specifically square lot, above road level, and good drainage when in reality there would be more factors that would affect the price of the lot or the definition of what makes a lot “ideal.” Lastly, the expert system is only able to evaluate the lot based on three generalized lot types: agricultural, commercial, and residential. It does not include other potential types of lots that the group and the professional are unaware of as well as it fails to be more specific in its present lot types which could also have an impact on the price such as different types of residential lots such as corner lots, interior lots, and flag lots (Home Stratosphere, 2022).



## **IV. Conclusions and Recommendations**

The group was able to implement an expert system that replicates the thinking process of an expert tasked to appraise the value of a lot. The expert system is able to determine if the value of the lot is very high, high, low, or very low, depending on the answers of a user to the queries the system has in relation to the qualities that determine the overall value of the lot.

This expert system mainly has one strength: if a user is able to provide answers to the queries with a high confidence level, then the expert system would be able to infer an answer with a high confidence level as well. This shows that the expert system has covered all of the possible outcomes that could lead to the value of a lot that aligns with the query answers. However, the expert system also does have its shortcomings. If the user were to answer the queries with a weak confidence level that is near zero whether positive or negative, the expert system might end up not determining an answer. This is possible due to the fact that values near zero lead to the ambiguity of the truth of the statement. Another weakness is that the expert system only considers three features, namely shape, elevation, and drainage, to determine the state of the lot. Having more features could lead to higher accuracy in appraising land lots, but more knowledge regarding these features can only be determined by interviewing different experts because the knowledge base is restricted to the knowledge of the only expert the group has interviewed. The last weakness the group has determined is that the expert system does not support providing answers for lot types that do not fall under agricultural, residential, or commercial.

There are many ways to further improve the expert system. As previously mentioned, the accuracy of the system can be further improved by introducing more factors that would determine the status or quality of the lot, as well as other external factors that affect its value. This can be done through another recommendation of the group by adding and comparing knowledge from different experts in the same field. Other factors may also include potential qualities such as future developments near the area, zoning changes, and market trends. Another factor that was not included in the expert system is the evaluation of lots with an industrial lot type. These factors may also be significant when appraising the value of a lot. The group also has recommendations regarding the implementation of the expert system. The expert system could possibly be further developed by using different approaches and more complicated algorithms and statistical models, such as a decision tree model and other machine learning models.

## V. References

Learn.org. (n.d.). *Bank Manager Career and Salary FAQs*. Retrieved March 25, 2023, from [https://learn.org/articles/Bank\\_Manager\\_Career\\_and\\_Salary\\_FAQs.html](https://learn.org/articles/Bank_Manager_Career_and_Salary_FAQs.html)

Home Stratosphere. (n.d.). 25 Types of Lots for Building Houses. <https://www.homestratosphere.com/types-of-lots-for-building-houses/>

## VI. Appendix A: Interview Transcripts

A Certified Public Accountant by profession with the following work experiences:

1996 to 1997: Municipal Accountant of the Local Government of Matag ob, Leyte

1997 to 2014: Employed in Metrobank

1997 to 2000: assigned in the Clearing Department wherein our primary responsibility was to process outward checks for Clearing.

2000 to 2004: assigned to the Centralized Credit Unit (CCU) of the Loans Department wherein we will process commercial loan applications. We will evaluate the 5 Cs of credit; Character, Capacity, Collateral, Condition, and Capital. Regarding the collateral, we will plot the property first then identify the neighborhood, research future plans of the government in the area, do an ocular inspection, and then give a valuation to the property.

2005 to 2009: promoted to Junior Assistant Manager and my primary task was to handle the operation of a branch.

2009 to 2014: promoted to Branch Head and my primary task was to lead the branch in the marketing aspect. Needless to mention that the branch head is the overall in charge of the branch

2014 to 2019: Employed at Security Bank

Branch Head of the Security Bank and in 2017 I was promoted to cluster head and handled 5 branches of the Security Bank, then.

2019 to present: an independent distributor of Riway International

Bank Manager:

- Car Loan
- Housing Loan
- Open an Account
- Credit Card

Base Price:

Put at the side factors that decrease the value.

- Appraisal of Lot
  - Plan of the Government on that Area

- Confidence Value
    - Confidence of Government involvement with a said lot due to projects in the area.
  - It will increase.
  - Impossible to estimate the increase in value but will be mentioned.
- Opening of the Lot
  - Side of the lot open to the road
  - 10k square meters ideal 60~80 meters opening.
    - Lower value
  - 5k square meters ideal 30~50 meters opening.
  - 240 square meters 12 meters opening
- Shape of the Lot
  - Perfect Square Lot
    - More value than an irregularly shaped lot or a rectangular shape
      - Square, maximizable.
      - 20% increase in.
  - Irregular shaped Lot
    - Always divide into squares for appraisal purposes
- Lot Type (Confidence Level)
  - Road Lot Level or higher
    - More important
  - Level Below the road
    - Slope
      - If steep slope, lower value
      - 45 very steep
      - 30 is acceptable.
      - 10 to 30 is acceptable.
      - 20 to 50%
- How big the lot
  - If the opening is very far. Not an ideal square. 50 by 200.
  - If the lot is very big, you cannot appraise it.
    - Split appraisal – the term
      - 30 x 100 divided by 3 to make a perfect square.
  - 50 by 100 must be split.
    - Split by proportion.
    - 1:1.5 is acceptable
    - 1:2 is not.
- Flood areas are low
- Neighborhoods
  - Commercial
    - 10,000 to 50,000
  - Residential
    - 1,000 to 10,000
  - Agricultural

- 10 to 1000
- Coconut plantations
- Grass Field

#### Ideal lot

- Along the road
- Good frontage (Opening)

#### New info:

#### Value in order

1. commercial\_buildings
2. govt\_offices
3. transport\_areas
4. school

High-value lot immediately if the government

#### High-value lot

- Along the road
  - Synonymous with “Good frontage (Opening)”
- Good frontage (Opening)
  - Synonymous with “Along the road”
- Square
- Above the road level
- Near Commercial

Proper drainage important

If lot is not accessible

#### Low value

- If the lot is accessible but one of the other requirements is not met, Med value.
- If the lot is accessible but two or more other requirements are not met, Low value.

#### Medium value lot

- Not located in a commercial area. Maybe in a residential area.

#### Low-value lot

- If one or two of the high-value lot ideals are not there can really affect the value
- Agricultural lot is automatically low value.

Squatters/Informal settlers’ equals lower value.

Instructions for Tords' dad. Give a confidence level ranging from -100 to 100.

Where -100 means that the statement is absolutely false and 100 if the statement is absolutely true.

Feel free to give it a confidence level between -100 and 100 if there is some truth to the statement.

KB RULES:

(ACCESSIBILITY)

IF the lot is near a road and has a good opening THEN the lot is accessible.

100

IF the lot is NOT near a road AND has a good opening THEN the lot is inaccessible

100

IF the lot is near a road AND does NOT have a good opening THEN the lot is inaccessible.

80

IF the lot is NOT near a road AND does NOT have a good opening THEN the lot is inaccessible.

100

(VERY IDEAL LOTS)

IF the lot has a square shape AND the lot is above road level AND the lot has good drainage THEN the lot is a very ideal lot.

90

(IDEAL LOTS)

IF the shape of the lot is NOT square AND the lot is above road level, AND the lot has good drainage THEN the lot is an ideal lot.

90

IF the shape of the lot is a square AND the lot is NOT above road level AND the lot has good drainage THEN the lot is an ideal lot.

80

IF the shape of the lot is a square AND the lot is above road level AND the lot does NOT have good drainage THEN the lot is an ideal lot.

80

## (SEMI-IDEAL LOTS)

IF the shape of the lot is square AND the lot is NOT above road level AND the lot does NOT have good drainage THEN the lot is a semi-ideal lot.

80

IF the shape of the lot is NOT square AND the lot is above road level AND the lot does NOT have good drainage THEN the lot is a semi-ideal lot.

80

IF the shape of the lot is NOT square AND the lot is above road level AND the lot has good drainage THEN the lot is a semi-ideal lot.

90

## (NOT IDEAL LOTS)

IF the shape of the lot is NOT square AND the lot is NOT above road level AND the lot does NOT have good drainage THEN lot is a not ideal lot.

90

## (VERY HIGH VALUE LOTS)

IF the government is interested in the property, THEN the value of that property is high.

90

IF the lot is accessible, the lot is very ideal, AND the lot type is commercial THEN the value of that property is high.

90

## (HIGH VALUE LOTS)

IF the lot is accessible AND the lot is a very ideal lot AND the lot type is residential AND the lot is near commercial establishments THEN the value of that lot is high.

90



IF the lot is accessible AND the lot is a very ideal lot AND the lot type is residential AND the lot is NOT near commercial establishments THEN the value of that lot is high.

80

IF the lot is accessible AND the lot is an ideal lot AND the lot type is residential AND the lot is near commercial establishments THEN the value of that lot is high.

90

IF the lot is accessible AND the lot is an ideal lot AND the lot type is residential AND the lot is NOT near commercial establishments THEN the value of that lot is high.

80

IF the lot is accessible AND the lot is an ideal lot AND the lot type is commercial AND the lot is NOT near commercial establishments THEN the value of that lot is high.

60

IF the lot is accessible AND the lot is a semi-ideal lot AND the lot type is commercial AND the lot is near commercial establishments THEN the value of that lot is high.

80

(LOW VALUE LOTS)

IF the lot is accessible AND the lot type is agricultural AND it is near commercial establishments THEN the value of that lot is low

70

IF the lot is accessible AND the lot type is agricultural AND it is not near commercial establishments THEN the value of that lot is low

80

IF the lot is accessible AND the lot is a semi-ideal lot AND the lot type is residential AND it is near commercial establishments THEN the value of that lot is low

80

IF the lot is accessible AND the lot is a semi-ideal lot AND the lot type is residential AND it is not near commercial establishments THEN the value of that lot is low

80

IF the lot is accessible AND the lot is a semi-ideal lot AND the lot type is commercial AND it is not near commercial establishments THEN the value of that lot is low

70

IF the lot is inaccessible AND the lot is a very ideal lot AND the lot type is agricultural AND it is near commercial establishments THEN the value of that lot is low

90

IF the lot is inaccessible AND the lot is a very ideal lot AND the lot type is agricultural AND it is not near commercial establishments THEN the value of that lot is low

90

IF the lot is inaccessible AND the lot is a very ideal lot AND the lot type is residential AND it is near commercial establishments THEN the value of that lot is low

80

IF the lot is inaccessible AND the lot is a very ideal lot AND the lot type is residential AND it is not near commercial establishments THEN the value of that lot is low

90

IF the lot is inaccessible AND the lot is a very ideal lot AND the lot type is commercial AND it is near commercial establishments THEN the value of that lot is low

70

IF the lot is inaccessible AND the lot is a very ideal lot AND the lot type is commercial AND it is not near commercial establishments THEN the value of that lot is low

80

IF the lot is inaccessible AND the lot is an ideal lot AND the lot type is agricultural AND it is near commercial establishments THEN the value of that lot is low

70

IF the lot is inaccessible AND the lot is an ideal lot AND the lot type is agricultural AND it is not near commercial establishments THEN the value of that lot is low

70

IF the lot is inaccessible AND the lot is an ideal lot AND the lot type is residential AND it is near commercial establishments THEN the value of that lot is low

70

IF the lot is inaccessible AND the lot is an ideal lot AND the lot type is residential AND it is not near commercial establishments THEN the value of that lot is low

80

IF the lot is inaccessible AND the lot is an ideal lot AND the lot type is commercial AND it is near commercial establishments THEN the value of that lot is low

70

IF the lot is inaccessible AND the lot is an ideal lot AND the lot type is commercial AND it is not near commercial establishments THEN the value of that lot is low

80

IF the lot is inaccessible AND the lot is a semi-ideal lot AND the lot type is commercial AND it is near commercial establishments THEN the value of that lot is low

80

IF the lot is accessible AND the lot is not an ideal lot AND the lot type is commercial AND it is near commercial establishments THEN the value of that lot is low

50

(VERY LOW VALUE LOTS)

IF the lot is inaccessible AND is a semi-ideal lot THEN it is a very low value lot

90

IF the lot is inaccessible AND is a semi-ideal lot AND is an agricultural lot AND is not near commercial establishments THEN it is a very low value lot

90

IF the lot is inaccessible AND is a semi-ideal lot AND is a residential lot AND near commercial establishments THEN it is a very low value lot

70

IF the lot is inaccessible AND is a semi-ideal lot AND is a residential lot AND near commercial establishments THEN it is a very low value lot

70

IF the lot is inaccessible AND is a semi-ideal lot AND is a commercial lot AND not near commercial THEN it is a very low value lot

80

IF the lot is accessible AND is a not ideal lot AND is an agricultural lot AND near commercial establishments THEN it is a very low value lot

80

IF the lot is accessible AND is a not ideal lot AND is an agricultural lot AND is not near commercial establishments THEN it is a very low value lot

90

IF the lot is accessible AND is a not ideal lot AND is a residential lot AND near commercial establishments  
THEN it is a very low value lot

70

IF the lot is accessible AND is a not ideal lot AND is a residential lot AND is not near commercial  
establishments THEN it is a very low value lot

90

IF the lot is accessible AND is a not ideal lot AND is a commercial lot AND not near commercial  
establishments THEN it is a very low value lot

60

IF the lot is inaccessible AND is a not ideal lot AND is an agricultural lot AND near commercial  
establishments THEN it is a very low value lot

80

IF the lot is inaccessible AND is a not ideal lot AND is an agricultural lot AND is not near commercial  
establishments THEN it is a very low value lot

90

IF the lot is inaccessible AND is a not ideal lot AND is an agricultural lot AND near commercial  
establishments THEN it is a very low value lot

80

IF the lot is inaccessible AND is a not ideal lot AND is an agricultural lot AND is not near commercial  
establishments THEN it is a very low value lot

90

IF the lot is inaccessible AND is a not ideal lot AND is a residential lot AND near commercial  
establishments THEN it is a very low value lot

80

IF the lot is inaccessible AND is a not ideal lot AND is a residential lot AND is not near commercial establishments THEN it is a very low value lot

90

IF the lot is inaccessible AND is a not ideal lot AND is a commercial lot AND near commercial establishments THEN it is a very low value lot

80

IF the lot is inaccessible AND is a not ideal lot AND is a commercial lot AND is not near commercial establishments THEN it is a very low value lot

80

IF the lot is inaccessible AND is a semi-ideal lot AND is an agricultural lot AND is near commercial establishments THEN it is a very low value lot

80

IF the lot is inaccessible AND is a semi-ideal lot AND is a residential lot AND NOT near commercial establishments THEN it is a very low value lot

90

A handwritten signature in black ink, consisting of several overlapping loops and a long vertical stroke extending downwards.

BONIFACIO S. TORDILLO, JR.

**VII. Appendix B: Contribution of Members**

| <b>Name</b>                       | <b>Contribution</b>   |
|-----------------------------------|---|
| Dichoso, Aaron Gabrielle C.       | <b>Rules Implementation, Expert System Implementation, Report Writing</b> |
| Natividad, Josh Austin Mikhail T. | <b>Rules Implementation, Expert System Creation, Report Writing</b>       |
| Razon, Luis Miguel Antonio B.     | <b>Rules Implementation, Expert System Implementation, Report Writing</b> |
| Tordillo, Christian Dave P.       | <b>Expert System Implementation, Interview w/ Expert, Report Writing</b>  |