

Develop Proactive System for Risk Management (DPSRM) for Lagging Investment Project in Iraq.

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ABSTRACT

To finalize any construction investment project, it would be necessary to identify the most significant problems and obstacles that lead to project reluctance and stalling. Unexpected events and conflicts may have disrupted these strategies and impacted project development. Due to the high initial investment costs of construction projects, crises can have an immediate impact, resulting in significant financial losses. The 2014 financial crisis was one of the most prominent crises that Iraq faced, which prompted the researcher to identify and evaluate those obstacles through this research and questionnaires using Pareto scientific theory to exclude factors that do not contribute to project lag. It was discovered that 28 obstacles contribute to project lag before and during implementation. Solutions are obtained by soliciting expert opinions and using the Delphi technique to reach a consensus and a software system to create a proactive plan to reduce and overcome these challenges.

Keywords: Construction Project, Investment, Lagging, stalled, Proactive plan, DPSRM

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تطوير نظام استباقي لإدارة المخاطر في المشاريع الاستثمارية المتكئة

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الخلاصة

لإنهاء أي مشروع استثماري إنشائي ، من الضروري تحديد أهم المشاكل والعقبات التي تؤدي إلى إجمام المشروع وتوقفه ، وقد تؤدي الأحداث والصراعات غير المتوقعة إلى تعطيل هذه الاستراتيجيات ويكون لها تأثير على تطوير المشروع. نظرًا لأن نفقات الاستثمار الأولية في مشاريع البناء ضخمة جدًا، يمكن أن يكون للأزمات تأثير سريع ، مما يؤدي إلى خسائر مالية كبيرة. كانت الأزمة المالية لعام 2014 من أبرز الأزمات التي واجهها العراق والتي دفعت الباحثة إلى تحديد وتقييم تلك المعوقات من خلال هذا البحث والاستبيانات. وباستخدام نظرية باريتو العلمية لاستبعاد العوامل التي لا تساهم في تأخر المشروع ، تم اكتشاف 28 عقبة تساهم في تأخر المشروع قبل وأثناء التنفيذ. تم الحصول على حلول من خلال التماس آراء الخبراء واستخدام تقنية دلفي للوصول إلى إجماع، وسيتم إعداد نظام برمجي لإنشاء خطة استباقية لتقليل هذه العقبات وإنشاء نظام برمجي لبناء خطة استباقية للتغلب على هذه التحديات.

الكلمات الرئيسية: مشروع انشائي، استثمار ، تلكؤ، توقف، خطة استباقية. نظام خبير DPSRM

1. INTRODUCTION

Fundamentally, the risk is the potential for financial loss and other aspects. The variability of returns associated with an investment project is a synonym for uncertainty (Aljanabei, 2016). Considering these facts, it is evident that, for this analysis, the project evaluator or decision maker will encounter various problems, using a single mechanical process to assess their viability. Thus, banks cannot always determine whether the projects to be financed are profitable and the level of risk associated with financing them. Because they lack access to capital markets, small businesses are particularly vulnerable and dependent on financial institutions that offer credit. This situation reduces the credit options available to small businesses, making them more susceptible to financial imbalances and higher financial dependence than larger companies.

Moreover, small businesses are less prepared for risk assessment and project evaluation, exacerbating their financial dependence (Yassin and Al-Asadi, 2019). As the projects may be independent or mutually exclusive, employing the appropriate analytic techniques for each situation is essential. Due to uncertainty, decisions and actions are not based on routines. Indeed, financial decisions are made in uncertain environments. Consequently, the measurement and management of risks are gaining importance. The outcomes of present-day decisions are contingent on future occurrences and may influence them so that they may result in potential gains or losses (Fadhil, 2022).

1.1 Investment and its Objectives in Iraqi Law

In 2006, Iraqi Investment Law No. (13) was imposed. The Iraqi Investment Law defined the following economic advantages and guarantees for each investor and facilities for all investment projects in all sectors: The investor, regardless of nationality, is obligated to all privileges, benefits, and guarantees, as well as the obligations illustrated in this law. The

Iraqi and foreign investor shall have the right to use the land for housing projects for a sum to be agreed upon between him and the land owner without land speculation, subject to the conditions set by the National Commission for Investment and the approval of the Council of Ministers. **(Aljanabei, 2016)**.

The Commission supports the allocation of the necessary lands for housing projects. After the project's completion, Iraqis are granted ownership of the housing units, and some factors encourage them to invest in Iraq, as shown in **Fig. 1 (Iraqi Law No. (13), 2006)**.

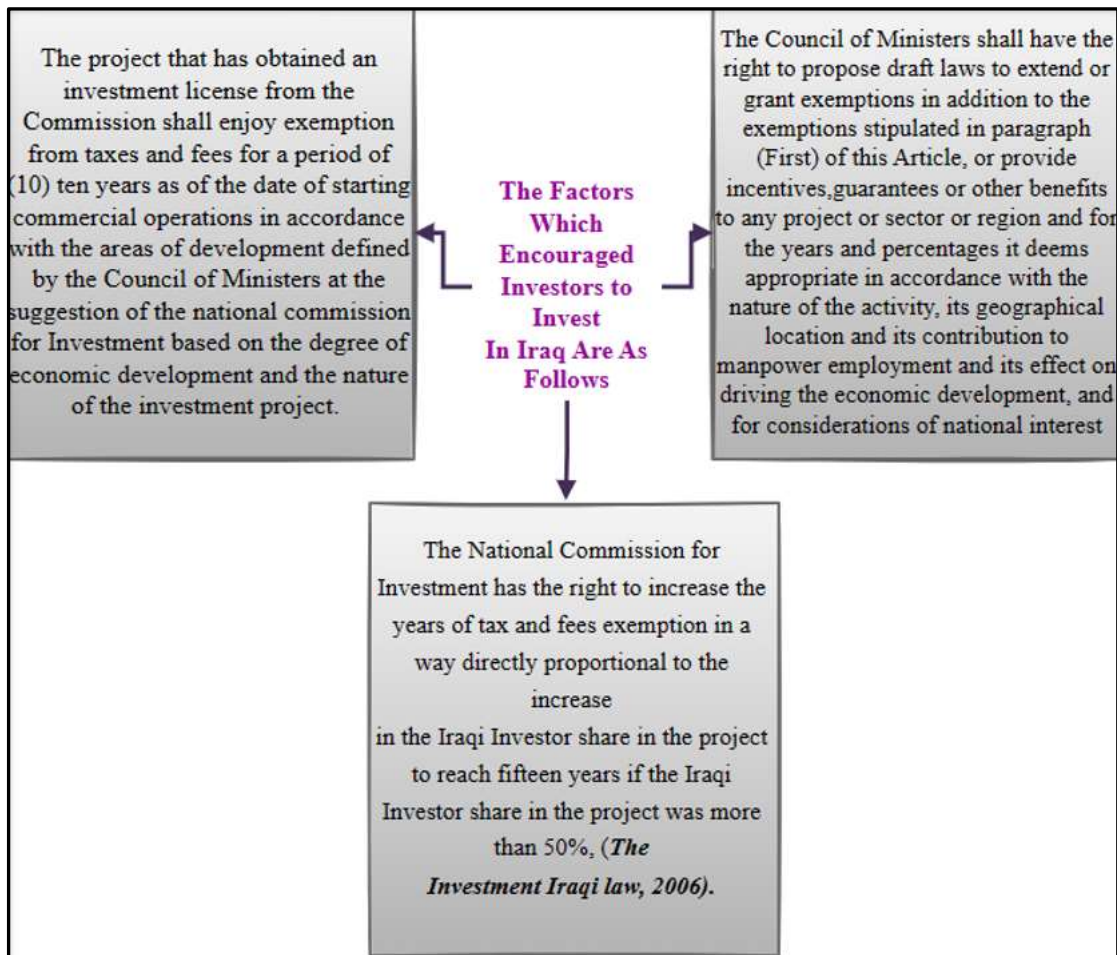


Figure 1. Factor encouraged the investors to invest in Iraq

1.2 Digital Map for Investors' Objectives

The investment map's projects are real and based on accurate data and information in a way that depends on the existence of an appropriate environment for the establishment of the proposed projects for the map's preparation to satisfy the population's shopping needs. **(Abdul-Adheem et al., 2020)**. The objectives of the investment map can be summarized in **Fig. 2**.

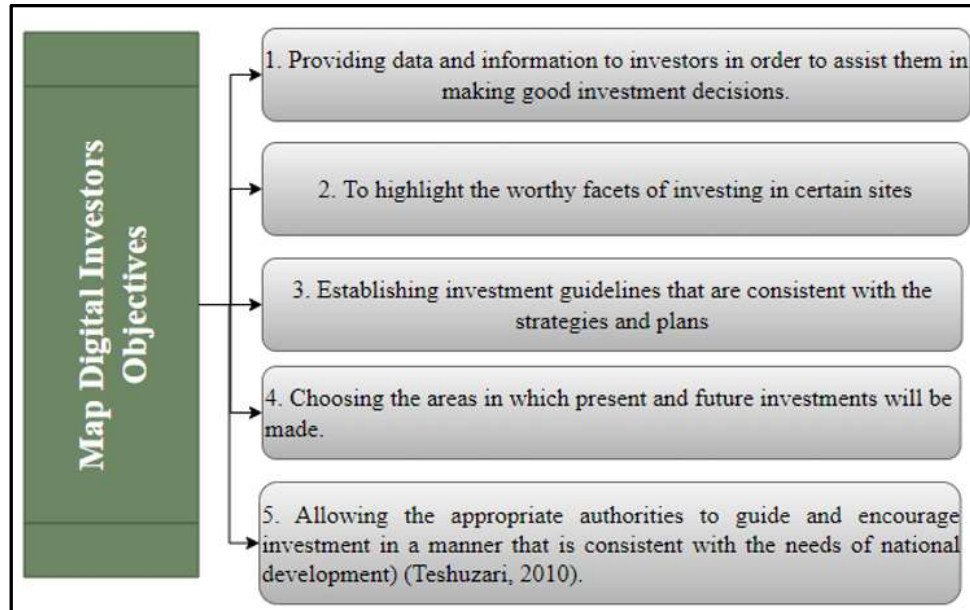


Figure 2. Digital Map for Investors' Objectives

1.3 Characteristics of Investment Project

The scope, budget, and timetable of a project define it. The schedule defines a beginning and ending point. Between the beginnings and endings, projects conduct a period of phases that, for construction projects, are typically initiation, planning, design, construction, commissioning, and closeout. Consequently, the investment project's characteristics can be summarized as shown in **Fig. 3 (Mohammad, 2019)**.

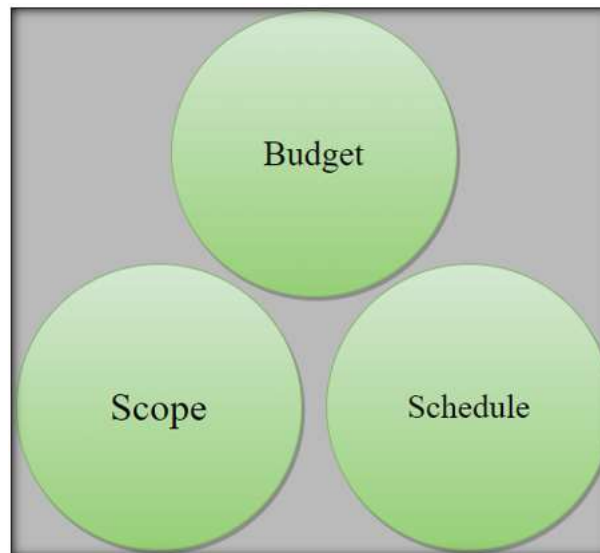


Figure 3. Characteristics of the investment project

2. METHODOLOGY

To discuss the significance of the study's subject and the significance of having a proactive plan for residential investment projects, the researcher interviewed (6) experts with experience in both the public and private sectors. And then, apply the Delphi technique in three rounds by making a closed questionnaire in each round, the consensus on the appropriate decision for the environment in Iraq, and using these solutions in the researcher's suggested expert system.

2.1 Expert's Systems Concept

Many definitions deal with the concept of expert systems. Here are some of them where a preliminary definition was established, representing that the expert system is a program that includes a large volume of identifiers related to a specific field. This definition comes from a talented expert who can successfully perform in his expertise. It can be defined as a knowledge-based system or an expert system. The intelligent program uses the rules from human experience in the form of conditions and results in a specific field. Using the derivation and inference methods to extract and gather results is justified by causes resulting from the congruence of these conditions or results with a condition or a result related to a specific problem that needs to be solved, as shown in **Fig. 4 (Islam, 2019)**.

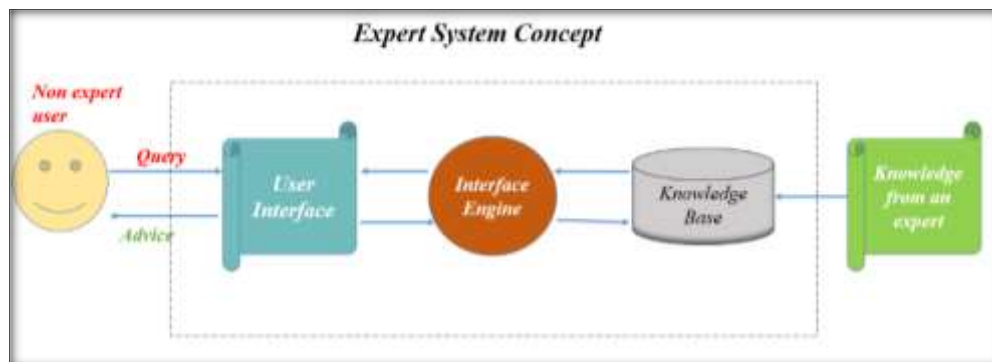


Figure 4. Concept of expert system

2.2 Design of DPSRM

This section contains information about the system's design that was created to resolve the problem that faces investment projects, as shown in **Fig. 5**.

- 1- The findings of the analysis of the data obtained from the questionnaire represent the opinion of investment specialists. The researcher focused on the most significant obstacles in construction investment projects to build the database.
- 2- Design of the system to be applied to other investment types.
- 3- Adapt the solutions obtained from the Delphi technique, which is based on managing investment projects, to the conditions of the Arab world and Iraq.

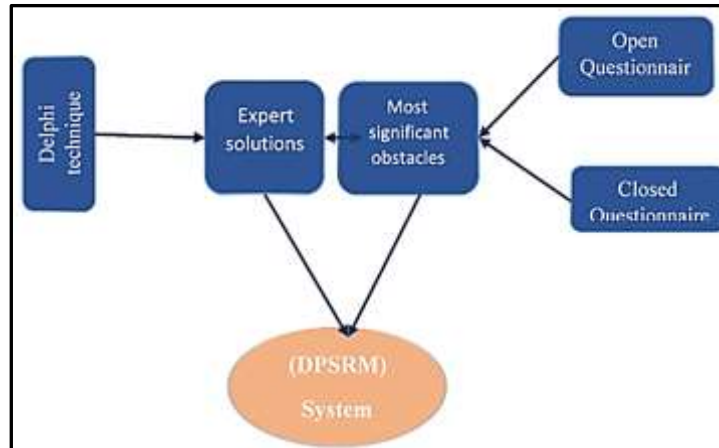


Figure 5. Design of (DPSRM)

2.3 Purpose of the Developed System

The main purposes of the developed system are:

- 1- Create a computerized system capable of keeping construction investment projects successful.
- 2- Develop a knowledge base by following lagging investment projects.
- 3- Design a system capable of overcoming the major obstacles to investment projects by conducting interviews to find solutions and consensus on a decision using one of the decision-making techniques.

2.4 Developing the proactive system and scheduling

The expert system distributed the treatment program into five sections, as shown in **Fig. 6**, following the findings reached by experts' suggestions. The system starts with the first axis, the legal and administrative obstacles, and the question is about each problem. The answer would be yes or no so that the quick fix is displayed if there is a problem. If there isn't, the system follows to the next question, as shown in **Fig. 7**. After completing the face of administrative and legal obstacles, the process forward to the second, third, fourth, and fifth faces, respectively. And the process repeats itself, and the system continues to work in the above manner until it completes solving all of the axes that have included lagging investment projects, as depicted in **Figs. 8 to 15**



Figure 6. Section of (DPSRM)

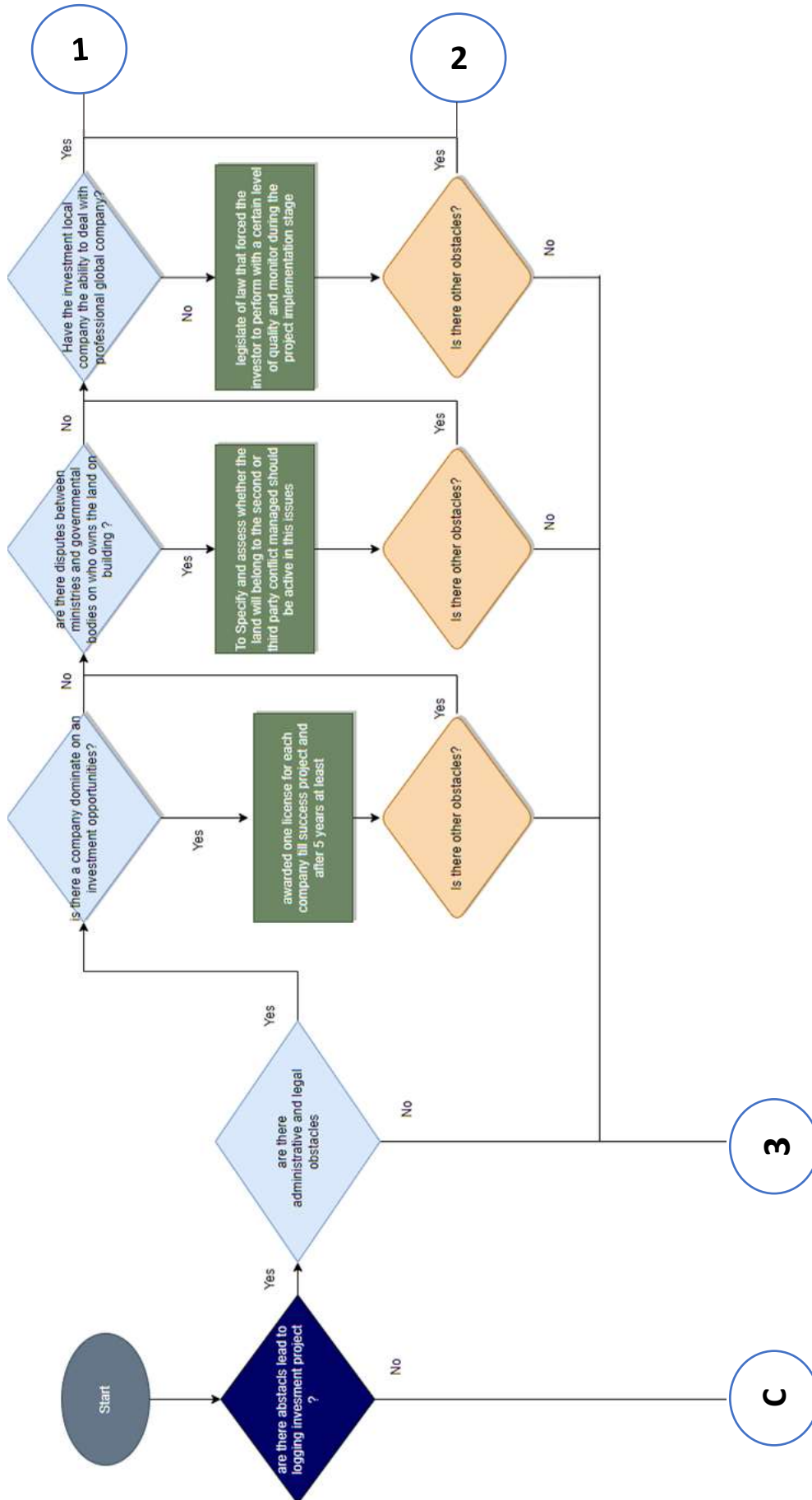


Figure 7. Part (1) on administrative and Legal obstacles

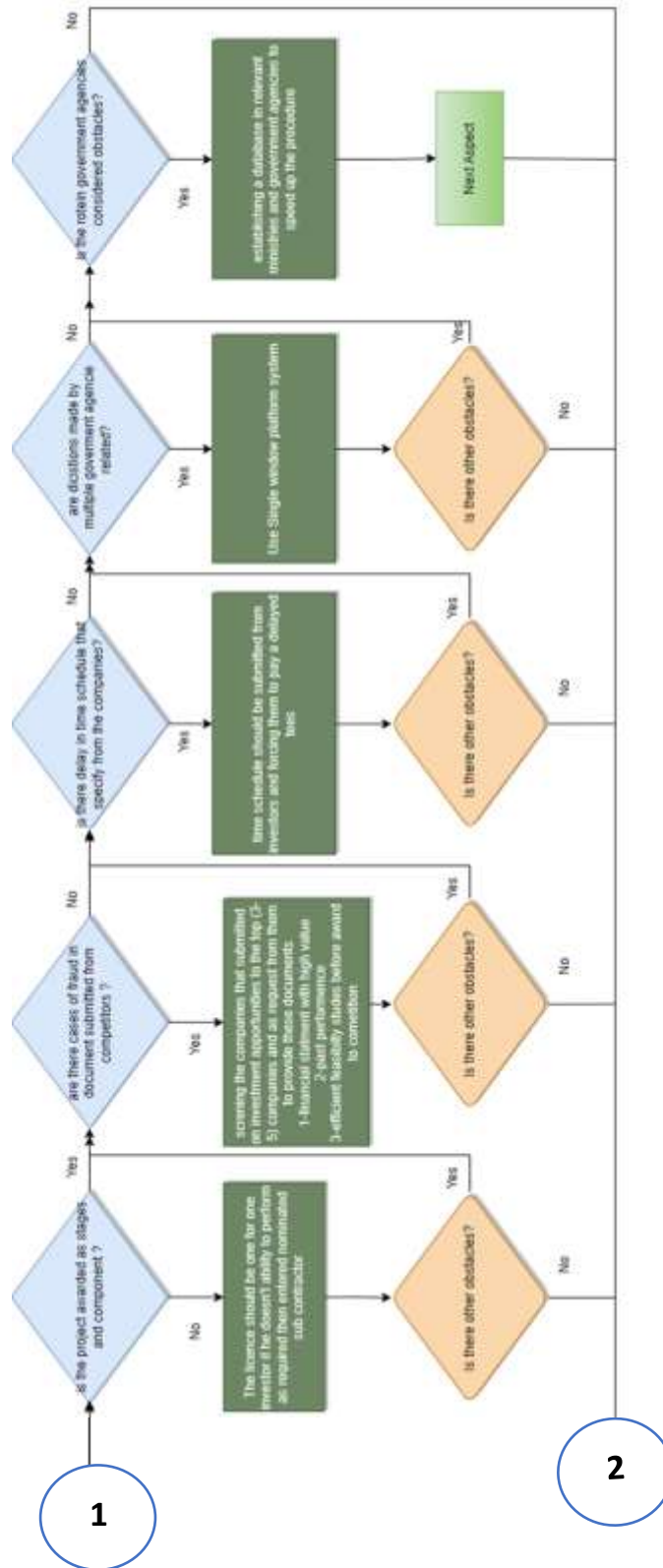


Figure 7. Part (2) of Administrative and Legal Obstacles

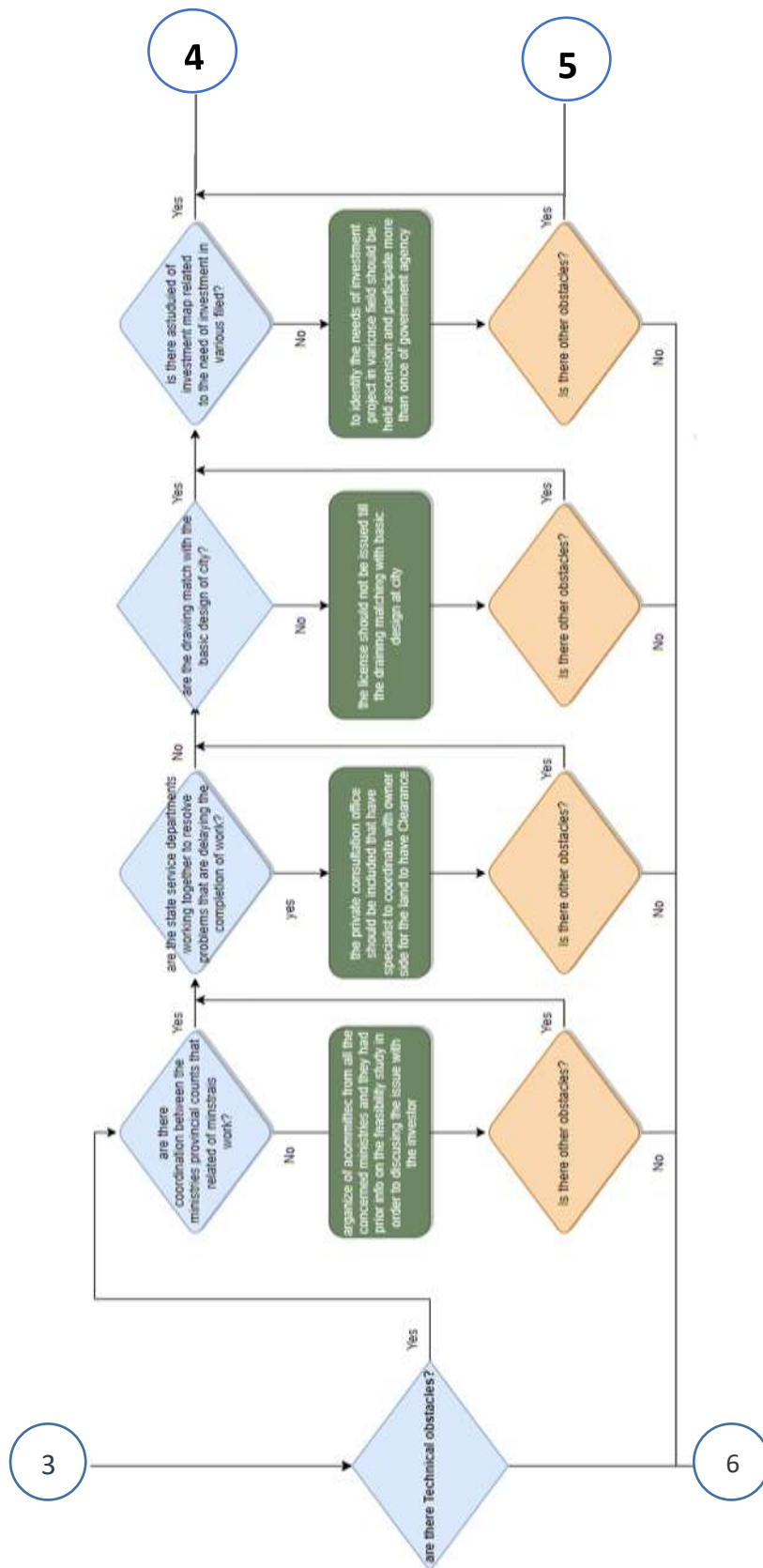


Figure 7. Part (3) Technical Obstacles

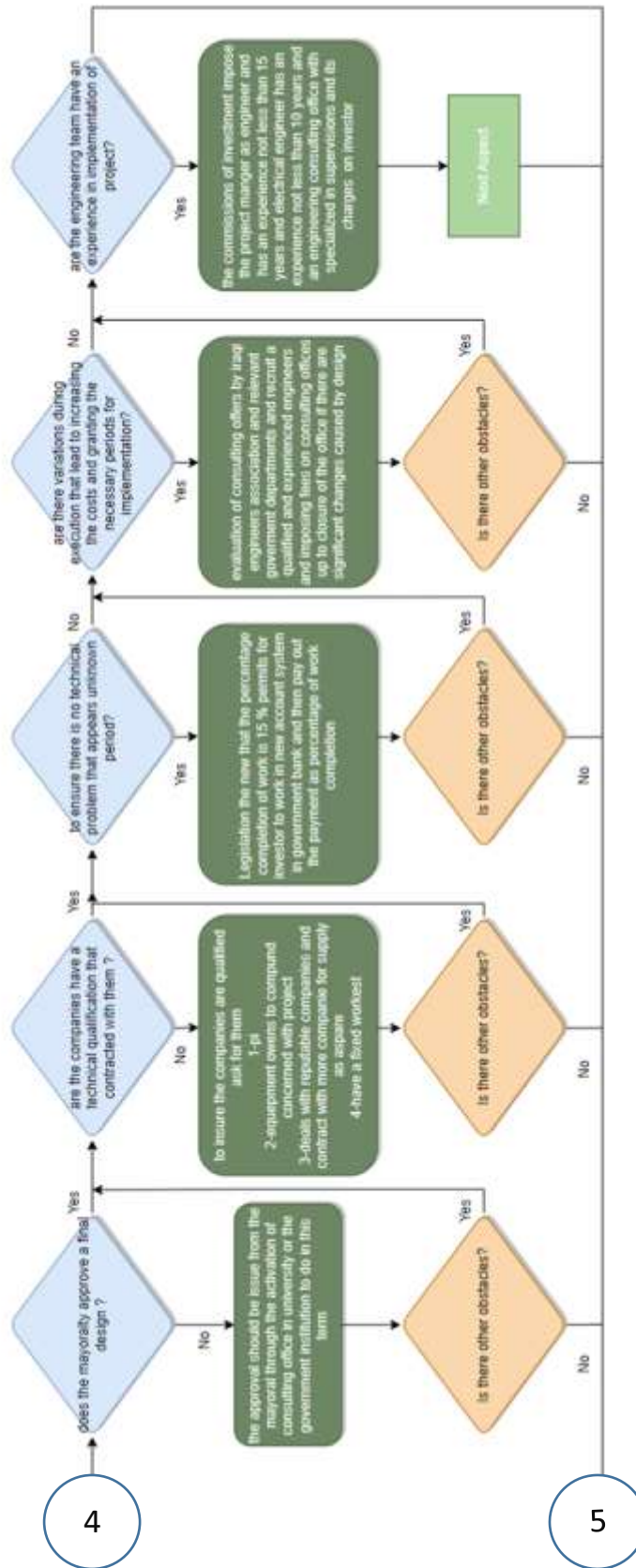


Figure 7. Part (4) Technical Obstacles

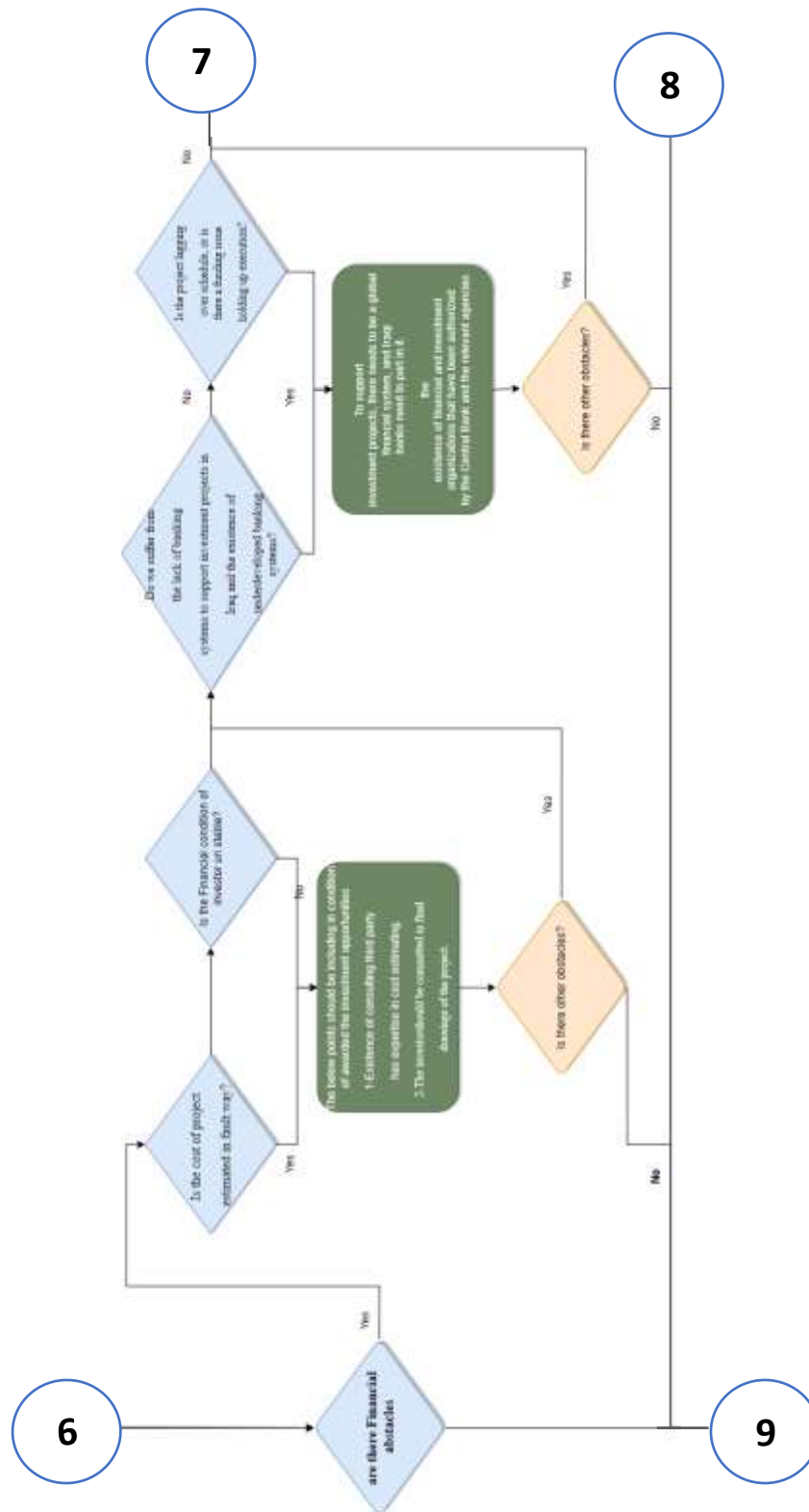


Figure 7. Part (5) Financial Obstacles

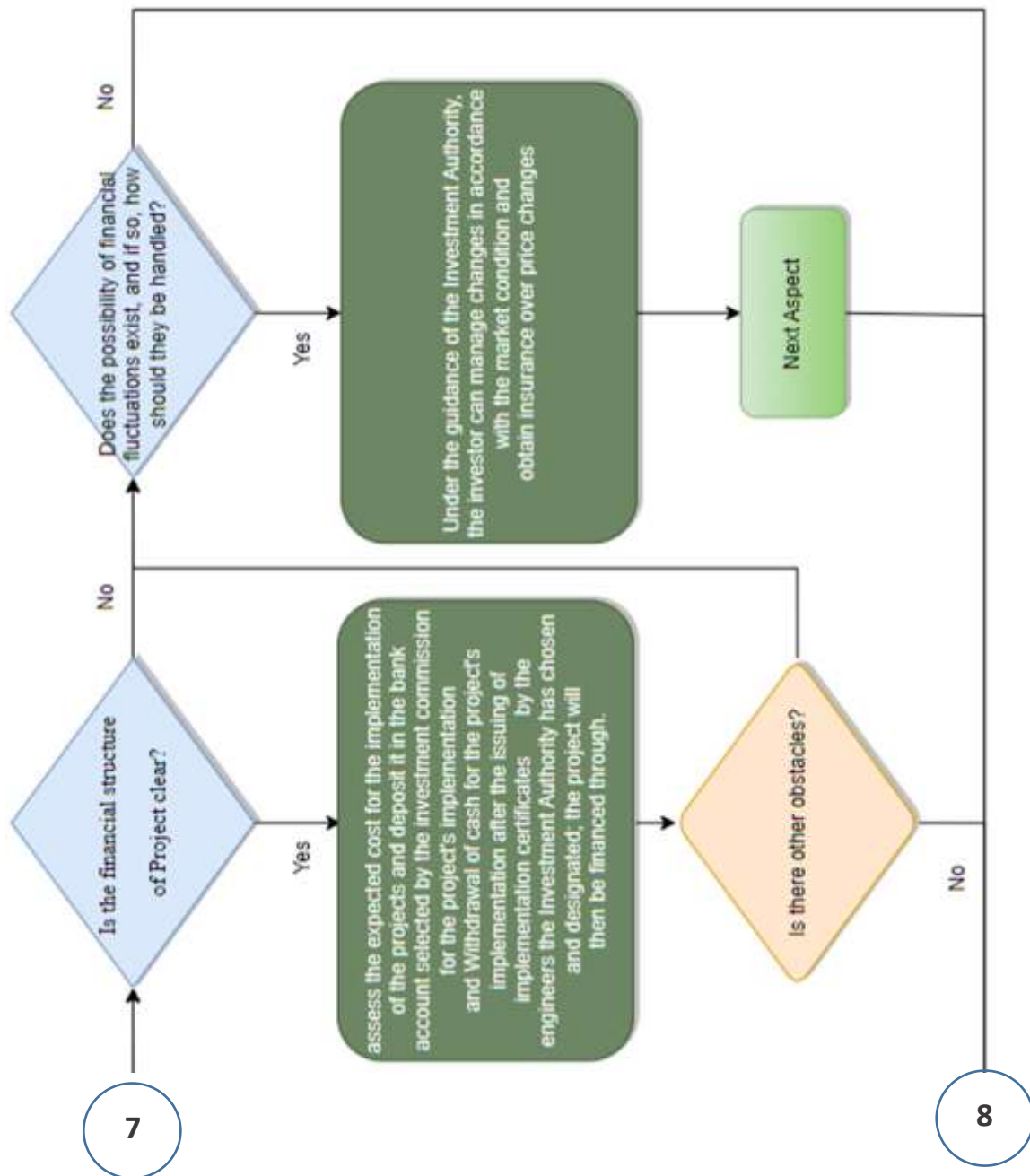


Figure 7. Part (6) Financial Obstacles

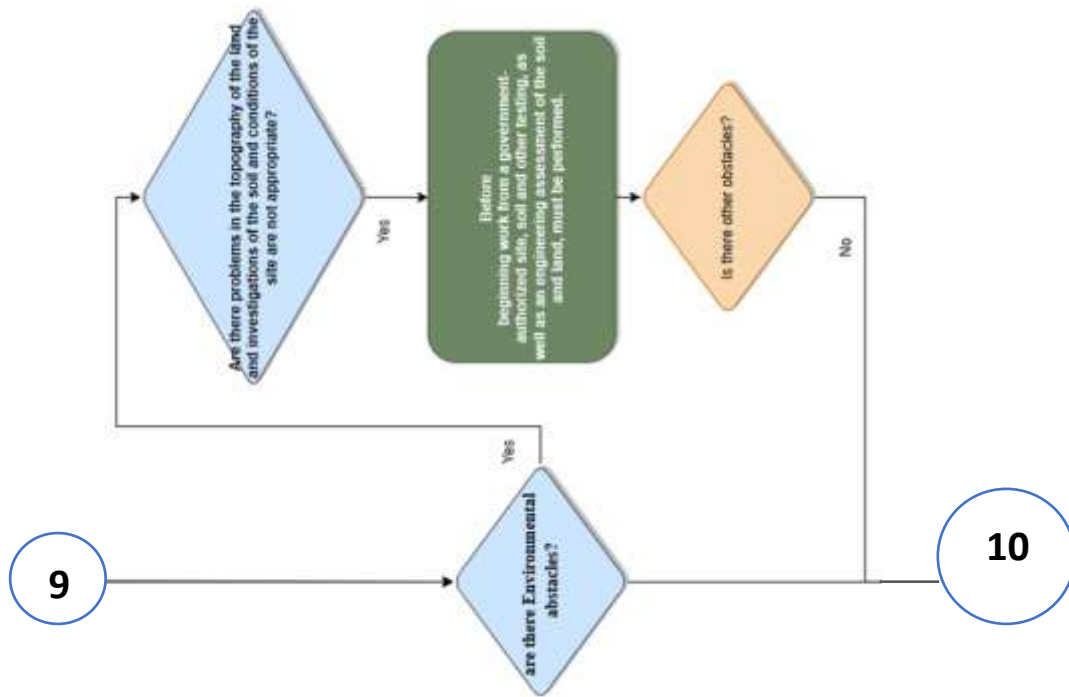


Figure 7. Part (7) Environmental Obstacles

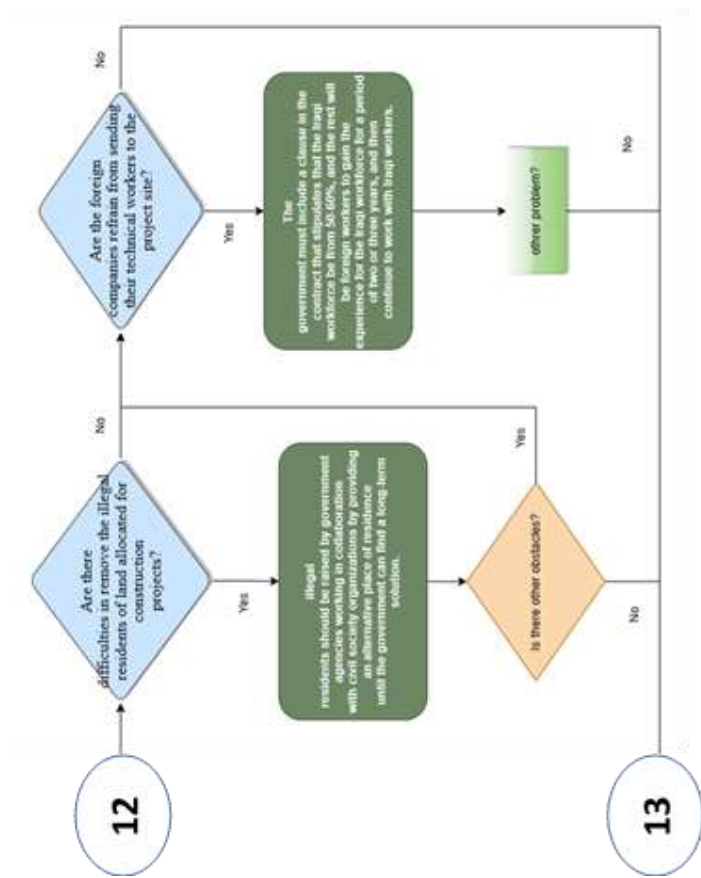


Figure 7. Part (8) Security Obstacles Part

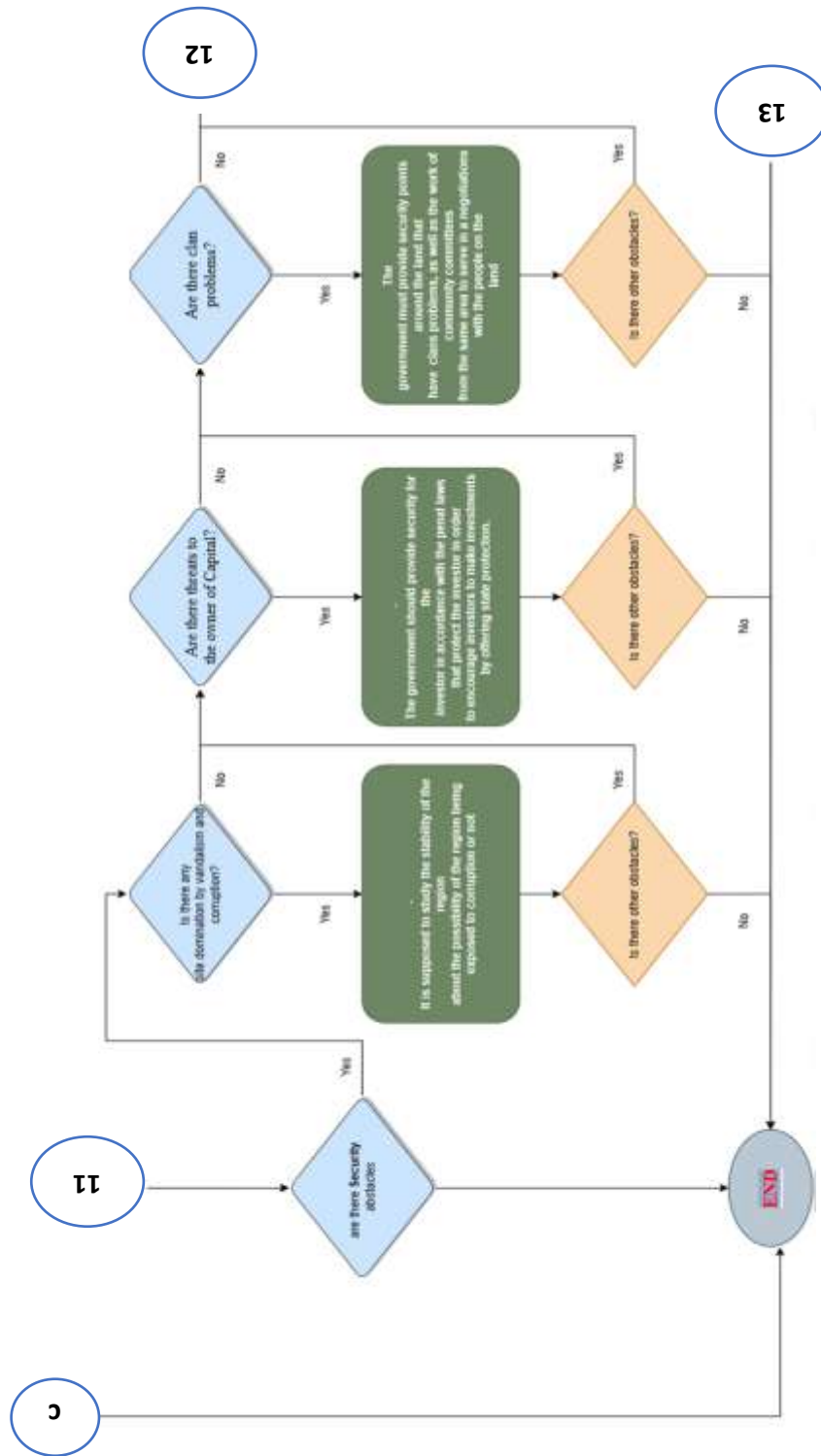


Figure 7. Part (9) Security Obstacles



3. CONCLUSIONS

Residential investment projects in Iraq faced many issues that caused lagging or stalled them; identifying these risks is crucial for managing and controlling them. The research reveals 37 obstacles representing the most common risk in investment projects. Risk analysis shows that 28 obstacles were the most important and fundamentally affected lagging projects. Therefore, the Researcher attempts to find a solution by using Delphi technote to achieve the consensus decision of a potential solution and then employing the proposed expert system.

Some theoretical recommendations have been reached and programmed, namely.

1. Awarded one license for each company till success project, and after 5 years, at least
2. legislate of law that forced the investor to perform with a certain level of quality and monitor during the project implementation stage
3. The schedule should be submitted from investors and forcing them to pay a delayed tee
4. Use Single window platform system
5. The license should not be issued till the draining matches with basic design at the city.
6. To ensure the companies are qualified, ask them to provide financial statement equipment to the compound concerned with the project, deal with reputable companies, contract with more companies for supply as a spare, and have a fixed worker.
7. The commissions of investment impose the project manager as an engineer with experience not less than 15 years, an electrical engineer with experience not less than 10 years, and an engineering consulting office specializing in supervision and its charges on an investor.
8. Certificates by the engineers the Investment Authority has chosen and designated; the project will then be financed.

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