Mutah University
Faculty of Graduate Studies

Tort Liability of the Engineer and Contractor During the Project Execution Period

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الإهداء

إلى حبيبة قلبي الأولى ... أمي الحبيبة

إلى من أحمل اسمه بكل افتخار... والدي العزيز

إلى أمي وأبي ... دوما

كل الأمل أن أكون قد جعلتكما فخورين.

To my first sweetheart ... beloved mom

To whom I proudly carry his name ... my dear father

To mom and dad ... always

All the hope that I have made you both proud.

Maisam…

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GDP	**Gross domestic product**

ABSTRACT

The Tort Liability of the Engineer and Contractor During the Project Execution Period

Maisam Ahmad AL-Dmour

Mutah University, 2019

This thesis examined the responsibility of both the contractor and the engineer for the solidity of a building after its completion and delivery to its owner. The significance of this thesis lies in many aspects: protection of the owner of the building who usually has little experience in building matters, especially when it comes to defects،which may appear after completion and delivery ،and may threaten the solidity and safety of the building.

The descriptive-analytical method used and utilized both primary and secondary sources. Because of the paucity of Jordanian judgments on the subject of private and contractor liability, this gap has been bridged through the use of jurisprudence in France and Egypt, in addition to conducting numerous interviews and asking a range of questions in other ways to achieve the objectives of this thesis.

The main findings of the thesis that can be drawn from this study are that the provisions of the special responsibility of the engineer and the building contractor apply only for new construction work and the subsequent additions, this responsibility is a responsibility Related to the General system, so no exemption or reduction can be agreed with it and this responsibility shall expire at the end of ten years from the final handing over of the work.

The study recommended the necessity of taking precautions for the safety and security of the neighbors and pedestrians in the projects, Also, extending the guarantee period from 10 to 20 years because ten years is not enough to test the durability and safety of the building according to the opinion of 50% of the lawyers interviewed.

الملخص

المسؤولية التقصيرية للمهندس والمقاول أثناء فترة تنفيذ المشروع

ميسم أحمد الضمور

جامعة مؤتة، 2019

بحثت هذه الرسالة في مسؤولية كل من المقاول والمهندس عن صلابة البناء بعد الانتهاء منه وتسليمه إلى صاحبه. تكمن أهمية هذه الرسالة في العديد من الجوانب: حماية مالك البناء الذي عادة ما يكون لديه خبرة قليلة في أمور البناء خاصة عندما يتعلق الأمر بالعيوب ، والتي قد تظهر بعد الانتهاء والتسليم ، والتي تهدد صلابة وسلامة المبنى.

وقد استخدم الباحث في هذه الرسالة المنهج الوصفي التحليلي حيث استعان في ذلك بالمصادر الأولية والثانوية للمعلومات .

بالنظر إلى ندرة الأحكام الأردنية بشأن موضوع المسؤولية الخاصة ؛ لقد تم سد هذه الفجوة من خلال الاستعانة بالفقه القانوني في فرنسا ومصر بالإضافة إلى عمل العديد من المقابلات وطرح مجموعة من الأسئلة بطرق أخرى من اجل تحقيق أهداف هذه الرسالة.

النتائج الرئيسية للرسالة التي يمكن استخلاصها من هذه الدراسة هي أن أحكام المسؤولية الخاصة للمهندس ومقاول البناء لا تنطبق إلا على أعمال البناء الجديدة والإضافات اللاحقة ، وهذه المسؤولية هي مسؤولية تتعلق بالنظام العام لذلك لا يمكن الاتفاق على أي إعفاء أو تخفيض فيها ، وتنتهي هذه المسؤولية في نهاية العشر سنوات من تاريخ التسليم النهائي للعمل.

أوصت الدراسة بضرورة اتخاذ الاحتياطات اللازمة لسلامة وأمن الجيران والمشاة في المشروعات ، وأيضًا تمديد فترة الضمان من 10 إلى 20 عامًا؛ لأن عشر سنوات لا تكفي لاختبار متانة وسلامة المبنى حسب رأي 50% من المحامين الذين تمت مقابلتهم .

CHAPTER ONE
INTRODUCTION

1.1 Overview

The increasing human requirements and the continuous population inflation led to a large expansion in the field of construction. Buildings were constructed in various forms and sizes of houses, hotels, factories, bridges, towers , and more. This was accompanied by the use of scientific means and modern technology in the construction work, which had the greatest impact on the speed of the completion of architectural projects, but the speed with which projects are carried out and construction and supervision are neglected often result in many serious accidents that result in significant loss of life and money due to the total or partial destruction of the building or the appearance of defects that threaten the safety and durability of the building after it is delivered to the employer.

Therefore, research on this subject is important because of the seriousness of building demolitions and fixed installations, whether from the employer or the other affected by the demolition.

The engineer and the contractor are engaged in a contract with the project owner to complete the project desired by the project owner. As with all contracts, the contracting contract as a binding contract of the two parties creates corresponding obligations on its parties, The contractor and the Building contractor shall submit a valid building, by the standards and the wishes of the owner of the project, by the rules and provisions of their profession, in return for the owner of the project committing to pay the remuneration for them.

However, the engineer or the building contractor may, for one reason or another, fail to carry out their functions as required, resulting in damage to the employer, and may even exceed other persons who are associated with the construction process, engineers and contractors, and may extend to foreign people, such as neighbors and passers-by.

The occurrence of such damage inevitably leads to liability, which requires compensation for the damage suffered by the injured party, as a result of the breach of the official of his contractual obligations.

1.2 The problem of the research

The development of quantity and quality in the field of construction, the speed of completion of buildings and fixed structures, may come at the expense of the durability of construction, due to inaccuracy in the implementation of work by the contractor, and negligence in supervising on these works.

This development in the field of construction, and the collapse of buildings after receiving them shortly, and sometimes even before receiving them, and harming the safety of individuals, by exposing their lives and property to many risks and damage, all this led the Jordanian legislator along the lines of other Arab legislation, to stress the responsibility of both engineer and construction contractor.

Despite the importance of the subject of the responsibility of the contractor and the engineer for the durability of construction after being handed over to the employer, it is still one of the topics that have not yet received in-depth and sufficient studies.

Therefore, it is appropriate to address this issue in the Jordanian civil law compared to the Egyptian civil law, the Palestinian civil law and the French civil law, highlighting the similarities and differences between Arab laws and French law and the manifestations of the progress of legislation in France in this subject.

1.3 The importance of the research

Due to the dynamism and sophistication of urbanization due to the high population density witnessed by the world, it often created a series of human victims and material losses due to the destruction of buildings and urban structures due to lack of respect for the rules of architecture and violation of its principles, At the construction stage or after completion.

Therefore, the importance of the current research on this subject is important considering the danger of the demolition of buildings and important installations, whether for the employer or the affected by the demolition, in addition to these defects do not appear to the employer upon the handover of construction, but appear after a period of use of the building may reach several years. Therefore, the employer who is not an expert in construction matters must be protected from defects that may occur in the construction after completion and delivery, which threatens the durability and safety of the building.

The frequent occurrences of the demolition of buildings and fixed structures – after being handed over to their owners – have increased the importance of the responsibility of the contractor and the engineer because they are directly responsible for construction work, which led the legislator in most legal systems to protect the interests of employers, where they often do not know the assets and art of construction.

Therefore, the legislator has introduced us to strict rules relating to the general system to deter contractors and engineers from occupational fraud. Jordanian civil legislation, for example, has made the engineer and the

contractor jointly liable for a minimum of 10 years for any demolition or cracking and appears in the construction after the handover of the employer and this is of public order and may not be waived by the employer.

1.4 Research aims and objectives

This study aims to solve the legal problems and determine the responsibility of both the contractor and the engineer and contribute to the building of a proper law in which the rights, obligations, duties, and consequences are determined by the resident engineer and the contractor.

The main objectives of this research as follows:

1- Investigating the nature of this responsibility, knowing its legal nature requires knowing the legal basis on which it was built, whether this basis is a contract, error, or law.

2-Research how to compensate an employer for damages caused by compensation in kind, or by compensation in exchange for his monetary and non-monetary form.

3- To investigate how to protect the employer who is not an expert in construction matters from the defects that may occur in the construction after completion and delivery, which threaten the durability and safety of construction.

4- Prove the absence of responsibility of the contractor and the engineer and this only by proving the foreign cause of them by force majeure, or by the employer's fault or by the mistake of others who have the status of force majeure.

1.5 Research questions

The building contractor and the engineer may be liable either before or after the execution, as a result of the damages they may cause to others, which leads us to ask the following questions:

1- What is the nature of the tort liability of the engineer and the contractor and what are their provisions?

2- What are the types of compensation for damages and how much compensation the employer deserves?

3- What are the legal obligations of the employer vis-a-vis the engineer and the contractor in the event of evacuation with their responsibilities resulting from personal error, or negligence, intentionally or unintentionally؟

4- What are the situations in which both the contractor and the engineer are exempted from liability?

1.6 Methodology

1.6.1 Research methodology

This study adopts a mixed methodology since it intends to describe the current situation, which is related to construction defects and demolition and the responsibility of both the contractor and the engineer, throughout using data collection tools relevant to the area of this study. These results in describing the current practices and there relevant areas of concern as an approach to identify a framework that helps in evolving better policies, strategies, and rational decisions that can be implemented in such construction projects.

1.6.2 Data collection tools

This study adopted a set of data collection tools to ensure that all types of data required are collected. The most prominent tools are the interviews, which specially prepared for the benefit of the study, while the researcher will benefit from the previous studies, court decisions, theoretical publications, the adopted models, and expert points of view.

Interviewed project managers and contractors to identify the core technical competencies they believe are important for high performance in project implementation and to learn more about their experience in this area.

Data collected using these methods are integrated and categorized to ensure the questions of the study are answered.

1.6.3 Data analysis

The qualitative data analyzed using all scientific justifications and logic by the well-established theories and practices.

1.7 Thesis structure:

This dissertation consists of five main chapters as follows:

Chapter One: Introduction. This chapter represented an overview of the main objectives of the research, statement of problems, aims, and objectives of the study.

Chapter Two: A literature review. This chapter provides an overview of the contracting contract and highlights the nature of the contractor and the engineer’s responsibilities, characteristics, and provisions.

Chapter Three: Methodology. This chapter shows the methodology used in this research to achieve the required objectives.

Chapter Four: Results and analysis. A survey into local contracting companies was conducted to obtain data and provide insight into the current situation, the outcome of this survey and the deep interviews were discussed and analyzed in this chapter.

• Chapter five: This chapter summarizes the problems facing the construction process and the role of each of the stakeholders. A set of conclusions and recommendations were developed to protect the interests of the employer and achieve public interest.

CHAPTER TWO
Theoretical Framework and Literature Review

2.1 The concept of the contracting contract

The Jordanian Civil Code provided the provisions of the contracting contract in articles (780) to (804).The Jordanian Civil Code No. (43) Of 1976 in Article (780) defines the contract as: "a contract that one of its party undertakes to do something or perform work for a fee that the other party pays."

Accordingly, the Jordanian Judiciary considers that "if the contract governing the relationship between the parties is a contract under which the plaintiff undertakes to furnish the defendant's house with the central heating and to carry out this work with the required extensions and industry for a fee to be pledged by the defendant. The contract in these terms and conditions is a contracting contract Applies to the definition of an article (780) of the Civil Code "

According to the provisions of articles 1787/1710 of the French Civil Code, the contracting contract is a contract whereby one of the parties is obliged to do the work of the other party in return for a fee agreed between the two parties.

This is following the definition stipulated by the Egyptian Civil Code No. (131) of 1948. Article 646 stipulates that "a contract is a contract whereby one party undertakes to make something or perform work for a wage contracted by the other contractor".

As for the Palestinian civil law, the contract is defined in an article (737), similar to the previous Arab legislation, and it is influenced to some extent by Jordanian law. The contract is "a contract whereby one of the contractor undertakes to make something or perform an act in exchange for a contractual obligation of the other contractor".

The undertaking of the contractor may be limited to the submission of the work, the employer shall provide the necessary material for the performance of the work under the contract, and the contractor may undertake to submit the work and the material together. It is also necessary for the contract of the contract to describe the work to be performed, type, amount, method of performance, and duration of completion and determines the amount of allowance paid (Article 782 of the Jordanian Civil Code).

It is noted that the Jordanian legislator in defining the contract of the contract as distinguished from the previous Arab legislation, replacing the use of the word "pay" with the word "allowance" to be inclusive of remuneration

and price together if the contractor provided the necessary materials to do the thing with the necessary work.

It should be noted here that the Palestinian legislator has followed the Jordanian law through the use of the word "Wildcard" and did not use the "wage" and this I believe is better because it includes both the wage and the price (http://www.zuhayli.net/contract.htm on 2007/4/8).

The provisions of this contract are explicitly in an article (781) of the law in its two paragraphs where it states that:

1. The agreement may be limited to the undertaking of the contractor to submit the work provided that the employer submits the material used or used in the performance of his work.
2. The contractor may also undertake to submit the material and the work.

2.2 Contracting contract characteristics

Based on the above, the characteristics of the contract are as follows:

2.2.1. A contracting contract is a consensual contract.

The contract of contracting is a consensual contract, which is sufficient to be linked to a positive acceptance, and does not need a special formality. Consent between the parties may be in writing, verbally or reference (Articles 388,433 of the Code of Justice).

2.2.2. A contract is a netting contract

The parties to the contract shall have the most important obligations, for the contractor to accomplish the work required of him and for the employer to pay the wage due for this work.

2.2.3. A contract is a contract of exchange

This means that it is a binding contract for both sides, which entails mutual obligations on both sides, whereby the contractor undertakes to make something, or perform work, for a known wage, to which the project owner is committed.

2.2.4. A contract is an independent contract

The contractor shall be independent in the execution of the contract of contract from any control, supervision, or management on the part of the employer. He shall perform his work without any interference from the latter, whether in terms of how to execute or by choosing the means or tools necessary for such execution. It is noteworthy that this characteristic distinguishes the contract of contract from the contracts of work and agency.

2.3 Obligations of the construction contractor

The main duties of the building contractor shall be to complete the work within the specified period and following the drawings, conditions, and specifications stipulated in the contract. It also requires the contractor to inform the employer and the engineer supervising the project of the difficulties faced or those difficulties that prevent the completion of the project, and prepare the necessary materials for the implementation of the project, and to Preserving the machines delivered to him, and finally the construction contractor is committed to the Decimal warranty (for ten years). Figure 2.1 shows the obligations of the construction contractor minutely.

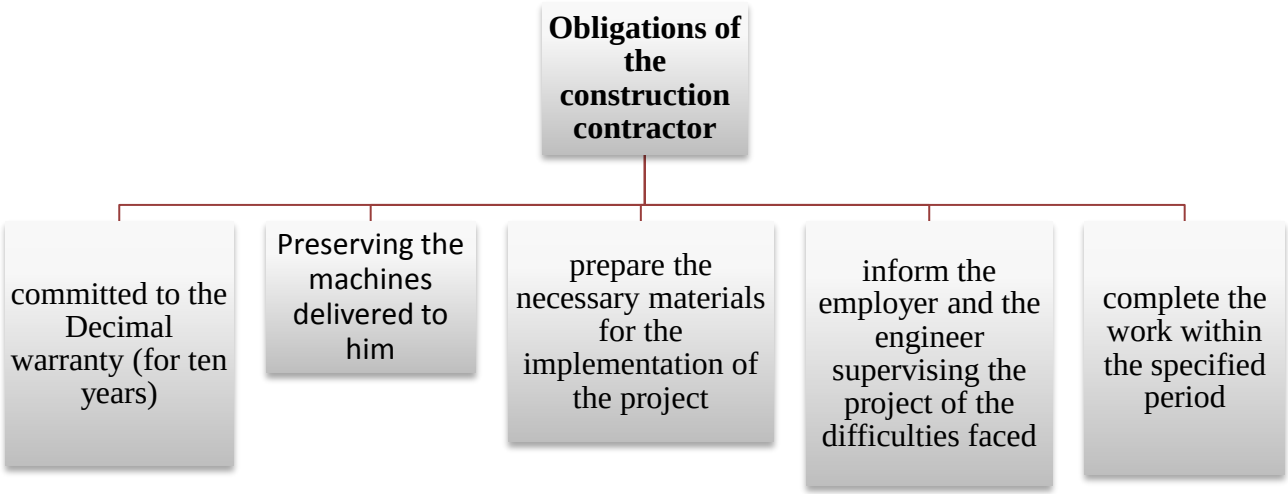

Figure 2.1 Obligations of the construction contractor

2.3.1 Commitment to complete the work

The first and main obligation of the contractor is his obligation to complete the work. This obligation entails that the contractor performs several duties including taking due diligence in the completion of the work, regardless of whether the material is submitted by him or his employer, and that the work is completed within the agreed period (Alsanhouri, 2006). Two issues were discussed:

The first issue: the way the work is done

The contractor shall complete the work in the manner agreed upon and within the conditions stated in the contract of the construction contract. In the absence of agreed conditions, he shall follow the custom as required by the assets of industry and art according to the work performed by the contractor.

The second issue: Due Diligence to get the job done

The obligation of the building contractor is an obligation to achieve a result. The contractor shall be discharged from his obligation only if the purpose is fulfilled, and he executes the contract and the work agreed upon. His responsibility shall not cease unless the foreign case is proved, whether the material is submitted by him or if the material is submitted by the employer.

2.3.2 The contractor's obligation to inform the Engineer and the Employer

The Jordanian legislator did not Definition of the contractor in the Jordanian law, but was defined in the Construction Contractors Law as any natural person practicing the construction contracting profession, licensed and registered following the provisions of this law.

We note from this definition that it did not mention the main characteristic the contractor, namely the independence from the employer, and therefore we can know the building contractor: every natural person who builds or constructs, based on the designs and models submitted to him without supervision the employer or his control.

Needless to say, this independence does not exempt the contractor from committing to inform, The Contractor shall be obliged to inform both the Engineer and the Employer.

2.3.3 Duty of contractor in providing machinery and equipment

The equipment and tools that the contractor introduces to work for the implementation of the project varies. Some projects require simple tools and machines, while others require tools that vary according to the project (drilling machines, electronic devices, and mixers).

2.3.4 The commitment of the building contractor to maintain the things handed over for him

The building contractor must preserve the materials delivered to him by the employer, and protect them from damage and loss, as well as to take the necessary measures and precautions. If the material, for example, is cement, the contractor must take into account the assets in storage and take all means to protect it from moisture that leads to its destruction in whole or in part.

This obligation is contained in the text of Article (783/2) of the Jordanian Civil Code, where it states (and if the employer is the one who provided the article, the contractor shall take care of it and take into account in his work the technical assets and return the remaining ones to them but If it is damaged,

defective or lost, the contractor shall guarantee it. The contractor shall take the necessary measures to ensure that it is not lost or stolen by appointing a guard.

2.3.5 The contractor's commitment to the ten-year guarantee

The ten-year guarantee is an obligation imposed by the legislator on the architect and the contractor to guarantee all the damages that occur as a result of the total or partial destruction of the appearance of defects with the buildings and fixed structures they have built. In our view, there are two objectives of the ten-year guarantee that the legislator wanted:

1- The employer often does not have the engineering knowledge and construction assets, especially as he contracts with a person who is supposed to have experience and competence.

2- The nature of buildings and installations being fixed does not help to discover the defect immediately after the completion of work and delivery, but these defects appear after a period estimated by the legislator ten years (Al-Sarhan, 2009).

2.4 The legal nature of this liability

The Jordanian legislator has established special rules to deal with the responsibility of the contractor and the engineer after handing over the work. This responsibility is regulated in the Jordanian Civil Code in Articles (788-791) and is matched with the text of Articles (744-747) of the Palestinian Civil Code. Articles (651-654) of the Egyptian Civil Code and Article (1792) of the French Civil Code.

There were many opinions on the legal nature of the contractor’s and engineer’s liability by special rules, some jurists considered that the basis of the responsibility of the contractor and the engineer and its source is the law.

Others, including Al-Sanhouri, argue that the basis for this responsibility is the contract. The contracting contract creates an obligation for the contractor that the Facilities should be free from defects. Due to the seriousness of this type of contract, the legislator has made the warranty period ten years to test the durability and rigidity of the building. This doctrine is supported by Dr. Shanab.

There is a third opinion, According to some diligence, the responsibility of the contractor and the engineer is exclusively based on the malicious act. The reason for this is that the contractor's assurance of the quality of the work ends with the handover of the work to its owner (Almomani, 1987).

Table 2-1 shows the similarities and differences between the Jordanian, Egyptian, French and Palestinian civil law regarding the nature of the contractor and engineer responsibility.

Table 2-1
The similarities and differences between the Jordanian, Egyptian, French and Palestinian civil law

civil Code	The numbers of materials that regulate the responsibility of the contractor and the engineer	The nature of the responsibility of the contractor and the engineer and the basis on which it is based	Exemption from liability
Jordanian civil code	(788-791)	As for jurisprudence in Jordan, it sees that the responsibility of the contractor and the engineer is only **a contractual responsibility** because it is based on a contractual obligation established by the contracting contract.	Every condition intended to exempt the engineer or contractor from the guarantee or reduce it is considered void
Egyptian civil code	(651-654)	As for jurisprudence in Egypt, also sees that the responsibility of the contractor and the engineer is **only a contractual responsibility** because it is based on a contractual obligation established by the contracting contract.	
French civil code	1792	French civil law made the liability of the engineer and contractor assumed by **law**	
Palestinian civil code	(744-747)	The engineer and contractor shall guarantee what happens **within the ten years** of complete or partial destruction of any building they have erected it from other fixed installations.	

2.5 Tort liability, based on fault

In addition to the contractual responsibility of the contractor and the subcontractor, their responsibility may also be raised within the scope of tort liability.

The execution of the contract of contracting may result in injury to a third party, other than the employer contractually associated with the engineer and the contractor. As a result of the contracting contract, as long as there is no contract between the injured party and engineers or the building contractor, it is recognized that the responsibility of these contractors and the engineer for the damage to third parties is a default.

Therefore, the owner of the project may refer to an engineer or the building contractor based on the tort liability when the damage caused is by its nature beyond the scope of their contractual obligations (Al-Husseini, 1987).

2.5.1 The basis of tort liability

As for the basis of this responsibility - in light of the prevailing trend, jurisprudence, and jurisdiction - it is based on a presumed mistake on the part of the guard, which is negligence in the maintenance of the building despite its age or an error in the construction of the building.

All that there is that the guard - the contractor - only remains to prove that a foreign cause was behind such damage as force majeure, a sudden accident or other mistakes. As for the case where the sub-contractor is the construction guard, he is responsible for the damage caused to others due to total or partial demolition, but his responsibility ends once he submits the work to the original contractor to whom responsibility for supervision, direction, and the responsibility rests, as soon as he receives the work from the sub-contractor.

2.5.2 Elements of tort liability

2.5.2.1 The default error of the contractor and the engineer

The fault of tort is a breach of a legal obligation, and a legal obligation is an obligation to always exercise care.

If the person deviates from the conduct of vigilance and foresight from realization, this deviation is a mistake. If the engineer or the construction contractor made a mistake intentionally or unintentionally and resulted in damage to the other, carried their tort responsibility.

2.5.2.1.1 Define the error and its constituent elements

Arab and foreign jurist's opinions on the definition of error

1- Dr. Jamil Al-Sharqawi defines the error in his book The General Theory of Commitment as "Breach of a legal duty, whether this duty is a special duty (i.e. an obligation), or a general duty imposed on every person living in a group governed by law to respect the rights and freedoms of others.

2- In his book, explaining the Civil Law, Dr. Ahmed Abdel-Daem believes that the error is: a person's deviation from the usual behavior and his awareness of this deviation

3- And Dr. Muhammad Shanab defines in his book "Summary in the Sources of Commitment" the error that it is: a deviation from the behavior of the usual person present in the same external circumstances of the perpetrator of the error, knowing that.

4- Dr. Anwar Sultan, in his book, Sources of Commitment in the Jordanian Civil Law and Sources of Commitment outlined in the General Theory of Commitment, says that jurisprudence in Egypt tends to take the definition of error as Deviation of a person's behavior while being aware of this deviation.

5- The jurist (Planiyol) defines of the error as "a breach of a prior commitment"

Planiyol limited the obligations to refraining from violence, refraining from fraud, vigilance in fulfilling the duty to control people and things.

2.5.2.1.2 Elements of the error:

The Jordanian Civil Code, based on Islamic jurisprudence, does not require the existence of a mistake in the establishment of tort liability, but it is sufficient for the act to be harmful until such responsibility exists.

As for the Egyptian civil law, which is based on Western jurisprudence, liability is not established in it unless the act is wrong.

The error has two pillars: the material pillar, which is infringing, this term corresponds to the term prejudicial act in the Jordanian Civil Law. As for the second pillar, it is the moral pillar, represented by awareness, and this pillar is not necessary for the establishment of tort liability in the Jordanian civil law. (Al-Sarhan, 2009).

1- The material element: committing the act of infringement: the breach of legal obligations is the one that constitutes the material component of the error, and there is no difference between whether this mistake was intended or unintended so that it happened through negligence.

2-The moral element, which is perception and discrimination: For countries that evaluate responsibility based on error, it is not sufficient for a person to deviate from his behavior, but the aggressor must be aware and discriminated against since in their eyes the crazy boy is not responsible for his actions because he does not have the awareness and discrimination.

The Jordanian civil law differs from the Egyptian civil law in the importance of this pillar, as the Jordanian legislator does not require the moral pillar to establish responsibility, influenced by the Islamic jurisprudence that assesses responsibility on the corner of damage.

As for the Egyptian legislator, he believes that the mistake does not happen once the infringement occurred, but rather requires that the aggressor be aware of his actions.

2.5.2.1.3 Error degrees

In practical terms, the error falls under multiple types and degrees, and the jurists did not agree on setting standards and controls for dividing them and distinguishing each of them. There is an intentional error, negligent error, serious error, and easy error and other. However, in theory, this difference in errors does not matter, as its result is the same as civil liability, and it is reparation. (Shanab, 2004)

Civil errors can be classified as follows:

1- **Willful error and negligence error**:

The error, in terms of the extent to which the will is involved in its commission, are divided into willful error and unintentional error.

An intentional error is one in which a person commits a harmful act to achieve a harmful result.

As for the unintentional mistake or the negligence, it is a type of breach of legal obligations, whether stipulated or not, and that is not intended to harm others, and whether the error is due to the mistakes of the mayors or negligence, the aggrieved party has the right to seek compensation in both cases.

2**- A serious and slight error:**

A grave mistake occurs when a person violates his legal duties on an aspect of importance. Some say that it is achieved by violating a fixed, verified obligation that is indisputable or in the case of negligence and lack of foresight, which amounts to a great extent of gravity.

A slight error it is usually defined as the mistake that a person with average care and care does not commit, and it is also called the ordinary error, and it means a slight deviation from what the average person would have done in the same circumstances, Where the breach of duty less important.

2.5.2.2 Damage caused by the default error of the contractor and the engineer

It is not enough for a tort to be faulted, but it must cause damage, and the burden on the victim is to prove the damage done by all means of proof as a material fact.

Consequently, if the fault is proved on the side of the engineer or the building contractor and the damage is caused to third parties, tort liability shall be made. It does not matter the size of the damage, because all the damage, even if it is small and even if it does not affect the durability and safety of the building requires compensation following the provisions of this responsibility.

2.5.2.2.1 Conditions of damage in the tort liability: Some conditions must be met for damage in the tort liability to be compensated, namely:

1. The damage must be real: That is, it will be permanent and real.
2. That the damage is direct: which was the result of the nature of the error that caused it, and it is considered so if the creditor could not envisage it by making a reasonable effort.
3. That the harm is personal to the person who seeks compensation: the claim for compensation is accepted only by the aggrieved person himself or any other person who has a legal capacity as his agent or his general successor, i.e. the harm claimed for has affected the aggrieved person, whether against his body, his money or his moral side.
4. That the damage was not compensated in the past: compensation aims to redress the damage and not to cause harm to the perpetrator, and his goal is to eliminate the harm and reduce it, so that the injured party may not obtain more than one compensation for the same harm except in the event of the instability of the harm, and this meaning It is not permissible for the injured party to get more than one compensation for the same fixed damage.

2.5.2.3 A causal link between the default error of the engineer and the contractor and the damage caused by this error

The tort liability of the engineer and the contractor can only establish when the presence direct causal link between the errors committed and the damage caused. This causal link shall not be removed unless the damage is caused by the foreign cause.

The contractor's default liability is in three circumstances: his responsibility for his actions, his responsibility for the actions of third parties, and his responsibilities for the things he makes and the machinery by which he works. He asks about his actions and the actions of his followers as well as asking what the damage caused by his machinery and tools of others and this is expressed by Islamic jurisprudence, as stated in the note to destruction guarantee.

The guarantee of destruction, as stated in the explanatory notes, is that "a person who harms another person, such as damaging himself, member, or property, must guarantee what is destroyed".

The guarantee in compensating the injured for the damage caused, it is what is required by the perpetrator of the harmful act, because (all damage to others is required by the perpetrator, even if not distinguished by the guarantee of damage)

The contractor shall guarantee the damages and losses resulting from what he does, whether as a result of the infringement or negligence following the text of Article (786) of the Civil Code which provides

"The contractor shall guarantee the damage or loss generated by the act and the manufacture thereof, whether by infringement or negligence or not.

2.5.3 Tort liability of the contractor and sub-contractor

In addition to the contractual responsibility of the contractor and the subcontractor, their responsibility may also be raised in the scope of tort liability.

Figure 2-2 represents the contractor's and subcontractor's responsibility to face others and their responsibility to the employer.

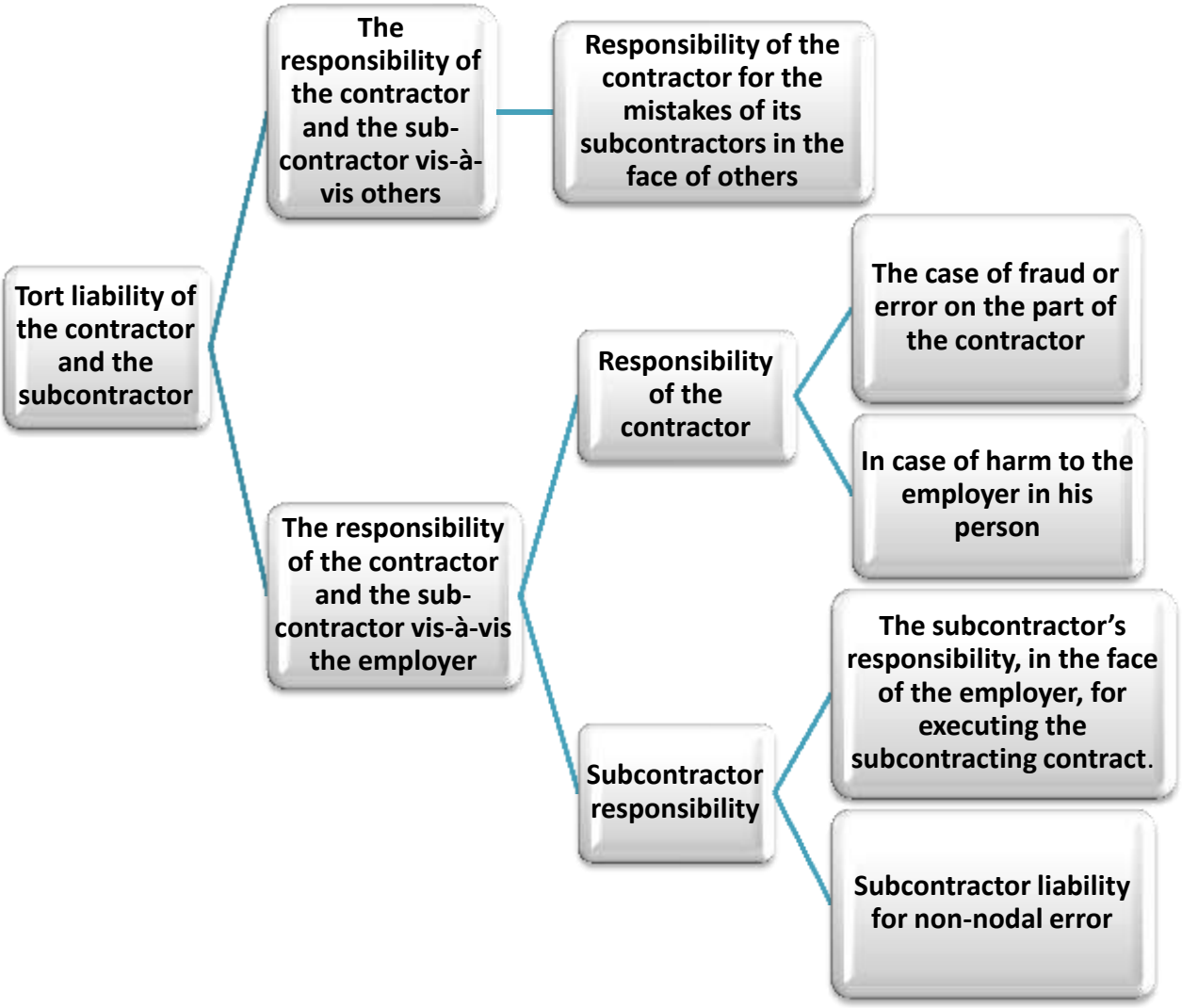

Figure 2.2 Tort liability of the contractor and sub-contractor

The owner of the project may request the engineer and the contractor for compensation based on tort, in the case of fraud, or for damage to his body or money that is not related to the construction process.

2.5.3.1 The responsibility of the contractor and the sub-contractor vis-à-vis others

It can be (others) foreigner unrelated to the construction process, it can also be a party in this process, i.e. related to its parties. (Shanab, 2004)

2.5.3.1.1 The responsibility of the contractor for the mistakes of its subcontractors in the face of others

(Others) affected by the mistakes committed by the subcontractors shall return the compensation to the original contractor, as it is responsible for the damages that they suffer from the subcontractor who uses them to perform the work.

2.5.3.2 The responsibility of the subcontractor is a tort responsibility in the face of the employer.

The relationship between the employer and the subcontractor is not a contractual relationship as is the case with the original contractor, so the responsibility of the subcontractor towards the employer is based only on the default liability based on the assumed fault of the subcontractor. (Yaqout, 1984).

2.5.3.2.1 The subcontractor's responsibility, in the face of the employer, for executing the subcontracting contract.

The subcontractor is considered a foreigner for the relationship that binds the employer to the original contractor and for this he is not responsible for the provisions of the original contract vis-à-vis the employer subject to the terms of the ten-year guarantee, but if he breaches his duty of employer rights generated by the original contract he is responsible for this breach in the scope. Tort liability and here the employer must prove the default error on the subcontractor's side, and this does not prevent the employer from referring to the original contractor based on contractual responsibility given that the original contractor is responsible for the actions of his subcontractors towards the employer.

Therefore, the subcontractor does not have a direct relationship with the employer, but rather is asked about the implementation of the subcontracting contract vis-à-vis the original contractor based on contractual responsibility,

and he is not responsible for not executing the contract before the employer because he considers others to him.

2.5.3.2.2 Subcontractor liability for non-nodal error

The sub-contractor may make a mistake towards the employer out of contractual responsibility, independent of the lack of implementation of the subcontracting contract, and has the consequence of harming the employer, which arranges tort liability for the subcontractor. (Shanab, 2004)

Damages to the employer that are outside the scope of implementing the subcontracting contract may occur before or after the work is handed over to the original contractor.

If the damage occurs before delivery, the sub-contractor is considered a guardian of the building in this case as he who has the right to control and direction and therefore the injured employer has the right to return to the contractor for compensation as a guardian of the building under the tort liability resulting from the construction guard.

But if the damage occurs after delivery, the tort liability of the employer and his successor will arise, as the responsibility is attributed to the original building contractor as a guardian of the building, in this case, the responsibility here is subject to the general rules governing tort liability and especially the provisions of the responsibility of the construction guard and is not subject to the ten-year guarantee provisions because the error here Outside the scope of the contractual obligation.

2.5.3.2.3 The case of fraud or error on the part of the contractor

The owner of the project may refer to the engineer or the construction contractor who has committed fraud, used fraudulent methods, or deliberately failed to fulfill his obligations under the claim of tort. The purpose is to protect the employer from the risk of losing his right to compensation, which the employer is often unskilled in the art of construction.

The case of fraud is an exception whereby the provisions of the tort and responsibility of the engineer and the construction contractor against the entrepreneur are determined because the fraud constitutes an error outside the scope of the contract.

In case of fraud, which allows the employer to reclaim compensation by the provisions of a tort, that the engineer or the building contractor deliberately mishandles and is well aware that this will inevitably lead to construction disruption, sooner or later, even if it is not intended to harm the employer, or that the engineer and the contractor hide a defect in the

construction intentionally or unintentionally to avoid the return of the project owner during the ten-year guarantee.

2.5.3.2.4 In case of harm to the employer in his person

The owner of the project, as the owner of the building, may suffer material damage or physical damage, either during the execution period or after he receives the building. In such a case, he may establish the request for compensation from the engineer or the building contractor based on the tort liability rules as a result of the damages caused to him and not resulting from the breach of any contractual obligations of the engineer or the construction contractor.

If the owner suffers physical damage, such as falling from the stairs of the building due to its warp or durability, and that is before receiving the building, he may receive compensation based on tort on the assumed error, because the building contractor or engineer is the guardian of the building before delivery. However, if he receives damage after receiving the building, the error is presumed on his side, and therefore cannot refer to the engineer or the building contractor for tort, unless he proves that the damage caused is due to the fault of the engineer or the contractor.

It is also the default responsibility of the engineer and the construction contractor against the project owner for the damage caused to the project owner in his money, as if a stone fell from the top of the building on his car parked next to the building, or on his neighboring properties, if any, on the basis that the project owner is considered for such damages From others, they are not attached to him as an employer, but as a third party.

2.6 Compensation for damage caused by default error

The liability of the contractor and the engineer following the special rules shall compensate the employer for the damage caused by the demolition of the building, or the appearance of defects that threaten his construction safety and durability.

The ideal way to compensate for the damage is to remove and erase it whenever possible so that the building will return to the same state as it was before the damage occurred. However, if the In-kind compensation for the damage is not possible, the court resorts to the method of compensation in return.

2.6.1 Compensation in kind

In-kind compensation is intended to restore the condition to its pre-damage status. The contractor or engineer is required to rebuild the damaged buildings or repair the defects in them.

In-kind compensation is the original. If the contractor and the engineer do not optionally repair the damage, the employer may resort to the courts to obtain his right to ask the court. Of course, the employer prefers the in-kind compensation method, i.e., the contractor and the engineer return the situation to what it was.

In-kind compensation can be combined with monetary compensation, especially if the reform process does not remove all defects.

Since in-kind compensation is only an in-kind implementation of the obligation, but after the contractor and the engineer have breached it, the court shall be obliged to compel them to return the situation to what it was before the damage occurred under Article 355 of the Jordanian Civil Code, thus the following conditions should be followed:

2.6.1.1 Warning

The Jordanian civil law stipulated warning in the cases of In-kind execution and execution by compensation method; this is stipulated in the first paragraph of article 355 in the case of in-kind execution and article 361 in the case of execution by way of compensation.

2.6.1.2 In-kind implementation is possible

The employer can ask the court to oblige the contractor or the engineer to rebuild the demolished buildings or to repair the defects that appear in it if possible. However, if it is impossible to return the situation to what it was, the in-kind implementation becomes ineffective and there is no escape from resorting to compensation in return. (Article 1/355 of the Jordanian Civil Code).

2.6.1.3 Not to be in the implementation of in-kind fatigue of the contractor and engineer

Article 2/355 of the Jordanian Civil Code stipulates that "If the implementation in kind is overworked for the debtor, the court may, at the request of the debtor, limit the right of the creditor to monetary compensation if that does not cause him serious harm"

If the judge considers that the award of monetary compensation damages the employer, the employer has the right to demand in-kind execution to protect his interests. (Al-Sanhouri, 2006).

2.6.2 Compensation in return

Compensation in return shall be considered as a method of reparation to the employer as a result of demolishing or defecting buildings and fixed installations, and shall not resort to it except in the following cases:

1. If in-kind execution is impossible
2. If the in-kind execution is fatigue to the contractor or the engineer.
3. If the in-kind execution requires the intervention of the contractor or the engineer personally, and the means of financial threat have not served to compel them.
4. If in-kind execution is achievable, but not requested by the employer, and not submitted by the contractor or engineer.

Compensation in return is either monetary or non-monetary.

2.6.2.1 Monetary compensation

Monetary compensation is compensation estimated at an amount of money, which is the common way, but is the original in compensation in return.

In all cases where in-kind compensation cannot be awarded, the court shall award monetary compensation for the damage caused to the employer by the demolition of the buildings or fixed installations established by the contractor and the engineer. This is stipulated in Article 2/355 of the Jordanian Civil Code.

2.6.2.2 Non-monetary compensation

It is for the court to order something to be done as compensation. This type of compensation is neither in-kind compensation nor in monetary compensation, but maybe more appropriate as circumstances warrant in some forms.

Non-monetary compensation is not mentioned in Article 355 of the Jordanian Civil Code, but Article 2/269 of the Jordanian Civil Code states that the court may order a specific order for inclusion, which means that non-monetary compensation may be used to compensate the damage caused to the employer.

2.6.3 The extent of compensation to which the employer is entitled

Article 221 of the Egyptian Civil Code expressly states that: "If compensation is not provided for in the contract or a law, it is the judge who appreciates it, equal to the damage done”

The Jordanian Civil Code stipulates in Article 363 that: “If the guarantee is not provided for in the law or the contract, the court shall assess it in an amount equal to the damage suffered when it occurred”.

Accordingly, compensation includes the loss of the employer, such as damage to his property and person, due to the demolition or defective construction, and the loss of profits, such as the loss of the benefit to him from the benefit of construction.

2.7 Cases of exemption from tort liability

The obligation of the contractor and the engineer to ensure that there are no defects in buildings and fixed installations is an obligation to achieve the result that the building they are staying intact for ten years after the employer's acceptance (Shanab, 2004).

Accordingly, the responsibility of the contractor and the engineer is based on a presumed error, which is a violation of the law and can only be denied by proving the foreign cause. The contractor and the engineer shall prove that the mistake has not been made to pay liability for himself, because there is a legal obligation on the contractor and the engineer that is the construction remains intact and solid for ten years from the date of delivery (Article 788 of the Jordanian Civil Code).

The liability can be paid by denying the causal link between the damage caused to the employer by the demolition or defective construction and the act of the contractor or engineer of the construction process. The negation of the causal relationship shall be by proving the foreign cause, which is represented by force majeure, the mistake of the employer himself, or the fault of others who have the character of force majeure.

2.7.1 Force Majeure

Force Majeure is defined as an unexpected incident, in which a person has no hand, is unable to pay it, and consequently, the implementation of the obligation becomes impossible.

What is meant by unpredictability is not for incidents that have not occurred before, but for incidents that cannot be predicted for a second time, even from the most cautious people?

For example, earthquakes, volcanoes, and airstrike's are considered force majeure. However, natural phenomena such as rainfall and storms. These phenomena are predictable in the light of contemporary scientific progress and are therefore not a force majeure unless they fall short of expectations and are impossible to push.

There is no difference between force majeure and the sudden incident. They are expressions of one meaning and have the same effect. (Al-Sanhouri, 2006) Article 261 of the Jordanian Civil Code states: "If a person proves that the damage was caused by a foreign cause in which he has no hand in it as a

celestial scourge, a sudden accident, a force majeure, an act of a third party, or the act of the aggrieved party, he shall not be obliged to guarantee unless the law requires, Or agree otherwise." The Jordanian legislator cited both force majeure and the sudden incident in tandem to indicate one thing.

To exclude the responsibility of the contractor and the engineer, force majeure shall be the sole cause of the damage. But if there is a defect in the construction that threatens its safety and durability and then force majeure occurred and caused the demolition of the building, do the contractor and the engineer have no responsibility in this case?

Some say that "if there was a defect in the building and then the building was demolished by force majeure, without the defect involved in its demolition, then the employer has no interest in filing the guarantee claim because the building would have been destroyed even if there was no such defect (Al-Sanhouri, 2006)."

Previously, the French judiciary had ruled in such a case by assigning responsibility among those responsible for multiple reasons, according to the share of each cause of the damage, in the so-called partial causation of the force majeure (Yaqout, 1984).

But after that, the French judiciary has reversed this trend and resorted to the theory of "productive cause", the most effective reason for demolition .If the force majeure is the cause of the product, the responsibility of the contractor and the engineer shall cease, but if the fault of the contractor or the engineer is the productive cause of the damage, Their responsibility remains.

2.7.2 The employer's fault

The mistake of the employer denies the responsibility of the contractor and the engineer for the complete or partial destruction of the buildings or establishments, or any defects therein that threaten their durability and safety, provided that such mistake by the employer is unique in causing the damage, and that no-fault shall be established on the part of the contractor or engineer. If the contractor or the engineer is found to be wrong, the damage is due to a (mutual fault) and the responsibility shall be distributed between them (Shanab, 2004).

It must be the employer's fault before the completion of the construction and delivery and during the implementation of the work, but if it occurs after the completion of work and receipt of it is acceptable, such as making defective modifications on how to distribute places inside the property, resulting in a defect, the employer alone asks for demolition or Construction defect (yaqout,1984).

Originally, the engineer and the contractor are experts in the art of construction, unlike the employer who is supposed to be ignorant about construction matters.

If the employer intervenes in the establishment of defective establishments, either by imposing defective specifications or by submitting defective materials or by approving a defective design, this does not relieve the contractor and the engineer of their responsibility, because they should have alerted the employer to the inadequacy of the specifications or the construction defects(Shanab, 2004) .

But if the defect in the material or the design is difficult to detect by the contractor and the engineer, the mistake of the employer here denies responsibility for the contractor and the engineer. (Al-Sanhouri, 2006).

However, if the employer is an expert in construction matters and has more experience in the art of construction than the experience of the contractor and the engineer who contracted with them, the compliance of the contractor and the engineer with the instructions and orders of the employer shall not be regarded as a mistake from them and the damage is due to the fault of the employer alone and the responsibility of both the contractor and the engineer is excluded.

2.7.3 The fault of others who have the characteristic of force majeure

Jurisprudence believes that the fault of third parties does not pay the contractor and engineer the responsibility placed on them unless it meets the conditions of force majeure in terms of the unpredictability of the error and the impossibility of payment. If these conditions are not met, the Engineer and the Contractor shall remain fully responsible to the Employer. (Shanab, 2004).

This third party may be inexperienced in the construction process, which is rare, but this is not impossible, such as the third-party drilling operations at deep depths near the foundations of the building, or the use of large machinery caused severe concussions in the ground near the building and caused a complete or a partial crack or destruction.

This mistake exempts the contractor and the engineer from their responsibility, provided that they are not negligent, such as putting the property on weak bases that contributed to the cracking or imbalance and aggravation, and then the responsibility is distributed to the contractor, the engineer and others, each according to the proportion of its contribution to causing damage.

2.8 Agreement on exemption from tort liability

Article 790 of the Jordanian Civil Code stipulates: "Every condition intended to exempt the contractor and the engineer from the guarantee or reduce it is considered void".

The legislator gave further protection to the employer by stating this provision, making the issue of the guarantee obligatory, and not agreeing to exempt the contractor and engineer from the guarantee (Almomani, 1987).

Similarly, the French law in Article 5/1792 abrogates any clause in the contract that exempts from such liability, and any clause intended to relieve the contractor and engineer from their presumed responsibility for construction defects is null and void.

It notes from the text of Article 790 a Jordanian civilian and Article 5/1792 French Civil that invalidity is not limited to agreements exempted from liability, but also includes mitigating conditions of liability.

Accordingly, any condition intended to deprive the employer of recourse to the engineer and contractor in the event of demolition or defect shall be null and void, and the agreement limiting the warranty to certain works or defects shall be null and void.

It is not permissible to agree to reduce the warranty period by making it less than ten years; however, the Egyptian civil law authorized the reduction of this period, but the Jordanian law did not take such an exception.

2.9 The difference between tort and contract liability

Table 2-2 shows the differences between contractual and tort liability in terms of the basis for liability, degree of error, the burden of proof, type, and extent of the compensation.

Table 2-2: Differences between contractual and tort liability

	Contractual liability	Tort liability
basis for liability	The basis of contractual responsibility is the **contract**	The basis of this responsibility is the **error**, without any contractual link between it and the victim.
the burden of proof	In contractual liability, the compensation claimant is not charged with proving a mistake from his opponent	In tort liability, it is the responsibility of the aggrieved person to prove wrong and harm
Type of compensation.	In contractual liability, compensation is always limited to cash compensation.	In tort liability, compensation may take different forms.
extent of compensation	Contractual liability is limited to expected damage	Tort liability includes anticipated and unforeseen damage
Exemption from liability	The exemption from liability is correct and acceptable in the contractual responsibility	The exemption from liability shall be void

Chapter three
Research Methodology

3.1 Introduction

This chapter presents and discusses the research approaches, the research community, study area, research methodology, data collection steps, and research tools. It also presents data analysis and statistical analysis.

To know the nature of the contractor and engineer responsibility for the durability of the building after completion and delivery to the employer, the analytical method followed for the provisions of Jordanian civil law, and other texts governing the architectural activity in Jordan. Because of the paucity of rulings issued by the Jordanian judiciary on the subject of the responsibility of the contractor and the private engineer, I shall try to fill this gap by using the jurisprudence of France and Egypt, if possible. In addition to the work of many interviews and put a set of questions in other ways to obtain quality and quantity data.

For this study, descriptive and analytical methods were used to collect data from several sources, the most important of which are Jordanian courts, engineering institutions and any concerned persons such as lawyers to determine the legal nature of the contractor and engineer liability and its consequences in case of default.

3.2 Research methodology diagram

To summarize the methodology description Figure 3.1 shows the diagram of the methodology used in this research.

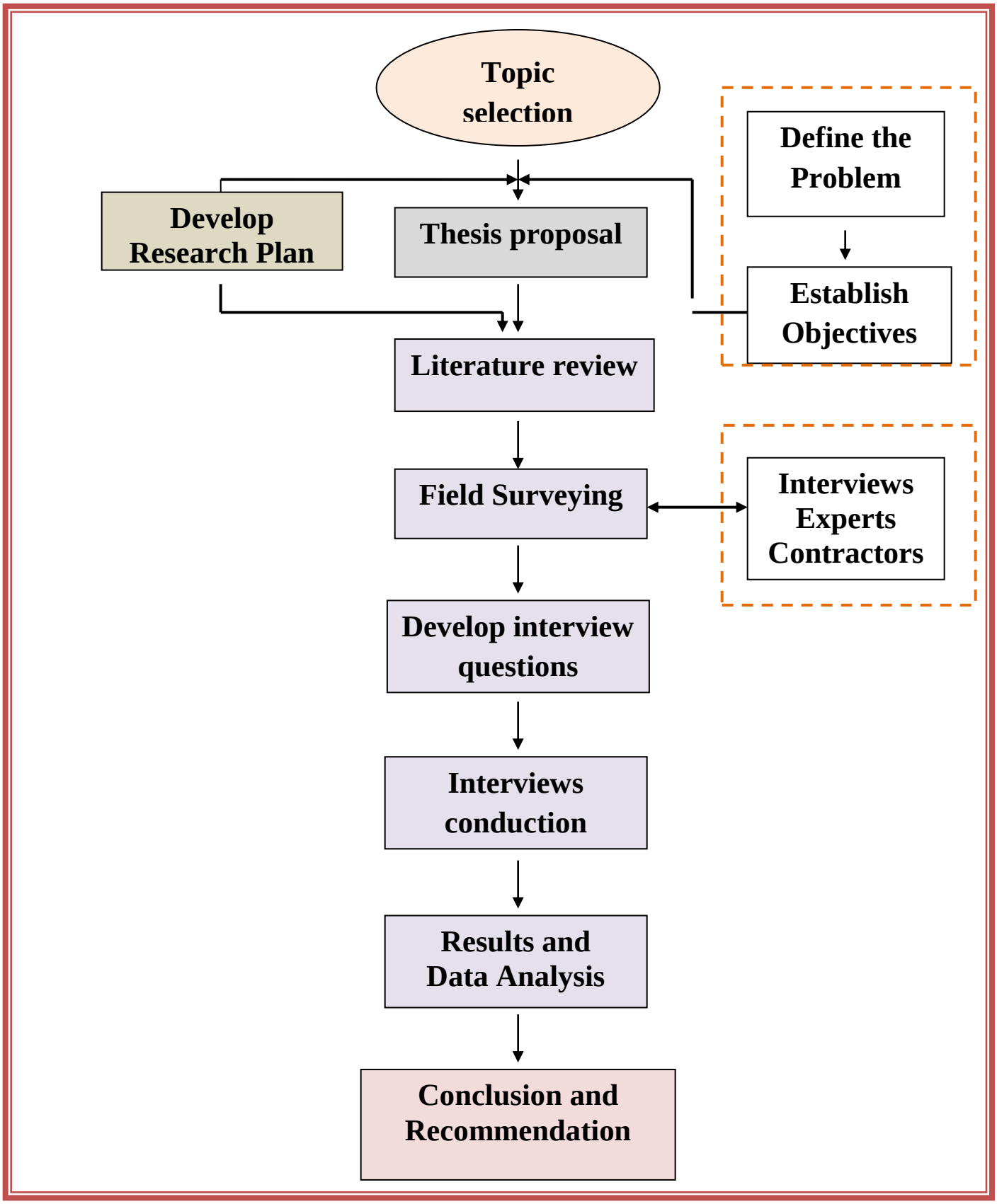

Figure 3.1: Flow Chart of Research Methodology

3.3 Methodology outline:

This research was conducted in three major stages:

3.3.1 First Stage:

The first phase includes a comprehensive review of the literature and the identification of the problem of research and objectives, this phase includes:

1. Creation of a clear description of the problem.
2. Review previous research.
3. Identification of the search problem.
4. Extract information and data about the research problem from many sources, such as books, magazines, articles, and reports.
5. Formulation of questions that will be used in the interviews, based on the information collected from the literature review.
6. Analyze and interpret quantitative and qualitative data.
7. Study of problems in other countries to make a comparison.

3.3.2 Second Stage:

This stage included data collection, using interviews with contractors working on construction projects that are classified under the building categories. These categories are "1st, 2nd, 3rd, 4th, and 5th Building categories" that have valid registration and a group of lawyers who have received cases related to the field of contracting. Taking into account that existing data on the tort liability of the Engineer and Contractor is very limited, a great deal of the research will be built according to the field investigation and local survey.

For the survey of the Jordanian contracting companies, here are some themes used in the interview:

1. Planning process before project implementation
2. Compensation for damage
3. Cancel the contract of the contracting

Concerning lawyers' interviews, here are some themes used in the interview:

1. Controversy over the nature of contractor and engineer responsibility
2. Contractual and tort liability
3. When will tort liability be fulfilled؟
4. Force majeure and lack of responsibility

3.3.3 Third Stage:

In this phase, an analysis is made (thematic analysis) using data from the interviews, knowledge from a literature review. This phase will include the following activities:

1. Extensive analysis of the information and data available.

2. Conclusion and recommendations from the analysis.
3. Recommendations to try to solve some of the problems.
4. Suggestions for further studies.

3.4 Research Approach:

Selecting a research method is a critically important decision the researcher needs to study the approaches to know which of them will satisfy the objectives of the study and will fit with the information available and with the information needed. There are many approaches in research methods, such as the quantitative and qualitative methods, and the deductive and the inductive method.

3.4.1 Method used in the research:

A qualitative method is used to explore and understand situations, behaviors, and experiences and construct a basis for decision making, and for this research, the qualitative method was used mainly.

The qualitative method is the most appropriate way to use in this research, as this method aims to understand the problem, also, it helps in understanding the beliefs, opinions, and relationships of individuals in the field using personal observation and in-depth interviews, and as a result, differences were described and relationships explained to explore the phenomena needed in the construction projects.

In this type of research, one uses a theory deductively and places it towards the beginning of the plan for a study. The objective is to test or verify a theory, rather than develop it. One thus begins the study advancing a theory, collects data to test it, and reflects on whether the theory was confirmed or unconfirmed by the results in the study. The theory becomes a framework for the entire study.

This study was designed and based on two main sources: secondary data, primary data.

The secondary data: collected from researches and studies. These secondary sources of information were mainly used to support the primary data.

The Primary data: the primary information was collected via using the main tool of the study which is the interviews with contractors, project managers, engineers and lawyers.

3.5 Research population and sample size:

Two populations were targeted in this research. The first population is Jordanian Contractors in the construction sectors that are classified under the building categories. At the time of the search, there were **1921** contracting

companies classified into first, second, third, fourth, and fifth categories in Jordan.

The second population included a group of lawyers who have received cases related to the field of contracting.

The sample size consisted of 100 contractors, it was chosen as a stratified random sample from the whole population, according to the location of the contracting company. The sample represented (**20%)** of the whole population of 500 classified contractors under the first, second, and third categories in Amman, al Karak, and Aqaba. The respondents were 80. Ten of them were not valid so they were dropped, and 70 were approved.

The researcher chooses the three principle classifications; since it was found that around 95% of the total implemented projects in Jordan were finished by the first three degrees of the registered classified contractors.

As for the lawyers, 12 lawyers were selected, who have received cases related to the field of contracting.

One of the things that help in the power of research and study is to approach the characteristics of the sample of the characteristics of the original community, making it representative of it; so many researchers limit the expansion of the study sample and select them in a random and accurate. Because this reduces the sampling error. Note that there is no agreement among the researchers to set a specific percentage for the sample of the study, but some prefer that the sample size should not be less than 5% or 10% of the original research community, in this study 20%.

3.5.1 Types of contracting companies

There is a total of 3110 of registered and classified contractors since 2018 in Jordan. This number includes contractors of categories from 1st to 5thand contractor's category VI (public works).

These contractors are classified as follows in table 3.1, and their classification depends mainly on elements such as capital, experience, and many other qualifications.

Table 3-1: categories of the contractors in this research

	Number of registrars	Number of Classifiers
Class I to V	2515	1921
Category 6 (Public Works)	595	449

Source: Jordanian Construction Contractors Association

3.5.2 Distribution of the contracting companies in Jordan

Table 3-2: Number of registered contractors

Governorate	Number of contractors
Amman	1774
Irbid	307
Karak	251
Tafila	78
Aqaba	41
Almafraq	95
Zarqa	210
Ajloun	28
Balqa	148
Jerash	34
Maan	58
Madaba	86
Total	**3110**

Source: Jordanian Construction Contractors Association

Figure 3-2 shows the distribution of construction companies in Jordan, and

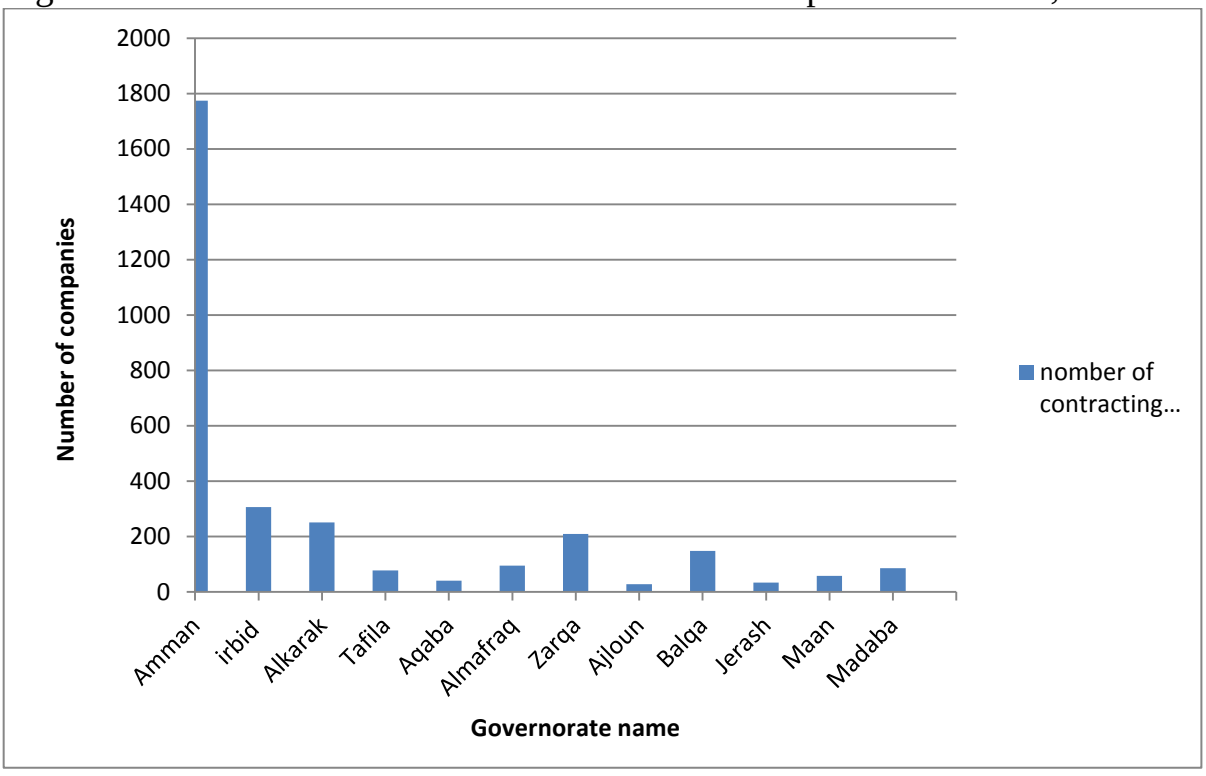

Figure 3-2: Distribution of the contracting companies in Jordan

3.5.3 Location of sample companies

The location of the companies that participated in the interviews, as shown in Figure 3.3, was mainly focused on Amman, where it has the largest number of projects created in Jordan and includes the most important

companies and vital projects in Jordan then comes Al-Karak, a large city of importance In Jordan, it has a wide range of construction companies, and Aqaba plays an important role in the field of construction, regardless of the obstacles that have arisen because of its location.

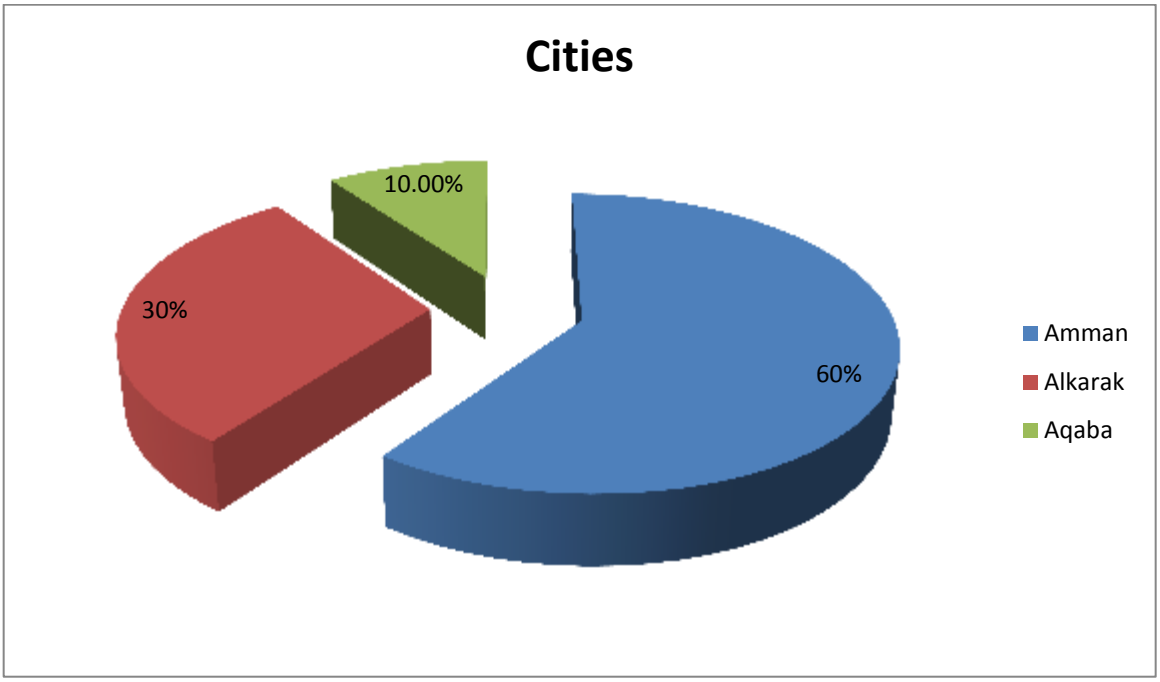

Figure 3-3: location of the contracting companies who participated in the interview

3.6 Interviews analysis:

In this research thematic analysis was used to analyze the interviews conducted with project managers, contractors, and lawyers, here are the steps used to reach the final themes that emerged from the data itself:

i. Data were collected from the interviews, project managers, contractors, lawyers
ii. Define a framework for the information collected, so that information and data are categorized and collected in a single frame or type.
iii. Indexing data, identifying data types, and the general framework for each type and category.
iv. Drawing and designing maps, tables, and interpretation of data, clarifying the relationships and elements associated with the research problem.

Personal interviews were used (face to face) with most of the contractors and engineers, but due to the geographical location of Aqaba Governorate, telephone interviews were used with contractors in this governorate, the duration of the interview ranges from 15 to 20 minutes.

3.7 Study Barriers

They are many constraints and barriers that faced the researcher during the conduction of the research. The most important barrier was the contractor’s unconcern to present their opinions on such subjects. A high rate of them showed a lack of cooperation and they delegated the answers to office engineers. Although the researcher explained first the aim of the research and they were asked if they can present the needed information. As for the lawyers, it was not easy to provide time to meet them. But despite these obstacles, the number of contractors interviewed was sufficient to obtain the required information, regardless of the small number of contractors who declined to be interviewed.

Several courts have been visited to collect information on issues about contractors, but information about cases in these courts is considered very confidential and is not disclosed for studies.

However, interviews with lawyers were sufficient to obtain legal information.

3.8 Summary

This research is a result of a study which adopted mainly the qualitative method and inductive theory that describes the variations and individual experience through an open-ended question in constructed interviews which will result in constructing a framework that will provide a basis to know the nature of the contractor's responsibility during and after implementation and to assist in safeguarding the interests of the employer who is not expert in construction work.

Chapter Four
Analysis and Results for Interviews

4.1 Introduction:

The construction sector in Jordan is one of the essential drivers of the national economy. It has the support of the government through a true partnership with the private sector with the Union Contractors, which includes more than 1,376 contractors; the Engineers Association, which includes about 83,000 engineers; and the Assembly of Investors in the housing sector, which includes about 3110 the investors and consultancy offices, which has about 1,200 office consultative partners, who are all representing the ministry and members of the partnership with the private sector in the Ministry of Public Works and Housing . The construction industry provides jobs for more than 12 percent of Jordan's workforce and produces nearly 20 percent of the local GDP. It supports more than 150 different careers, making construction a vital part of life in Jordan

A survey was done in Jordan by interviewing project managers, contractors, and lawyer's .The interviews were conducted in Amman, Al-Karak, and Aqaba with contractors who work in first, second, third, fourth, and fifth-degree companies.

Twenty questions were discussed, in which respondents could express themselves freely. Each question was analyzed and some answers were quoted precisely from the respondents to express their point of view. This is the main attraction of free-text analysis, to let respondents express themselves without constraints.

4.2 Interviews with contractors and lawyers

Comparative and thematic analyses were used to analyze the data; the results are tabulated according to the majority of the responses provided.

It should be noted that, due to the nature of the answers that bear more than one meaning and can be interpreted in more than one way, a few answers were not clear. However, all of these notes will be mentioned with comments on each question.

The interviews were largely successful and served the desired purpose, as through the interviews the researcher was able to identify the impressions of the people and write them down along with the answers to the questions; To confirm their sincerity. Also, the information obtained through the interviews was accurate due to the possibility of explaining the questions to the people who were interviewed and clarifying the questions for them.

4.2.1 Planning process before project implementation

Contractors and lawyers

Preparing a plan is one important step in managing a project. Good planning takes time, effort, and cost, but the results can reduce risks, reduce waste and fulfill the client's requirements.

When project managers were asked about planning, the answers were that all project managers had prepared a plan; however, interviews indicated that many plans were not followed closely, which in some projects led to some mistakes that were difficult to avoid.

After an open discussion on the planning of the project, the opinion was the same, and all parties involved in the interview agreed that good planning takes time, but the effort ensures that time and cost are saved later, and risks are minimized. Good planning helps to deliver better design; reduces waste and trains the project team to anticipate and deal better with risks.

4.2.2 Contractual and tort liability

Contractors

It was necessary to know the nature of the contractor's liability for damages and defects that may arise during the implementation process or after delivery. All contractors interviewed agreed that their liability for damages is contractual and that the contractor's guarantee ends with the handover of the work so that delivery covers all defects that appear later.

Lawyers

While the lawyers had a different opinion, they agreed that the delivery only covers the apparent defects and that the contractor stays responsible for defects for the legally agreed period of 10 years, due to the seriousness of the fixed installations and the need to test their rigidity.

4.2.3 The degree and type of error that causes liability

Lawyers

In contractual liability, if the commitment is to achieve an end, responsibility is available when the result is not achieved.

If the obligation is to exercise care, the responsibility for the minor error that cannot be avoided does not arise.

As for tort liability, it is always based on error, no matter how easy or trivial. The standard of error in tort liability is fixed and does not change.

4.2.4 Compensation for default error

Contractors

The ideal way to compensate for the damage is to remove and erase the damage whenever possible, so that can return to the same condition as before the damage, which is in-kind compensation, but if it is impossible to compensate the damage in kind, there is no way before the court only resort to the method of compensation in return

Most of the contractors interviewed agreed that any defect in the construction, whether it appeared before handing over the work to the employer or after the handover, was committed to repairing it in addition to eradicating the damage and removing it without the employer resorting to the court to obtain his right.

The rest of the contractors interviewed, part of them said that they were able to prove the foreign cause that led to defects in the building and thus denied the responsibility for them and exempted them from compensation, the other part of the contractor compensated the employer for the damages that were shown by the monetary compensation, in fulfillment of the employer's desire.

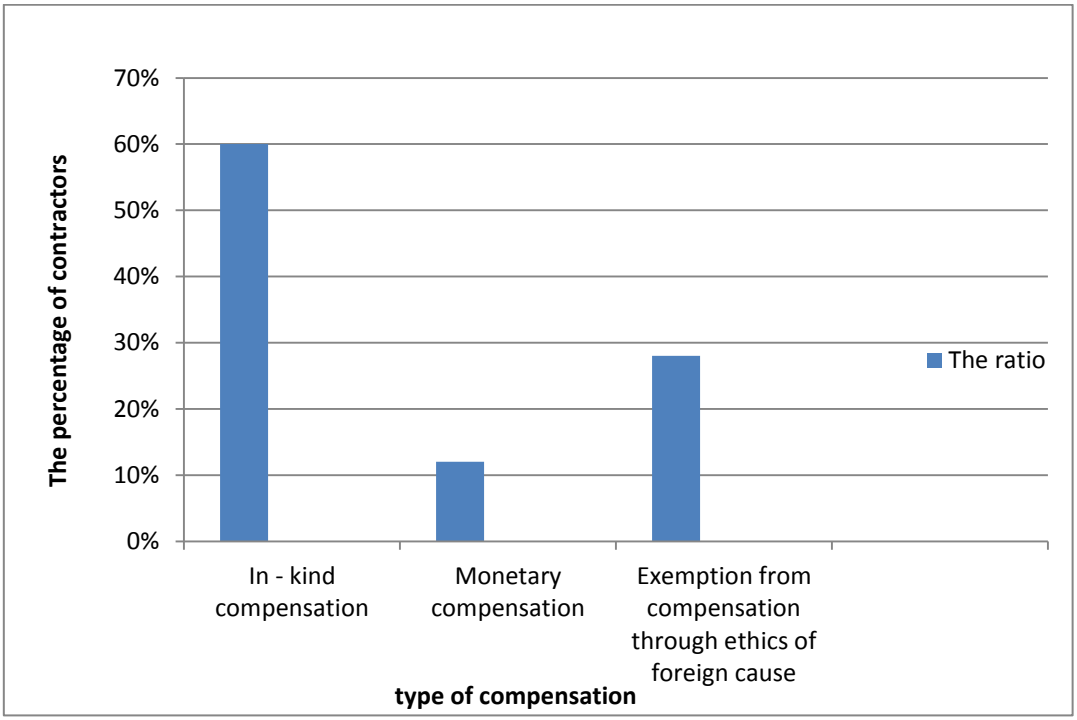

Figure 4-1: Compensation for damage (Percentage of the contractor's respondents)

As seen in the chart more than 60 percent of the answers said that the compensation for the damage was through removing the defect and restoring the condition to what it was before the damage.

Then 28 percent of the answers said that the contractors were able to prove the foreign cause and 12 percent of the answers said that the employer requested financial compensation for damages instead of in-kind compensation.

4.2.5 When the responsibility of the contractor and the engineer is realized?

One of the most important questions that need to be answered is "Is the responsibility of the contractor and the engineer only in case of total or partial destruction of the building?"

Contractors

All contractors who agreed that their liability for damages is contractual, also agreed that their liability includes all anticipated damages, whether serious or minor.

Lawyers

After asking this question to 12 lawyers specialized in contract cases, Lawyers split into two parts: the first section said that the responsibility of the contractor and the engineer is not only in the case of demolition of the building, but extends to all serious defects that threaten the integrity of the building and its durability.

The other section of lawyers said that special liability is specialized for serious damages such as defects of total or partial destruction or defects that threaten the durability and safety of the building within ten years, while the contractual liability includes all expected damages, whether serious or minor.

4.2.6 The results of the defective implementation or violating the terms of the contract

Lawyers

The contractor shall fulfill his contractual obligations of completing the work within the agreed period and also following the agreed conditions.

According to Article 785 of the Jordanian Civil Code, all the lawyers interviewed agreed that the contractor who performed the work flawed must repair the defect if it is possible to repair the defect within a reasonable period. However, if the defect cannot be repaired, the employer may request the dissolution of the contract and entrust another contractor to complete the work at the expense of the first contractor.

4.2.7 The adequacy of the period legally prescribed as a special guarantee in the contracting contract

Lawyers

Did the legislator, because of the laws governing the construction, have chosen the right period for the guarantee or did it need to be amended?

It is known that the legislator specified the period during which the commitment of the engineer and the contractor shall remain in force for ten years from the date of receipt of the work by the owner.

However, the lawyers interviewed were divided into two parts. The first part of the lawyers agreed that it is not permissible to exempt from the guarantee or to agree to reduce or amend the duration of the guarantee.

The other section agreed that this period may be increased, but without authorization to reduce it from the legal period, i.e., a reduction of ten years.

4.2.8 Force majeure and Exemption from tort liability

Contractors and lawyers

What if the demolition is caused by a celestial blight like a thunderbolt or an earthquake?

What if the employer himself did intentionally or unintentionally acts that lead to demolition or flaw?

These questions were addressed to all the lawyers and contractors interviewed, and all the lawyers agreed on one answer: the absence of the contractor's and engineer's responsibility in case of proving the foreign cause.

The responses of the contractors and lawyers interviewed are summarized in Table 4.1

Table 4.1: Comparison of the responses and feedback of both contractors and lawyers on the topics discussed in the interviews

The main topics discussed during the interviews	contractors	lawyers
Advance planning and its relationship to mistakes and defects that occur during the implementation of the project	Contractors said the advance planning reduces waste and trains the project team to anticipate and deal better with risks.	A good planning ensures that risks are minimized
Contractual and tort liability	All contractors agreed that their liability for damages is contractual and that the contractor's guarantee ends with the handover of the work	All lawyers agreed on that the contractor stay responsible for defects for the legally agreed period of 10 years
When the responsibility of the contractor and the engineer is realized?	Agreed that their liability includes all anticipated damages, whether serious or minor.	Lawyers agreed that the responsibility of the contractor and the engineer is in the case of serious defects that threaten the safety and durability of the building
The results of the defective implementation or violating the terms of the contract	60 percent of the answers they could remove the defect, 28 percent of the answers they were able to prove the foreign cause, 12 percent of the answers said that the employer requested financial compensation for damages	Lawyers agreed that the defect should be repairing if possible, but if the defect cannot be repaired, the employer canceling the contract and entrust another contractor to complete the work at the expense of the first contractor.
The adequacy of the period legally prescribed as a special guarantee in the contract of contract		The first part of lawyers agreed that the contractor and engineer shall not be exempted from the warranty or amendment in its duration. As for the second section, they said that Permissible of amendment in duration of warranty by increasing it and not decreasing it
exemption from liability	Liability shall be excluded if the foreign cause of the defect is proved	Liability shall be excluded if the foreign cause of the defect is proved

4.3 Results

1. All contractors agreed that good planning before implementation is very important to the success of the project and avoid any mistakes or damage that may occur during the implementation of the project, but despite this recognition of the importance of planning, but many companies suffer from inaccuracies in the planning process and weaknesses
2. All contractors agree on the right of the employer to claim compensation for any damage or defect to the building as a result of negligence and negligence of the contractor. However, the contractors differed in the method and type of compensation for the error, a large part of them used in-kind compensation to remove the defect, while the rest of the contractors used some of the cash compensation and some of them were able to prove the foreign cause of the appearance of the defect and therefore was exempt from compensation.
3. About the termination of the contracting contract (at the request of the employer) due to the failure of the contractor to repair the defects that may appear in the building and its inability to restore the situation to what it was before the damage occurred, most of the contractors said that the process of dissolution of the contract is rare and that any Defect appears in the building being repaired by the contractor
4. When asked what type of damage or defect is causing the contractor and engineer's responsibility, the lawyers here are divided into two parts, the first section of the lawyers agreed that the responsibility of the contractor and the engineer includes all serious defects that threaten the safety of the building. The second section of the lawyers agreed that the contractual liability is concerned with all damages, whether serious or minor, but the tort liability only concerns the total or partial destruction of the building for 10 years from the date of delivery.
5. All lawyers agree that the contractor and the engineer are no longer responsible in case the foreign cause is proved.

Chapter five
Conclusion and Recommendations

This chapter provides the main conclusions which were obtained from the hypothesis testing and data analysis, also, the chapter will present the recommendation that emerged from the study.

5.1 Conclusions

1- The tort liability of the Engineer and the contractor come true if its conditions are available, the necessity of presenting a contract for the construction of fixed buildings or installations, and the occurrence of complete or partial demolition of the building or the emergence of a hidden defect within ten years starting from the date of final receipt of the work.

2- The contractor shall not be entitled to claim the allowance in case of destruction or defect before delivery to the employer if the cause of the defect is a sudden accident, except in one case, which is if the employer is alerted to receive the work, but the employer did not receive it until the work was destroyed and defective.

3- It is a manifestation of the strictness of this responsibility that its provisions form of public order, and that the contractor and engineer are jointly in the guarantee, and that their responsibility extends for ten years after the handover of the building to the owner, and their assumed error can be paid only by proving the foreign cause. The Contractor and the Engineer shall also remain liable for any demolition or defect that threatens the durability and safety of the building even if the cause of the demolition remains unknown, or the employer's consent to the establishment of defective installations.

4- The responsibility of the engineer and the construction contractor is a responsibility Related to the public order, so the exemption cannot be agreed upon or reduced, but it can be agreed to Stress it.

5- The responsibility of the engineer and the construction contractor shall expire at the end of ten years from the final handing over of the work.

6- The provisions of the tort liability of the engineer and the building contractor shall apply to new construction works and the subsequent addition, modification or upgrading thereof, It also applies to major reforms, consolidation, renovation and expansion, simple maintenance work, such as paintwork and whiteness is subject to general rules, as it does not affect the durability and safety of the building.

5.2 Recommendations

To improve the performance of the contractor and the engineer in the implementation of the facilities, and to ensure the right of the employer in the event of failure of the contractor and compensate the injured for the damage, a set of suggestions were made:

1- We see the necessity to take precautions for the safety and security of the neighbors and pedestrians, It may also be damaged those involved in the construction process, such as workers or Caretakers (contractor and engineer), and in the end, we demand the need to respect the legally defined distance separating the buildings or fixed installations from the neighbor and take all necessary precautions to protect pedestrians.

2- Also, the ten-year guarantee period should be extended from 10 to 20 years. Ten years is not enough to test the durability and safety of the building in the era of tightening modern buildings and buildings, because that most of the construction defects do not appear until after a long time more than 10 years such as foundation and soil defects; Because it was observed that such defects appear after some time from the use of the building.

3- This responsibility shall be exercised only in respect of fixed-property works, irrespective of the nature of the materials used in the construction, or the purpose for which the construction was constructed. I, therefore, propose to amend the text of article 788 of the Jordanian Civil Code by adding the word "fixed" after "establishments" to read "fixed installations"; because there are facilities such as ships, do not fall within the buildings, and fixed installations under study.

4- If there is a complete or partial demolition of the building or a defect that threatens the durability and safety of the building, the responsibility shall not be limited to the contractor and the engineer who shall design the design as stated in Article 788 of the Jordanian Civil Code. There are other people, responsibility should extend to them because their role in the construction process is no less important than the contractor himself, such as civil engineers, mechanical, electrical or construction engineer, who contract with the employer directly.

Others may be involved in the construction process, such as the seller, agent, manufacturer, and others.

5- Specialized experts should be introduced and bring them in this field to minimize the risks of building demolition and defect, and also the need to strike a balance between the interests of the employer and the injured and the contractor or engineer.

6- The subjugation of the works that are set up Underground to the rules of private warranty in the contract of contract.

7- Expanding the ten-year guarantee in terms of contracts, so that is not limited to the original contract, but also includes the subcontracting contract and the contracts related to the real estate transfer.

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APPENDEX (I)

Questions asked to contractors and lawyers in the interviews

This is an interview that will be conducted with contractors and lawyers in Jordan as a tool for getting a master's degree in engineering management, to study the nature of the contractor and the engineer’s responsibility towards the employer.

The information in this interview will be used only for academic research, with a complete commitment to absolute confidence.

The questions discussed in the interviews are:

1- Does pre-planning before starting the implementation of the project reduces errors and defects that may occur during implementation or after the handover of the work?

2- What is the difference between contractual responsibility and tort liability?

3- What is the type and degree of error that causes the contractor’s responsibility to arise?

4- What is the best type of compensation for damage and its amount?

5- What are the cases in which the contractor and the engineer are exempted from liability?

6- What are the results of defective implementation that violates the terms of the contract?

7- Is it permissible to amend the ten-year guarantee period by increasing or decreasing?

8- What is force majeure?

9- What is the role of the supervising company, in your view? Do you think the role is positive or negative in your projects?

10- How do we make sure that safety measures are implemented during the project?

11- Does handing over the work to the owner terminate the contractor's responsibility and cover all defects?

12- In the event of damage, is liability limited to the contractor and civil engineer only? Or does it extend to other people like the electrical engineer and the seller?

13- What are the conditions that must be met to carry out the tort liability of the contractor and the engineer?

14- If there is a defect in the construction that threatens its safety and durability and then force majeure occurred and caused the demolition of the building, do the contractor and the engineer have no responsibility in this case?

15- What is the nature of the facilities that are subject to this responsibility?

16- Why simple maintenance work for facilities is not subject to the provisions of tort liability?

17- What are the conditions for achieving force majeure?

18- What are the obligations of the construction contractor to the employer?

19- Do all the obligations of the contractor and the engineer expire at the end of the contracting contract and handing over the work to its owner?

20- What is the legal basis for tort liability?

APPENDEX (II)

القانون المدني الأردني

- تنص المادة **(261)** من القانون المدني الأردني على انه :" إذا اثبت الشخص أن الضرر قد نشأ عن سبب أجنبي لا يد له فيه كآفة سماوية أو حادث فجائي أو قوة قاهرة أو فعل الغير أو فعل المتضرر كان غير ملزم بالضمان ما لم يقض القانون أو الاتفاق بغير ذلك"

- تنص المادة **(269/2)** على انه : " ويقدر الضمان بالنقد على انه يجوز للمحكمة تبعا للظروف وبناء على طلب المضرور أن تأمر بإعادة الحالة إلى ما كانت عليه أو أن تحكم بأداء أمر معين متصل بالفعل الضار وذلك على سبيل التضمين"

- تنص المادة **(355/2)** على انه : " على انه إذا كان في التنفيذ العيني إرهاق للمدين جاز للمحكمة بناء على طلب المدين أن تقصر حق الدائن على اقتضاء عوض نقدي إذا كان ذلك لا يلحق به ضررا جسيما"

- تنص المادة **(363)** على انه : " إذا لم يكن الضمان مقدراً في القانون أو في العقد فالمحكمة تقدره بما يساوي الضرر الواقع فعلا حين وقوعه"

- تنص المادة **(780)** على أن : " المقاولة عقد يتعهد أحد طرفيه بمقتضاه أن يصنع شيئا أو يؤدي عملا لقاء بدل يتعهد به الطرف الآخر "

- تنص المادة **(781)** من القانون بفقرتيها على أنه :

1- يجوز أن يقتصر الاتفاق على أن يتعهد المقاول بتقديم العمل على أن يقدم صاحب العمل المادة التي يستخدمها أو يستعين بها في القيام بعمله .

2- كما يجوز أن يتعهد المقاول بتقديم المادة والعمل .

- تنص المادة **(785)** على أنه : "يجب على المقاول انجاز العمل وفقا لشروط العقد ، فإذا تبين أنه يقوم بما تعهد به على وجه معيب أو مناف للشروط فيجوز لصاحب العمل أن يطلب فسخ العقد في الحال إذا كان إصلاح العمل غير ممكن . وأما إذا كان الإصلاح ممكنا جاز لصاحب العمل أن يطلب من المقاول أن يلتزم بشروط العقد ويصحح العمل ضمن مدة معقولة . فإذا انقضى الأجل دون التصحيح جاز لصاحب العمل أن يطلب من المحكمة فسخ العقد أو الترخيص له في أن يعهد إلى مقاول آخر بإتمام العمل على نفقة المقاول الأول "

- تنص المادة **(786)** على أنه : " يضمن المقاول ما تولد عن فعله وصنعه من ضرر أو خسارة سوا أكان بتعديه أو تقصيره أم لا وينتفي الضمان إذا نجم ذلك عن حادث لا يمكن التحرز منه"

- تنص المادة **(788)** على انه :

1- "إذا كان عقد المقاولة قائما على تقبل بناء يضع المهندس تصميمه على أن ينفذه المقاول تحت إشرافه كانا متضامنين في التعويض لصاحب العمل عما يحدث في خلال عشر سنوات من تهدم كلي أو جزئي فيما شيداه من مباني أو أقاماه من منشآت وعن كل عيب يهدد متانة البناء وسلامته إذا لم يتضمن العقد مدة أطول"

2- "يبقى الالتزام في التعويض المذكور ولو كان الخلل أو التهدم ناشئا عن عيب في الأرض ذاتها أو رضي صاحب العمل بإقامة المنشآت المعيبة"

3- " تبدأ مدة السنوات العشر من وقت تسلم العمل "

- تنص المادة **(790)** على انه : " يقع باطلا كل شرط يقصد به إعفاء المقاول أو المهندس من الضمان أو الحد منه "

القانون المدني المصري

- تنص المادة **(221)** على انه :

1- إذا لم يكن التعويض مقدّراً في العقد أو بنص في القانون فالقاضي هو الذي يقدّره، ويشمل التعويض ما لحق الدائن من خسارة وما فاته من كسب، بشرط أن يكون هذا نتيجة طبيعية لعدم الوفاء بالالتزام أو للتأخر في الوفاء به، ويعتبر الضرر نتيجة طبيعية إذا لم يكن في استطاعة الدائن أن يتوقّاه ببذل جهد معقول.

2- ومع ذلك إذا كان الالتزام مصدره العقد، فلا يلتزم المدين الذي لم يرتكب غشاً أو خطأً جسيماً إلا بتعويض الضرر الذي كان يمكن توقّعه عادةً وقت التعاقد .

- تنص المادة **(646)** على أن : " المقاولة عقد يتعهد بمقتضاه أحد المتعاقدين أن يصنع شيئاً أو أن يؤدي عملاً لقاء أجر يتعهّد به المتعاقد الآخر"

- تنص المادة **(651)** على أنه :

1- يضمن المهندس المعماري والمقاول متضامنين ما يحدث خلال عشر سنوات من تهدّم كلي أو جزئي فيما شيّدوه من مبان أو أقاموه من منشآت ثابتة أخرى وذلك ولو كان التهدّم ناشئاً عن عيب في الأرض ذاتها، أو كان رب العمل قد أجاز إقامة المنشآت المعيبة، ما لم يكن المتعاقدان في هذه الحالة قد أرادا أن تبقى هذه المنشآت مدة أقل من عشر سنوات.

2- ويشمل الضمان المنصوص عليه في الفقرة السابقة ما يوجد في المباني والمنشآت من عيوب يترتب عليها تهديد متانة البناء وسلامته.

3- وتبدأ مدة السنوات العشر من وقت تسلّم العمل.

- تنص المادة **(652)** على انه : " إذا اقتصر المهندس المعماري على وضع التصميم دون أن يكلّف الرقابة على التنفيذ، لم يكن مسئولاً إلا عن العيوب التي أتت من التصميم .

- تنص المادة **(653)** على انه : " يكون باطلاً كل شرط يقصد به إعفاء المهندس المعماري والمقاول من الضمان أو الحدّ منه"

القانون المدني الفرنسي

- تنص المادة **(1386)** من القانون المدني الفرنسي : "يسأل مالك البناء عن الأضرار الناشئة عن تهدمه لنقص في الصيانة أو لعيب في تشييده"

- تنص المادة **(1792)** من القانون المدني الفرنسي على :

"كل معماري يتولّى تشييد بناء، يعتبر مسئولاً بقوة القانون قبل مموّل البناء أو من يكتسب ملكيته عن الأضرار حتى تلك الناتجة عن عيب في الأرض، التي تعرّض للخطر متانة البناء أو التي تصيبه في أحد عناصره الإنشائية أو أحد عناصره التجهيزية، والتي يترتّب عليها أن يصير البناء غير صالح للغرض الذي شيّد من أجله.

- وتنتفي هذه المسئولية إذا ما أثبت المعماري، أنّ هذه الأضرار ترجع إلّى سبب أجنبي"

- تنص المادة **(1792)** بفقرتها الخامسة على انه :" كل شرط ينص عليه في العقد ويكون موضوعه استبعاد الضمان المنصوص عليه في المادة 3/1792 يعتبر مستبعدا وكأنه لم يكن "

القانون المدني الفلسطيني

مادة (744)

1- يضمن المهندس والمقاول متضامنين ما يحدث خلال عشر سنوات من تهدم كلي أو جزئي فيما شيدوه من مبان، أو أقاموه من منشآت ثابتة أخرى، ولو كان التهدم ناشئاً عن عيب في الأرض التي أقيمت عليها، أو كان صاحب العمل قد أجاز إقامتها معيبة، ما لم يكن المتعاقدان في هذه الحالة قد أرادا أن تبقى هذه المنشآت أو المباني مدة أقل من عشر سنوات

2- يشمل الضمان المنصوص عليه في الفقرة السابقة ما يوجد في المباني والمنشآت من عيوب يترتب عليها تهديد متانة البناء وسلامته

3- تبدأ مدة السنوات العشر من وقت تسلم صاحب العمل له، ولا تسري أحكام هذه المادة على ما قد يكون للمقاول من حق الرجوع على المقاولين من الباطن

مادة (745)

4- إذا اقتصر عمل المهندس علي وضع التصميمات دون أن يكلف بالإشراف على التنفيذ كان مسئولاً فقط عن عيوب التصميم، وإذا عمل المقاول تحت إشراف المهندس أو صاحب العمل الذي أقام نفسه مقام المهندس فلا يكون مسئولاً إلا عن العيوب التي تقع في التنفيذ دون عيوب التصميم.

مادة (746)

5- يكون باطلاً كل شرط يقصد به إعفاء المهندس أو المقاول من الضمان أو الحد منه.

مادة (747)

6- تسقط بالتقادم دعوى الضمان بانقضاء ثلاث سنوات على حصول التهدم أو اكتشاف العيب.

المعلومات الشخصية

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