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RESEARCH ARTICLE

Responsibility for Defects and Errors of Smart Robots According to Traditional and Modern Theories in the Jordanian Legislations

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ABSTRACT

This study aims to address civil liability issues concerning defects and errors in software or machines represented by smart robots. The objective is to find solutions that match the work of robots within the framework of Jordanian legislations, particularly the Consumer Protection Law, while considering the challenges of proving errors and defects in modern smart robots. The study explores the inadequacy of general rules of responsibility in dealing with the unique defects of smart robots. It proposes defining standards and characteristics for smart robots and aligning them with Asimov's agenda to ensure ethical considerations. The research employs a comprehensive legal analysis of Jordanian legislations, consumer protection laws, and proposed laws for smart robots. Case studies and relevant literature are examined to understand the complexities of addressing defects in smart robots. The study suggests developing specific laws to handle smart robot defects, while integrating them with existing Jordanian legislations on defects and consumer protection. By doing so, it establishes a framework for verifying responsibility and addressing redress for defects in smart robots. The findings have significant implications for the legal landscape surrounding smart robots in Jordan. By proposing a comprehensive legal framework, the study provides clarity and protection for consumers, manufacturers, and other stakeholders involved in smart robot usage and development. This research contributes to the emerging field of legal considerations for smart robots by proposing innovative solutions that combine existing Jordanian legislations with specific laws for smart robots. The study's insights offer valuable guidance to policymakers and legal experts, facilitating the responsible integration of smart robots across various domains in Jordan.

1. INTRODUCTION

Smart robots are characterized by multiple benefits and their use in most areas of life. However, since they perform various tasks, including precise ones such as surgery and others, we must reduce the defects and errors of these robots. Such defects may come in the manufacturing stages, or after that through lack of required maintenance, storage or shipping. The defects of robots may also be of a special kind, such as a violation of the privacy of a particular category. Thus, we can say that for special defects of robots it's necessary to raise liability for defective products or the rules of consumer protection laws. However, in general, in many countries this issue is usually dealt with through objective liability without error, as the responsibility focus on the product, which will in turn refers us to its maker, and by linking it with the smart robot, will those affected by the manufacturer be compensated for the defect in the design, or by someone else? Is it possible to include electronic means and thus can smart robots be covered for their defects? Thus, this research will address the opinions in favor and against the responsibility for the defective products of the robot based on the

Jordanian legislations in force. As well, in order to redress the damage for those affected by the work of the robots, we will show who are the persons responsible for the damages of the robot, and we will show the possibility of applying the rules of responsibility for the robot according to modern international theories.

2- RESPONSIBILITY FOR THE DEFECTIVE PRODUCTS OF ROBOT BASED ON THE JORDANIAN LEGISLATIONS IN FORCE

Opinions differed about responsibility for the defective products of robot, some opinions are supportive while others are against, as shown in the following: -

2.1 Supportive opinions for applying defective product liability rules to robots

The French legislator took objective responsibility and exempted the injured party from proving the error so that this element is replaced by the defect in the product (Anwar, 66: 2021). The French legislator specified this liability for defective products in Paragraph (17) of Article (1245) of the French Civil Code. Paragraph (18) of the same article, stipulated that an injured person shall prove that there is a defect in the robot and that it caused damage and there is a causal relationship. However, the responsibility is established once the existence of a defect is proven, even without the existence of an error based on paragraph (9) of the same article. Meanwhile, paragraph (3) of the same article indicated what is meant by a defective product, by providing the following statement: A product shall be defective when it does not provide the safety that could be legitimately expected (Anwar, 2021:66).

As for the Jordanian Civil Code, it set the rules for the defect option for commodities in contracts for Articles (193-198), as well as stipulating hidden defects (the defect option), for Articles (512-521), where these articles stipulated that the defect be old, hidden and influential.

Some believe that civil liability for the use of artificial intelligence technologies (including smart robots) does not need special legislation. They believe that liability for these smart technologies can be established by relying on traditional rules that deal with damages for defective products or as a precaution for doing things (Abdul Latif, 2021: 43).

Others assert that civil liability in the current rules can apply to robots. For example, in accidents with self-driving vehicles, if someone is driving your car carelessly, the driver may be required to pay the medical expenses of the injured person and the obligation to compensate him. However, if a person's foot is injured due to an explosion, due to a defect in the fuel tank, the manufacturer may be liable for compensating for damages due to defects (Chesterman, 2021: 36). Nevertheless, traditionallists believe that a best way to confront the dangers of robots is to adopt the current legislation as an infrastructure to represent the starting point through the introduction of simple amendments to the current laws in the short term (Al Hamrawi, 2021: 3095). The researcher, herein, does not support these opinions at all. For example, we may be able to address the defects and errors of robots based on the current rules, but they are specific cases. So, it is necessary to find amendments and additions to the laws. Also, with that, these amendments will not be satisfied, but rather new laws must be enacted to deal with the potential dangers of smart robots and its defects.

In any case, researchers and technicians should adopt special policies for the use of artificial intelligence to make robots work as fully as possible and without defects. Despite the presence of minor defects, robots may appear better than the human element in certain cases. Thus, the worse or more expensively a job is now done by human beings, the more pressure there will be for machines to take it over. When the violence and boredom of a poorly run prison is the only other alternative, constant monitoring at home by a taser-equipped robot doesn't look so bad. The shamefully racist record of so many police departments is what makes an Afrofuturist robo-cop seem like a great leap forward. (Pasquale, 2020:123)

2.2 Opponents to apply liability rules for defective products to robots

Some oppose the application of civil laws to liability for defects in products on robots, since the rules of responsibility for the action of defective products are objective, however it exempts the injured party from proving the error and it is sufficient to prove a damage. However, that liability is of a special legal nature because it applies to all those affected by defective products. Therefore, it is

neither a contractual nor tort liability, but rather a responsibility of a special nature. Meanwhile, the rules of this responsibility are of a peremptory nature, and in order to achieve this liability for robot damage, three pillars must be met, the first of which is the presence of a defect in the robot when a product does not achieve safety and security, the second pillar is damage, because without its presence there is no compensation, of course, the damage must be from the defective product. The third is the causal relationship. Where the injured party must prove that the damage is caused by defects in the robot, and therefore the rules of this responsibility are insufficient in light of the emergence of advanced generations of robots that may deviate from the ordinary because of their reality and not their manufacture or programming. (Al Hamrawi,2021: 3086-3084)

Some also believe that the provisions of traditional defects contained in civil laws are generally inconsistent with artificial intelligence software. Manufacturing may provide safety, but despite this, its operation may lead to harm to others due to the presence of the autonomy of the robot, and that establishing liability based on defect laws for traditional defective products requires that a victim proves the existence of the defect, and this may not be available in smart robots (Fath al-Bab, 87:2021). Some also believe that the responsibility of a programmer is achieved as an immaterial transfer, and it is possible to exempt from liability in the event that the scientific and technical knowledge at the time of launching the product does not allow the discovery of this defect and ignorance is inevitable (paragraph 10 of Article 1245 of the French Civil Code). However, the application of this exemption in a smart robot cannot be accepted, because the robot bases its work on independent thinking, therefore, according to this principle, exemption will be on a large scale, and the consequences may be great, up to the death of humans, so applying the idea of product defect in an abstract way is difficult in the field of artificial intelligence (Abdul Latif, 21:2021).

In the opinion of the researcher, regardless of the opinions presented above for and against the application of liability rules for defective products on the robot, a case may be raised due to the difficulty of proving the defects in the robots. In some of the cases filed in the US, a case called Mracek v. Bryn Mawr Hosp, a patient filed a case against the hospital for defects in the "de Vinci" robotic surgery. For prostatectomy, where human doctors intervened to complete the surgery after defects and malfunctions emerged in the robot. However, the plaintiff could not prove the defects of the robot at the beginning of the case because the responsibility in the case was based on the duty of care standard. Some argue that although failure to use an intelligent robot and its defects may lead to liability, humans still have a duty of care to avoid accidents, even after delegating part of the process to the robot. This responsibility may arise in the use of semi-autonomous machines where humans and machines share responsibilities. (Barfield & Pagallo, 2020: xi).

On the other hand, in the case of (Inc Jonesv. W + M Automation), a case dealing with liability for defects in (robot) products, where the arms of the robot holding the plaintiff were struck in the head while he was standing next to the robot within the confines of the safety fence. The robot, following the instructions of the algorithms, performed repeated movements. One of the main issues addressed in the case was whether the robot's gantry system was defective when the defendant sold it. The plaintiff sued under the rules of liability, negligence, failure to warn, and breach of warranty, and the court held that the plaintiff failed to provide evidence showing that the robot was defective. At the same time, the plaintiff did not hold the robot responsible for the injury, given that the robot was not considered a legal person (this is a condition for the robot to be a party to a lawsuit), and even if the plaintiff tried to include the robot in the lawsuit, the court would certainly reject it in summary procedures.

The researcher believes that the standard of care for the usual man in the lawsuit for damage resulting from negligence and liability for the product stipulated in the Jordanian civil law, and taken by the owner or user of the robot is of a special nature. For example, for self-driving cars, we find different types of care required thereof. The first is a traditional one that the standard of care is a duty on the part of the “driver” in general. The car driver has a duty of care for other road users. As for the second, this car may be without a driver in the first place, so there is no care for the driver. In this case, the manufacturer bears responsibility for defects thereof. As for the third, in which the driver is present, and his responsibility for not taking care is not raised.

However, to illustrate the final hypothesis in the 2018 case, Elaine Herzberg crossed the middle area of the street. She was pushing a bicycle loaded with shopping bags. She almost reached the other side of the four-lane road when a Volvo Uber XC90 traveling at a speed of 70 km / h clashed with her from the right, which led to her death, although the car was equipped with front and side cameras, radar, headlights, navigation sensors, and an integrated unit for computing and data storage. A report from the National Transportation Safety Board in the United States concluded that the car had detected Ms. Herzberg, but the software had classified her as an unknown object. On the other hand, the vehicle memory showed that just over a second before the collision, the AI system had decided that braking was necessary because there was an emergency case, but this option was disabled to reduce the possibility of "erratic vehicle behavior". Ultimately, Uber reached an undisclosed settlement with Ms. Herzberg's family - with an implicit admission of liability. (Chesterman, 2021: 31&36)

3. PERSONS RESPONSIBLE FOR DAMAGES OF THE ROBOT

The existence of a smart robot requires the consolidation of multiple efforts, so this existence begins by developing an innovative design, then smart software is introduced, and then the manufacturing stage, after which the use and exploitation of the robot takes place. Therefore, we will show the people responsible for the robot as follows: -

3.1 The first category - represented by the developer (programmer) or manufacturer (producer) of a smart robot

This represents the first stage of the existence of a smart robot through innovative designs or software that exist within a theoretical framework, where it is necessary to implement this theoretical framework by converting it into something tangible in practice. Consequently, we will show in this section the extent to which responsibility is achieved for the developer (programmer) or the manufacturer (producer). The error may be due to a defective design, for example, a smart robot caused harm to others because the designs or programming are defective. In this case the producer (manufacturer) is far from the error because the defects were due to the designs or software that were sent to it.

Developer (programmer)

The developer is the entity that designs or programs an artificial intelligence system, whether with algorithms, self-learning, or expert learning. It is the one who is attributed to the idea of the existence of artificial intelligence mainly (Othman, 2021: 1613). Some believe that the responsibility lies with the original specialized programmer (designer or developer), because he is the one who established the system for a robot, but if secondary programmers intervened later and secondary programs were added, then responsibility may fall on them if the damage was due to these secondary programs (Muhammad, 2022: 84-83). The responsibility of the designer or developer arises when he commits a mistake or error in the design. Such mistake or error is difficult to limit because the intelligence technology is complex. Therefore, the error is measured by every intentional or unintentional defect that affects the efficiency, operation, or use of safety means in a smart system, so that harm to others is caused by design or programming (Othman, 2021: 1580).

Some believe that developers should be governed by principles that must be taken into account. For example, it is not permissible to design robots only or mainly to be used as combat weapons, because if the designs were based primarily on this feature, it would reduce the commercial capabilities of the robots because they would be considered unsafe in civil society. Likewise, among other principles, designers must ensure that robots comply with human laws, as well as privacy. For example, a robot that takes care of a sick person and follows up on his life must transfer this information to the competent medical authorities only and not violate his privacy. Likewise, designers must take into account safety, health, and rights (Muhammad, 2022:82-83). The defects and errors of robots may be of a special kind due to the violation of privacy and its example through the robot recording details and events of children in school and documenting private conversations between young children without any restrictions for the robot, and it collects personal information for them and uses it or discloses it, so the protection for children will be violated by the robot because such protection is not taken into consideration). (Pasquale, 2020:74)

Manufacturer (producer)

The Manufacturer of artificial intelligence is the party that manufactures the smart machine (the robot), or the smart system and its exit from the realm of design into tangible physical existence. A Manufacturer may not modify except with the approval of the designer or the programmer. Therefore, the Manufacturer shall bear any damage caused to others because of its mistakes (Othman, 2021: 1581-1580). The manufacturing defects of the very smart robot are difficult, and the affected person does not have the material and scientific capabilities to prove it, so it is preferable that the civil liability be based on taking responsibility, which is one of the applications of "blessing is equal to the curse". (Al-Wali, 278: 2021). The researcher, herein, confirms that the above opinion is consistent with the principle of "blessing is equal to the curse" in Article (235) of the Jordanian Civil Code.

Sometimes a Manufacturer shall be responsible for the defects by not using the required materials or the specifications shown by the designer, or not programming the robot according to the mechanism sent thereof by its programmer, such as having modified it or not using it properly, or using incomplete software and other errors. In these or similar cases the Manufacturer shall be responsible to these errors. However, the responsibility of a Manufacturer arises when the victim proves the existence of a verified and interrelated causal relationship between the errors and defects of a robot and the manufacturing thereof, because the robot is independent of the will of the manager or the manufacturer. so the legal system needs to be regulated according to these new data. The designer and the Manufacturer cannot exempt themselves from responsibility because their responsibilities are original and cannot assign it to the existence of the technical complexity of artificial intelligence in all its applications. Also if it is permissible to exempt designers and manufacturers from responsibility, it will lead to great negative problems so that they do not care about the accuracy of design and manufacturing (Othman, 2021: 1597). However, in any case the manufacturer (producer), must perform tests and experiments on robots to increase the guarantee is in front of the public before it is used and before it is put on the market. They also have to protect the robots' software from piracy (hackers), and make it difficult to penetrate, secure, and able to protect itself from attacks of all kinds (Muhammad, 2022: 85-83). The researcher, herein, believes that the responsibility of a manufacturer (producer) is not absolute, so that we hold him for all the errors issued by a smart robot, but the responsibility rises according to legal standards. For example, similar to the civil liability of the doctor who dealt with the medical error with the usual standard of the man (doctor), because if we release the responsibility to release it to the doctor or the designer (producer) of the robot, they will move away leaving a lot of work for fear of responsibility. Therefore, it will kill the spirit of creativity among professionals. This matter can be addressed to protect those affected by creating mandatory insurance programs to achieve the interests of all parties while preserving the approach of development and creativity.

3.2 The second category - represented by the owner, user or beneficiary of a smart robot

The general principles of robots and their defects depend on the need to place the burden of compensation for damages on their owners and users based on several general rules. In the event of defects in the robot, the owner can refer to the developer or producer to exercise the right of recourse to request compensation (Al-Mashad, 2021: 337).

The owner of the robot is the one who operates the robot to serve him or his clients. Thus, this is the principle, whereas any exception is made to this principle, such as in the event the robot is operated by a person other than the owner, in which case he is called the user (Muhammad, 2022: 86-83). Practically, if a person suffers damage due to defects in the robot, the question arises here, who should claim a compensation for the damages of these defects, and who is responsible for such damages, the owner of the robot, the user or the beneficiary of the robot during the occurrence of harmful defects?

However, before answering this question, the researcher would like to clarify what is meant by each term in this category. The owner, as it is known, is the owner of the smart robot and has private ownership over it. As for the user or beneficiary, they are not the owners of the robot, but rather they use the robot under a contract of any kind with the owner or any otherwise legal way.

Nevertheless, there are two possibilities for errors and defects according to this category: The first one is the error due to the user or the beneficiary, who bear the compensation for the error entirely because of their purely wrong action on their part, and their responsibility may be partial as much as their contribution by mistake if their contribution was by mistake with others (Othman, 2021: 1597). As for the second possibility, it is the defects occurred during the owner's possession of a smart object without the presence of a beneficiary or a user thereof. In this case, he shall be responsible in whole or in part. An example of this is the owner's negligence in due maintenance, which has nothing to do with design or manufacturing. Meanwhile, responsibility may arise due to the error of the owner of the robot, for example, if the owner used the robot in his work more than the typical working hours specified in the instructions of the designer or producer of the robot, or if the owner failed to perform the required periodic maintenance and other similar errors in which the producer, designer, or user is far from these errors.

Of course, if the error was from several separate parties, the responsibility will be realized according to the error percentage of each of them, and in some cases the owner can be included in bearing the responsibility of the user's mistake according to the rules of the affiliate's responsibility for the actions of his subordinate or other liability rules. In such case, the owner shall recourse paid compensation to the wrong user, each case individually, in accordance with Paragraph (2) of Article (288) of the Jordanian Civil Code, which stated: "And whoever performs the guarantee shall return what was paid from the convicted."

3.3 The third category represented by third parties

Here what is meant by third party is a person other than the first and second categories (mentioned above), and certainly the responsibility of third parties will be based on the rules of liability for harmful acts. And if we go back to the general rules regarding responsibility for the act of others, it was stated in Paragraph (1) of Article (288) of the Jordanian Civil Code, which clarified the principle that no one is responsible for the act of another, but the paragraph added exceptions by saying, however, the court may, based on the request of the injured party, if it deems justified that obligated to pay the guarantee imposed on those who inflicted the damage, and they are, according to Clause (a) of Paragraph (1) of the same article, "whoever is required by law or by agreement to supervise a person in need of supervising because of his shortcomings or his mental or physical condition, unless it is proven that he performed the duty of supervising or that the damage would have occurred even if he performed this duty with the necessary care." Also, according to Clause (b) of Paragraph (1) of the same article, "Whoever has authority over the one from whom the damage occurred, he must supervise and direct him even if he is not free." In his choice, if the harmful act was issued by the subordinate in the event of performing his job or because of it." This meaning intended by the third party is the responsibility of those who were under his supervision, and because of the behavior of this observer, he caused damage through the robot, and the second case that showed the responsibility of the subordinate for the actions of his subordinate, i.e. if a harmful behavior of the subordinate worker occurred through the robot and the cause of damage to others was the responsibility of the subordinate, and in addition to these cases, the third party may be another party.

It may be the total responsibility of third parties, i.e. bear full responsibility, for example, third parties (hackers) penetrate the smart technical system and cause damage, and the fault may be partial from third parties in partnership with the designer or manufacturer. For example, the designer or manufacturer gives others the encryption that allows access to the smart system. Meanwhile, it may be the fault of the third party involved with the owner, for example, the owner helps others to enter into the smart system in order to penetrate it and reveal its secrets, and in the meantime, harm occurs to others. Certainly, every contribution by mistake pays compensation to the third party in proportion to his contribution by mistake (Othman, 1599-1601: 2021).

However, there are those who add about the unknown error issued by others, and they indicate that the biggest problem will be achieved in the event of a robot error without any direct error from any person, but the error was due to internal and by a decision of the robot, and in this case the responsibility based on the error cannot be applied (Abdul Latif, 2021:13)

4. ROBOT RESPONSIBILITY AND RULES OF JORDANIAN CONSUMER PROTECTION LAW

Some believe that the development in the technological field and the emergence of machines and commodities that are characterized by complexity and danger will create risks from the defects of these products. Thus, legislation has established guarantees for a consumer through legal texts to protect him, and due of the insufficiency of the rules of contractual and tort liability, so the principle of objective liability was adopted in consumer protection laws (Lutfi, 2021 :56-57). Among these legislations supporting consumer guarantees for defects in products is the Jordanian Consumer Protection Law No. (7) of 2017, as this law sets out the legal rules for consumer protection for damages caused by defective products. In this chapter, we will show whether there is a potential to apply the rules of this law on the defects and damages of smart robots. The importance of this Jordanian Consumer Protection Law is that it considers liability for defective products to be objective (legally determined) in favor of a consumer. Thus, a consumer shall not need to prove the fault of the manufacturer or supplier. Therefore, this law may be supportive of the buyer of the robot and consider it as a consumer in the absence of legislation specific to the defects of robots. Therefore, in absence of safety and security conditions in the product (the product may be a robot), responsibility is achieved whether there is a contract with the injured party (contractual) or whether there is no contract with the injured party (tort). Certainly, the matter requires the establishment of liability, the link of defects and damage to the causal relationship. Thus, the legislator made it easier for the injured party, in the event of defects, to prove the error. Thus, this law is considered one of the laws that developed the rules of traditional civil liability contained in the Jordanian civil law. In this law, a legislator left the error and focused on the act (activity), in order to prove responsibility. Thus, here responsibility is proved without the need for proof of deviation of the manufacturer from the usual behavior of man or even without the need to prove the error.

Article (6) of this law clarified the criteria for considering a good or service defective by not meeting safety requirements for normal or expected use, non-compliance with the applicable mandatory technical rules, non-conformity with the declared characteristics, or non-achievement of the results authorized for the consumer or failure to achieve the levels of performance or quality authorized in the commodity or service, or the existence of a defect or deficiency in it, or its unfitness for use according to what it was prepared for for a period that is commensurate with its nature[1]. However, we may encounter a problem in determining whether a smart robot as a product has met safety conditions or not, so the researcher considers it necessary to define standards and characteristics for smart robots because this is a new technological world, so that the conformity of any robot used with its characteristics is later linked to the approved standards. On the other hand, the characteristics of the approved robots can be linked to Asimov's agenda and set their rules in the Jordanian legislation.

On the other hand, with regard to software in general and smart robot software in particular, we ask a question about the possibility of considering smart robot software among the products or commodities so that it can be covered by the protection stipulated in the Consumer Protection Law and thus reflected and developed on robots.

This law was developed to protect the relationship between a consumer and other party as a provider of the commodity or service, and this is what we are trying to reverse and apply in the relationship between the user or buyer of the robot and the party providing (the seller or importer) of the robot. The Consumer Protection Law clearly clarified what is meant by the service or commodity covered by the law. It defines the service as “a commercial service, whether it is for a fee or without a fee, provided by any person to a consumer, including the rental of movables,” and defines the commodity as “any movable money obtained by a consumer.”

However, we note that the Jordanian law included movables, and on the other hand by referring to the Copyright and Related Rights Protection Law and its amendments No. (22) of 1992, we find that it has defined the workbook in Article (2) as “every literary, artistic or scientific creativity that is protected in accordance with the provisions of Article (3) of this law”. However, with reference to this law, we find that Clause (8) of paragraph (b) of Article (3) has included computer programs,

[1] Clauses (1,2,3,4) of Paragraph (a) Article (6) Jordanian Consumer Protection Law No. (7) of 2017.

whether in the source language or in the language of the machine, in the protection of works whose expression is in writing, sound, drawing or photography or the movement. Thus, it enjoys protection thereof.

Therefore, the researcher sees the possibility of considering the smart programs in which the robot operates as movables and therefore covered by the protection stipulated in this law. The law also stated that the consumer has the right to obtain a commodity or service that achieves the intended purpose without harm when he uses such commodity normally. It has also provided for his right to obtain sufficient information about the commodity or service, and gave him the right to file a lawsuit in the event of a violation of the rights of the consumer or damage thereof.[2] The law also required the service provider to ensure the quality of the advertised product, and to ensure that it conforms to the advertised characteristics.[3] And this is consistent with the smart robot product. On the other hand, the Jordanian Consumer Protection Law regulated in Article (5) that the provider must provide after-sales services. Similar to this article, we suggest organizing after-sales services for smart robots, as it is of a special nature that needs exceptional care. And this is according to special instructions issued for robots, and within the framework of instructions for after-sale (maintenance) services, smart robots. Paragraph (a, b) of Article (19) of the Jordanian Consumer Protection Law indicated that the supplier is responsible for the damage caused by the defective good or service, except for two cases, which are if he did not put the good or service for circulation, or if the damage occurred due to the fault of the affected person or for an unrelated reason. to the provider. This same provision can be added legislatively to smart robot products.

Article (20) of the Jordanian Consumer Protection Law stated that the responsibility is symbiotic and joint between suppliers who caused or knew of a defect in a commodity or service that was sold to the consumer. This article may be supportive of dealing with the damages of the robot, and we can rely on this article by proposing the existence of solidarity or interdependence from everyone who contributed to the existence of this robot. Let's start with the one who designed it, who programmed it, who manufactured it, and who sold it, funded it, or imported it, because smart robots are mergers between a material movable act as a mechanical thing integrated with innovative smart software. In return, this entity (smart robot) has defects that may lead to catastrophic dangers to society. Therefore, restriction and expansion of the guarantee makes us reassured of the existence of high-quality robots with an almost absolute safety rate. Therefore, according to the general rules of solidarity, the harmed party shall recourse liablity for damage to any of the parties thereof. Whereas he returns from Reparation for the damage to the rest and distribution of which among them. Nevertheless, Article (21) of the Jordanian Consumer Protection Law stated that the arbitrary terms in the contract concluded between the supplier and the consumer are invalid. This same provision can be applied legislatively to the products of smart robots. For example, a robot seller may not absolve himself from liability for robot defects in absolute terms, because the rules of obligation to deliver a sale free of defects are imperative.

As for the defects of the robot that cannot be claimed in accordance with the Consumer Protection Law, they are the defects that appear to the buyer of the smart robot who intends to resell or rent it, which is not covered by the consumer protection laws because it will be considered as a business and other rules will apply to protect it thereof. Article (2) of the Protection Law indicated that the consumer is the one who satisfies his personal needs or the needs of others, and this does not include those who buy the commodity or service for resale or leasing.

However, by explaining the nature of consumer protection laws covering the smart robot, we can say that once the robot is not used personally, it shall be covered by the general rules for defects but not included by the special consumer protection rules. For example, if he has undergone surgery by robots, so the researcher does not see that the consumer rules are sufficient to deal with these defects. It is necessary to return to the general rules until the issuance of legislation specific to the defects of robots.

[2] Paragraphs of Article (3) of the Jordanian Consumer Protection Law No. (7) of 2017.

[3] Paragraphs of Article (4) of the Jordanian Consumer Protection Law No. (7) of 2017.

5. THE RESPONSIBILITY OF THE ROBOT ACCORDING TO MODERN INTERNATIONAL THEORIES

Some modern theories emerged to determine the responsibility of robots for their defects and errors after criticism directed at a number of traditional theories and an attempt to reflect them on robots. The judiciary also had a role in stimulating the development of these theories. For example, (United States v Athlone industries, lnc.) case indicated that "robots cannot be law suited, while it may cause devastating damages". Then thinking began to find middle solutions by stating who bears these devastating damages by devising multiple theories, and these theories are:

5.1 Responsibility of a human representative in charge of the robot

This theory is considered one of the modern trends to determine the errors that proof responsibility for robots. The European Union went to this trend and showed that a robot is not an inanimate thing, but rather a robotic being with a novice human logic capable of evolving. However, this theory differs from the idea of legal representation, as the latter represents the representative by force of law on behalf of another person to represent him, and here the representative bears responsibility for the robot, and the theory may be close to the liability insurance system (in favor of the robot) in the face of any harm (Al Hamrawi.2021: 3088)

However, the rules of the European Parliament removed the robot from the circle of things, and also avoided bringing it under the category of natural or moral persons through the use of the term human representative (Muhammad, 2022: 87). The European Parliament also limited the human representative to the following persons (manufacturer, operator, owner, user). As the responsibility of a manufacturer proved when it presents a defective product, however the injured party should prove the existence of such defect (harmful act) and the causal relationship between the damage and the defect thereof. It is worth mentioning that the human representative system was devised by the European legislator to transfer responsibility from a nonpersonal and noncompetence robot to a human by the force of law. Thus, the images of a human representative for the actual parties in the presence of a smart robot according to the European concept are of the following possibilities: -

First: The manufacturer human representative: he is asked about manufacturing defects in the event that a robot performs actions outside its normal use (Abdul Karim, 296-297: 2021). Here, the reason lies in the error of the robot from the manufacturer (producer), itself in the event of defects in the products, as we explained previously. Of course, we expect in this hypothesis that the robot acted passively without interference or error from its supervisor. Examples of these behaviors include a defect in the robot that led to the patient moving the wrong way, and his condition worsened as a result, or damage to the patient due to the robot's miscommunication with the laboratory (Al-Qusi, 2018: 89).

Second: The operator human representative: the person who exploits the robot and makes a mistake shall be liable, an example of the error of the drone operator (Abdul Karim, 297:2021), and he is the person who directs the robot to do its work and performs the work through it.

Third: The owner human representative: shall be liable because he operated the robot to serve him or his clients personally. For example, the owner of a hospital who owns and operates a medical robot to perform surgical operations and cause harm. It is noted that the European robot law placed the owner after the manufacturer and the operator (unlike the responsibility for things, the owner is first and the presumption is based on him to guard the thing if the accident occurred with the operator) (Abdul Karim, 297:2021).

Fourth: The user human representative: This is the person who uses the robot (neither an owner nor an operator), who is liable if it causes harm to others, and here the user bears responsibility, contrary to the rules of responsibility for things, because they were imposed on the owner and that the user caused the accident because of his use of the thing. Also, here is a disagreement about the responsibility of the leader (the owner) for the actions of his subordinate (the user), and also here is a disagreement regarding the owner being considered a supposed guardian (Abdul Karim, 297-298: 2021).

Certainly, the user is not the operator or the owner mentioned in the second and third clauses, but the user may be a beneficiary of the robot, as the smart bus may be used by a number of traveling people, and one of them may give a wrong order that causes a traffic accident, and the user may sue the user of the operating company who neglects maintenance and causes damages (Al-Qusi, 2018:90). Some believe that the European Parliament's reliance on the human representative system to compensate the injured, by granting the robot a position to have a role and not a guarded object as in the general rules. Therefore, this matter may be the foundation for granting the legal electronic personality to robots in the future (Abdul Karim, 292: 2021). However, it is assumed that the basic legal capacity of an agent is as a natural or legal person. Therefore, AI systems must acquire some form of personality (natural or legal), in order to be able to act as an agent in the legal sense. (Chesterman, 2021: p.100)

The researcher believes that justifying the phrases of the European legislator with the existence of (an agent or a representative) and thus the inevitability of a legal personality puts us in a vicious circle. Suppose such legal personality of a robot exist indeed, the European Parliament would not have addressed the representative as a compromise until the legal personality of the robot is adopted. Therefore, this character will assume its duties and have its rights. On the other hand, there are those who believe that describing the person responsible for the actions of the robot as a human representative gives him legal personality, and the evidence is not to use the description of the guardian or the curator. Nevertheless, the European Parliament has not decided the nature of the eligibility that it explicitly recognizes for smart machines (Saeed, 2021: 1721).

The researcher, herein, contradicts the above opinion, so we cannot give the legal personality to the robot on the pretext that the European Parliament did not describe it with certain descriptions such as the guardian or the curator, as well as on the pretext of not deciding the nature of its eligibility as a smart machine. Rather, it's exact the opposite. As the absence of such descriptions and indecision of robot eligibility indicates that there is a big problem that they cannot give him a description of the legal personality due to the presence of many legal problems. Therefore, the European Parliament tried to find people who would bear the damages of others caused by the robot as a temporary solution, until a legal mechanism is found that resolves the issue of the nature of the personality of smart robots, and this nature was discussed independently in an independent research by the researcher (Al-Abadi, 2023).

Some believe that the robot can now be likened to a non-discriminatory person. Therefore, it needs a human representative, and it may develop later in the future to be like a deficient person and develop further to be like a full-fledged person. The responsibility of the human representative is less severe than the responsibility of the custodian of things, as the latter is assumed, while the responsibility of the human representative is not assumed and requires proof of error and negligence of the representative. However, as it becomes clear to us that responsibility developed from an error that must be proven and with the emergence of machines (things), the error became assumed, and then developed into a hypothetical mistake that can be proven otherwise, then a supposed error that cannot be proven otherwise. Of course with the development of legal ideas to make the robot bear a measure of responsibility by acquiring legal personality (Al-Wali, 2021:163).

Others believe that it is expected in the future that the legal personality of artificial intelligence systems will be adopted and that it will have official ownership and financial disclosure, especially for unmonitored (independent) artificial intelligence systems. Thus it will open the way for its prosecution. It is also possible to link the responsibility of intelligence to bear the obligations for its mistakes, and in the event that it is not suitable, it will refer to its human representative (Al-Mashad, 2021: 332-333). However, the researcher believes that the process of recognizing the legal personality of robots cannot be relied upon currently because it does not exist. Therefore, we deal with the matter in light of its absence in order to redress the damages of the robot, until it exists in the future. Then, which is what we hope, we will have come a long way in dealing with the damages of robots because by the presence of a law granting the legal personality to the robot, it will be responsible for itself and its actions according to specific rules.

5.2 The liability of the robot according to the accident standard

This criterion was advocated by some French jurisprudence, which determines damages based on unexpected external sudden actions (accident), i.e. the difficulty of determining the nature of the act that resulted in responsibility. However, this criterion is suitable to be applied to accidents caused by artificial intelligence represented by robots, because it does not look at analyzing a pattern of the behavior, contrary to the concepts of error or defect, as in traffic accidents (Al-Mashad, 2021: 343). However, through this criterion it is possible to hold the manufacturer or designer liablility according to this criterion as an objective criterion for compensation for damages for sudden and unexpected external acts, especially in robots used in meeting personal needs in homes. However, sometimes we find it difficult to apply this criterion in medical robots due to the difficulty of determining the cause of the accident, as it may be a cause latent in the robot or reasons specific to the patient (Othman, 2021: 1581).

5.3 The liability of the robot according to the criterion of unreasonableness of damage

In this criterion, responsibility is attributed to the designer or manufacturer on the basis that the errors of artificial intelligence techniques represented by robots differ from normal damages. Therefore, this abstract criterion was found to be in line with the nature of these technologies by estimating the consequences of the act of artificial intelligence instead of analyzing the act itself, due to the difficulty of comparing the behavior of the robot with the behavior of an ordinary person. Therefore, some believe that this criterion is better than the accident criterion because it is consistent with realism to determine the nature of the act, and that the accident criterion is not comprehensive because it is applied to some actions of artificial intelligence. Consequently, the damages of these technologies are complex, and it is difficult to set a specific standard that governs them, unlike the rest of the damages (Othman, 2021: 1582).

However, the researcher, herein, suggests to reduce the factory defects of robots, the adoption of special solid software that works with smart devices, as well as setting special conditions for exporting and importing companies working in this field in order to reduce defects in such devices. Thus, smart machines, as an electronic mean, must fulfill special requirements that may be regulatory or technical, countries may require them in their regulatory legislation as well as the contracts concluded with companies operating, programming or entering into the software and data of these smart devices, in order to ensure that a smart device works within a framework of security, success, efficiency, high quality and without defects, because the challenge is legal and technical. Meanwhile, since smart devices have legal and technical aspects, we suggest that there be joint committees of jurists and artificial intelligence specialists to determine the nature of smart robots that are allowed to be imported or manufactured by setting up a special regulation for the conditions of their approval, in order to reduce any future defects that appear in these devices.

6. PROPOSALS TO ORGANIZE THE WORK OF SMART ROBOTS IN TERMS OF THEIR DEFECTS AND ERRORS IN THE HASHEMITE KINGDOM OF JORDAN

CONCLUSION

In this research, general laws for reparation for defects were discussed to address the defects of smart robots. It did not only deal with the development of these rules contained in the Jordanian Civil Law and other laws such as the Consumer Protection Law, but also the issuance of special legislation to ensure compensation for damage to robots, and reliance on compromise solutions to determine the responsible for the robots until it is recognized. In conjunction with that, there is a need to adopt the electronic personality of the robots. However, in order to reduce the defects in the robots in circulation, we recommended setting special conditions for companies exporting and importing smart robots of all kinds to ensure the existence of these advanced devices without defects.

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