

# Decision support system for enforcement of child support obligations\*

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## Abstract

Information technologies, in particular, decision support systems, including intelligent systems, currently have significant potential for modernizing and optimizing justice processes. An urgent task at present is to develop decision support systems, including intelligent ones, for various legal areas, including, for example, the area of alimony. The decision support system for enforcement of child support obligations proposed in this article helps to automate the decision-making process related to the enforcement of alimony obligations. The advantages of the decision support system for enforcement of child support obligations are: automation of processes to speed up decision-making on alimony; analytical support for predicting the alimony payer's solvency; transparency of decisions due to recommendations and reasonable conclusions; reduction of the judicial workload by automating a part of the processes subject to standardization; significant facilitation of the decision-making process related to alimony obligations by increasing its objectivity, speed and efficiency.

## Keywords

Decision support system, artificial intelligence, decision-making process, alimony obligations, alimony payer, alimony recipient.

## 1. Introduction

Information technologies, in particular, decision support systems, including intelligent systems, currently have significant potential for modernizing and optimizing justice processes [1-3]. Such systems can be used at various stages of the judicial process – from automated document processing to the analysis of large amounts of legal data [4-6].

The main areas of application of decision support systems (DSS) in courts include:

1. Automation of routine tasks – DSS can greatly facilitate the processing of legal documents, such as classifying cases, generating template documents, checking documents for compliance with the law, and detecting errors; this allows employees to focus on more complex tasks [7, 8].
2. Analysis of precedents and legal data – DSS can analyze legal precedents, court decisions and relevant legislation, helping judges and lawyers to find important decisions and formulate arguments faster; this is especially relevant in countries with case law, where court decisions in previous cases influence current ones [9, 10].

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3. Predicting case outcomes – DSS can use statistics and machine learning algorithms to predict likely case outcomes by analyzing similar cases, the history of a judge's decisions, or data on the parties to a case; this can help lawyers and litigants make more informed decisions about strategy [11, 12].
4. Judicial decision support – providing judges with supporting information and analysis that facilitates the work with large amounts of data; DSS can generate lists of key facts, summaries of the parties' arguments, and even recommend possible sentences based on previous cases [13, 14].
5. Automated mediation and small claims dispute resolution – DSS can also be used for automated resolution of small claims disputes (e.g., small financial conflicts), working as a neutral mediator, which reduces the burden on the judicial system [15, 16].
6. Risk assessment and participant profiling – some countries use DSS to assess the risk of reoffending or the likelihood of a defendant's flight in order to decide on preventive measures or conditional release; however, this area is very sensitive, as it involves ethical challenges such as algorithmic bias and human rights violations [17, 18].

The introduction of DSS in the judicial system has many advantages, but also raises a number of ethical issues and challenges, in particular [19-21]:

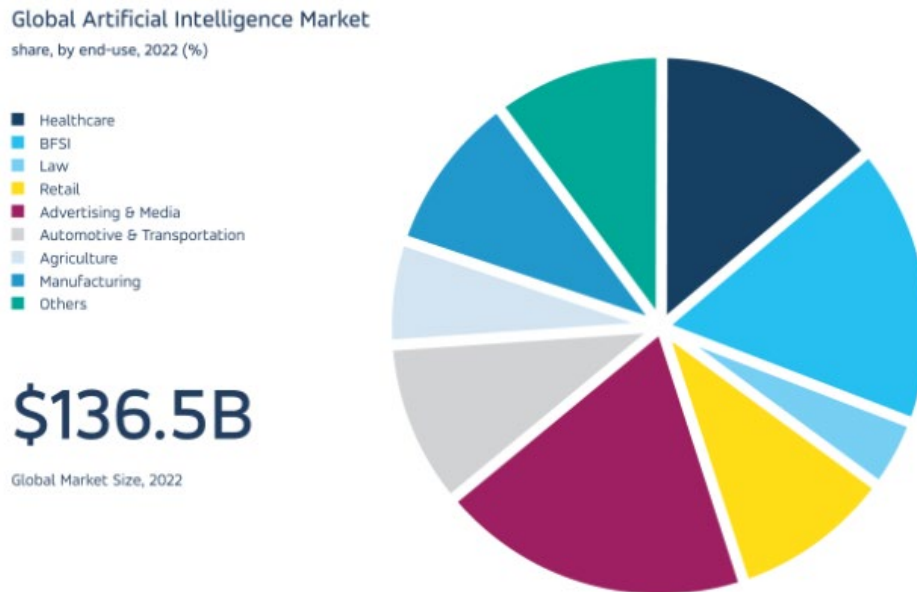
- algorithmic bias (reproducing or even reinforcing biases that existed in the available data (e.g., racial or gender discrimination), which can lead to unfair decisions);
- accountability for errors (the judicial process requires a high level of accountability, and determining who is responsible for the errors of the DSS remains problematic);
- transparency of algorithms (it is important that participants in the process understand how the DSS makes decisions);
- a “black box” may not be acceptable in justice, where the reasoning behind decisions is key);
- confidentiality and data protection (processing of personal data should be subject to strict confidentiality requirements).

Despite the challenges, DSS can significantly transform the judicial system, making it more efficient, faster and less costly. They can also help address court overload and make justice more accessible. However, in order to achieve these goals, it is necessary to implement innovative technologies responsibly, taking into account ethical aspects and ensuring high standards of transparency and accountability [22-24].

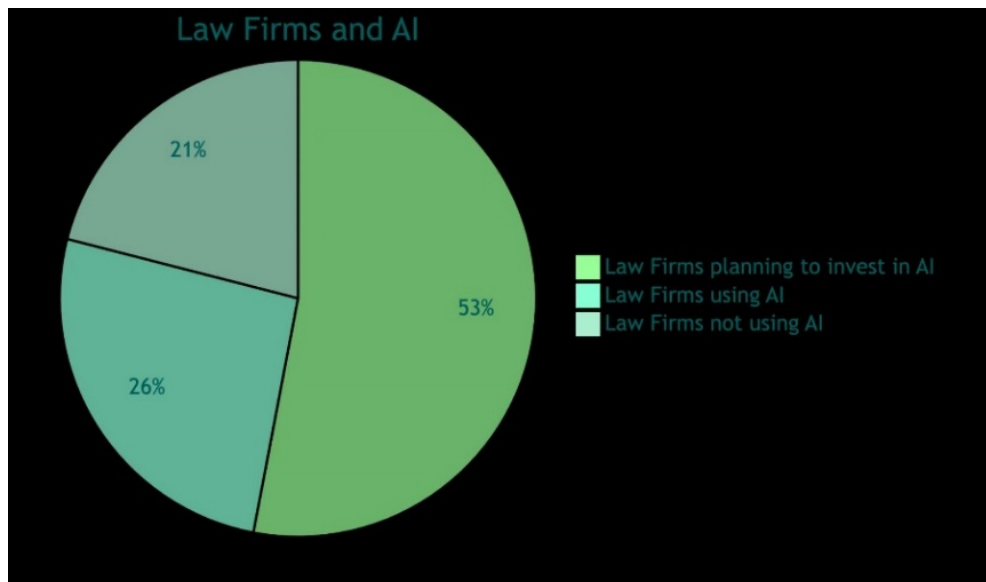
Grand View Research [25] reports that the global artificial intelligence market, for example, was estimated at \$136.6 billion in 2022. The growing share of the legal sector in the intellectualization of the market structure is obvious (Figure 1).

About 65% of law firms believe that the use of artificial intelligence can speed up their tasks, and 64% of lawyers believe that artificial intelligence improves their efficiency. However, only 26% of law firms currently use AI, although more than half (53%) plan to invest in AI technologies in the future [26] – Figure 2.

Thus, decision support systems pervade modern life and are already being used in courts and tribunals, both in their administration and to support decision-making, and by the legal profession [27, 28]. So, *an urgent task* at present is to develop decision support systems, including intelligent ones, for various legal areas, including, for example, the area of alimony.



**Figure 1:** Global Artificial Intelligence Market [25].



**Figure 2:** Adoption of AI in Law Firms [26].

## 2. Peculiarities of enforcement of child support obligations

Let's conduct an analysis of the applied field [28, 29].

Child support is a very important and painful issue today. This issue received special attention back in 2014, with the beginning of the military aggression in Ukraine, when hundreds and thousands of couples began to lose their mutual understanding of the psychological impact of the Russian war against Ukraine.

The range of issues in this issue is quite wide, as the income of a significant number of alimony payers is declining. However, the state has steadfastly stood and will continue to stand for the protection of children's rights to ensure their adequate standard of living. Legislative provisions state that martial law does not affect parental obligations to support children.

According to the current legislation of Ukraine, every child has the right to a standard of living sufficient for his or her physical, intellectual, moral, cultural, spiritual and social development.

Parents or persons in loco parentis are responsible for creating the conditions necessary for the child's full development.

Alimony obligations are the main institution of family law in Ukraine, designed to ensure the fundamental rights of the child.

However, there are cases when parents evade their obligation to provide for the child's livelihood. This leads to the enforcement of alimony in court.

The relevance of the issue lies precisely in the problematic aspects of the practical development of the fulfillment of alimony obligations, the impact of war and the importance for a healthy and full life and psychological development of a child.

Family law contains sufficient dispositive provisions that allow participants in family legal relations to independently determine and regulate their own behavior. The elaboration of the institution of alimony obligations made it possible to agree on the conclusion of an alimony agreement on a discretionary basis, and thus avoid going to court. That is why alimony relations have gained new meaning and their participants have received proper protection.

Family law of Ukraine imposes obligations related to the maintenance of specific persons not only on parents, adult children, wife, husband (including former ones), but also on other family members and relatives, including grandparents, great-grandparents, grandchildren and great-grandchildren, brothers and sisters, stepmother and stepfather, stepsons and stepsisters, actual caretakers and foster children. This list is exhaustive. At the same time, it should be noted that membership is determined not only by blood relations but also by moral considerations. After all, we are talking about people who have not always been and are not always connected by cohabitation. These are members of the so-called extended family who are united not only by feelings but also by rights and obligations provided for by law.

Alimony relations are characterized by their personal nature, non-transferability and inalienability. The personal nature of the right to alimony determines the termination of this legal relationship in the event of the death of any of the parties to the legal relationship, as well as the inadmissibility of offsetting alimony claims with other counterclaims.

When determining the amount of alimony, the court takes into account the health and financial situation of the child; the health and financial situation of the alimony payer; the presence of other children, disabled husband, wife, parents, daughter, son; the alimony payer's ownership, possession and/or use of property and property rights, including movable and immovable property, funds, exclusive rights to the results of intellectual activity, corporate rights; the alimony payer's expenses, including those for the purchase of immovable or movable property, proven by the alimony collector, which exceed ten times the subsistence minimum for an able-bodied person, unless the alimony payer proves the source of the funds; other circumstances of material importance.

The minimum guaranteed amount of alimony for one child cannot be less than 50 percent of the subsistence minimum for a child of the corresponding age. The court is not limited by the amount of the alimony payer's earnings (income) if it is established that the alimony payer has expenses that exceed his/her earnings (income) and for which the alimony payer has not proved the source of funds for their payment.

The amount of alimony collected from other family members and relatives for children and disabled adults in need of financial assistance is determined as a percentage of earnings (income) or as a fixed amount of money (Article 272 of the Family Code of Ukraine). In determining the amount of alimony, the court takes into account the financial and marital status of the payer and recipient of alimony. It should be noted that if the alimony payer has an irregular income, the amount of maintenance is usually set in a fixed amount of money.

Child support is awarded: by a court decision from the date of filing a claim; in case of filing an application for a court order, from the date of filing such an application; child support for the past time may be awarded if the plaintiff submits evidence to the court that he or she took measures to obtain child support from the defendant, but could not obtain it due to the latter's evasion of payment. In this case, the court may award alimony for the past time, but not for more than ten years.

Child support arrears are repaid at the request of the payer by deductions from his or her salary, pension, or scholarship at the place of receipt or are collected by court order.

The child support arrears are collected: regardless of the child's reaching the age of majority; if an adult daughter or son continues their education and therefore needs financial assistance, the parents are obliged to support them until they reach the age of twenty-three, provided that they can provide financial assistance.

The right to support is terminated in the event of termination of education.

The parent with whom the daughter or son lives, as well as the daughter or son who continues to study, has the right to file a claim for alimony.

It is worth paying attention to the liability for late payment of alimony and additional expenses:

- in case of arrears due to the fault of the person obliged to pay alimony by court decision or by agreement between the parents, the recipient of alimony is entitled to recover a penalty (fine) in the amount of one percent of the amount of unpaid alimony for each day of delay from the date of delay in payment of alimony until the date of full repayment or until the date of the court's decision to recover the fine, but not more than 100 percent of the debt;
- the amount of the penalty may be reduced by the court taking into account the financial and family status of the alimony payer;
- the penalty is not paid if the alimony payer is a minor;
- in case of delay in payment of additional expenses for a child due to the fault of the payer, such payer is obliged, at the request of the recipient of additional expenses, to pay the amount of debt for additional expenses, taking into account the established inflation index for the entire period of delay, as well as three percent per annum on the overdue amount;
- the payer of additional expenses shall be deemed to be in default if he or she fails to fulfill his or her obligation to pay additional expenses within the period established by a court decision or by agreement between the parents, and in their absence or if such a period is not established, after seven days after the recipient of additional expenses has made a corresponding demand and actually paid them.

At first glance, the legislation on the enforcement of alimony appears to be perfect. However, problems often arise with the enforcement of a court order and a court decision on the recovery of alimony. Such circumstances can arise both before the relevant decision on the recovery of alimony is made (lack of permanent income, the debtor's location in a foreign country) and after the decision is made (avoidance of alimony, traveling abroad).

The problem is that failure to fulfill alimony obligations can negatively affect the normal development of a child, violating his or her fundamental rights.

3 analysis of legal norms and court practice, we identify three categories that are relevant today and require legislative improvement: establishing a clear mechanism for determining the real earnings of the alimony payer; enforcement of alimony obligations in case of one of the parents' travel abroad; creating a mechanism whereby a child could, on his or her own initiative, apply to the court through the relevant authority for the payment of alimony when the parent with whom he or she lives is unwilling to do so.

On November 23, 2007, the United Nations adopted the Convention on the International Recovery of Child Support and Other Forms of Family Maintenance, according to Article 49 of which, in relations between Contracting States, the 2007 Convention replaces the 1956 Convention to the extent that its scope of application between such States coincides with the scope of application of the 2007 Convention. This Convention allows not only to recognize and enforce a Ukrainian court decision in the territories of these states, but also to make a decision on the recovery of alimony in these states on the basis of the documents provided.

There are two ways to collect alimony from a person residing abroad: apply to the competent authority of the foreign country where the debtor resides with a petition for recognition and permission to enforce a Ukrainian court decision on alimony (if the issue of alimony was resolved in

Ukraine and a court decision is available); apply to the competent authority of the foreign country where the debtor resides with a petition for a child support decision.

It is important to note that if the documents are drawn up in Ukrainian, a translation must be attached. This is also provided by the applicant. Subsequently, the Ministry of Justice of Ukraine informs the applicant about the progress of the alimony case.

As a rule, depending on the country of residence of the alimony payer, the procedure takes from six months to one year, sometimes even longer.

If one of the parents moves abroad for permanent residence to a country with which Ukraine does not have a legal assistance agreement, alimony is collected in accordance with the procedure established by the Cabinet of Ministers of Ukraine.

If one of the parents, who is a citizen of Ukraine, leaves for permanent residence in a foreign country with which Ukraine does not have a legal assistance agreement, he or she is obliged to fulfill alimony obligations for the maintenance of the child(ren) until they reach the age of majority. These obligations are formalized: in the form of an agreement between this person and the parent with whom the child (children) remains, or ii by a guardian, trustee, or in the form of an agreement on the termination of the right to child support in connection with the transfer of ownership of real estate (residential house, apartment, land plot, etc.).

In case of failure to fulfill alimony obligations by a person who travels abroad, alimony is recovered by court order.

Thus, if Ukraine and any of the Contracting Parties have another international treaty in force regulating the recognition and enforcement of judgments, execution of orders for the service of documents or receipt of evidence abroad, the provisions of the relevant international treaty, such as the Convention on Legal Assistance and Legal Relations in Civil, Family and Criminal Matters of 22 January 1993, may be applied.

Thus, the enforcement of child support obligations in the event that one of the parents moves abroad for permanent residence is a rather complicated and lengthy process, but it is quite possible if necessary.

An important feature of children's rights is the need for their special protection. It is important to provide opportunities and favorable conditions for free and full development. The main priority in the protection of children's rights is to ensure their interests and specific needs.

### **3. Structure of decision support system for enforcement of child support obligations**

Let's develop the structure of decision support system for enforcement of child support obligations (Figure 3).

The decision support system for enforcement of child support obligations proposed in this article helps to automate the decision-making process related to the enforcement of alimony obligations. The structure of such a system should include several main components, each of which performs certain tasks and ensures the efficiency of the system.

The main components of the structure of the decision support system for enforcement of child support obligations:

- data collection and processing subsystem – consists of: data collection module that collects the necessary information about the payer and recipient of alimony, existing obligations, history of performance, financial condition, current changes in legislation, as well as other relevant data; data verification module that checks the received data for their accuracy, relevance and compliance with the requirements; automatic data update module that ensures timely updating of information in the system, in particular, data from state registers and databases;
- analysis and forecasting subsystem – consists of: analytical module that analyzes the collected data, calculates possible options for resolving disputes over the payment of alimony,

predicts the payer's financial capabilities and risks of default; risk forecasting and assessment module that uses statistical analysis and machine learning methods to assess the likelihood of default on alimony obligations and predict the payer's financial capabilities; scenario analysis module, which offers possible scenarios and recommendations for decision-making based on changing conditions (for example, in case of changes in the payer's income or social status);

- decision support subsystem – consists of: recommendation module that provides recommendations on the best option for resolving disputes, justifying the choice to provide a judge or other authorized person with objective information for making a decision; legal compliance module that ensures compliance of decisions with the law by automatically checking the current legal norms governing the fulfillment of alimony obligations; decision generation module that generates a draft decision for adoption by a court or relevant authority, including the necessary documentation and conclusions;
- security and data management subsystem – consists of: access control and encryption module that protects data from unauthorized access and ensures the confidentiality of information; backup module that ensures the safety of information for data recovery in case of unforeseen situations; monitoring module that monitors the system and registers possible security breaches;
- user interaction subsystem – consists of: user interface that provides convenient and understandable access for judges, social workers, payers and recipients of alimony, facilitating interaction with the system; access control module that provides different levels of access for different users, ensuring the security and confidentiality of data; reporting module that generates reports for judicial authorities, users and organizations that monitor the fulfillment of alimony obligations.

The advantages of the decision support system for enforcement of child support obligations are: automation of processes to speed up decision-making on alimony; analytical support for predicting the alimony payer's solvency; transparency of decisions due to recommendations and reasonable conclusions; reduction of the judicial workload by automating a part of the processes subject to standardization; significant facilitation of the decision-making process related to alimony obligations by increasing its objectivity, speed and efficiency.

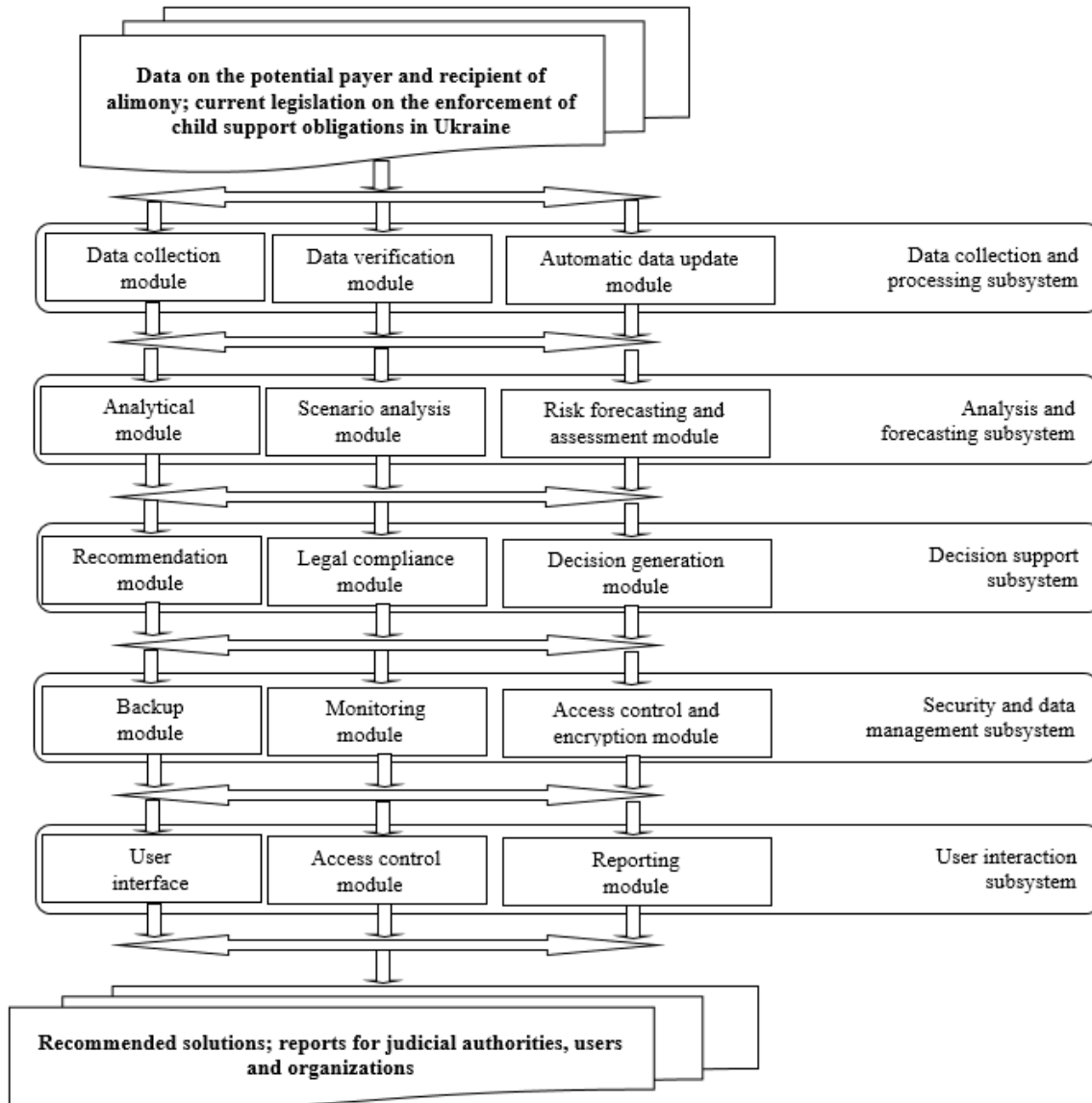
## 4. Results & discussion

Let's consider the operation of decision support system for enforcement of child support obligations. The decision support system for enforcement of child support obligations was tested on available court decisions from the Unified State Register of Court Decisions (<https://reyestr.court.gov.ua/>), namely on civil cases (from January 1, 2019) – cases of action proceedings – cases of disputes arising from family relations – cases of alimony recovery, in which court decisions are known. Thus, the system was tested on more than 100,000 real court cases available in the Unified State Register of Court Decisions, and in 278 cases the system generated an incorrect decision to refuse to award alimony, which is about 0.3% of the total number of generated decisions, which is a very high indicator of the system's correctness.

Most of the incorrectly generated decisions concerned the payment of alimony to an adult during the transition from a bachelor's to a master's degree. Thus, the system recommended denial of the alimony obligation in such a transitional period, but the analysis of actual court cases showed that it is incorrect to interpret the provisions of Article 199 of the Family Code of Ukraine in such a way that alimony for an adult child who is studying is paid only for those periods when the educational process actually continues, and in case of transition to the next educational level, a person cannot be considered to have stopped studying, since the existence of a time gap between the end of training at the previous level and the beginning of training at the next educational level does not depend on the will and desire of the applicant. Therefore, the period of actual interruption in education

determined by the nature of the educational process cannot in such cases indicate its termination within the meaning of part two of Article 199 of the Family Code of Ukraine, and the period of alimony payments is continuous. Corresponding changes were made to the system.

It is obvious that the proposed decision support system for enforcement of child support obligations, with its experimentally proven high correctness, allows automating the process of making decisions on alimony and reducing the burden on the court by automating the process.



**Figure 3:** Structure of decision support system for enforcement of child support obligations.

## 5. Conclusions

Information technologies, in particular, decision support systems, including intelligent systems, currently have significant potential for modernizing and optimizing justice processes. An urgent task at present is to develop decision support systems, including intelligent ones, for various legal areas, including, for example, the area of alimony. The decision support system for enforcement of child support obligations proposed in this article helps to automate the decision-making process related to the enforcement of alimony obligations. The advantages of the decision support system for enforcement of child support obligations are: automation of processes to speed up decision-making on alimony; analytical support for predicting the alimony payer's solvency; transparency of decisions due to recommendations and reasonable conclusions; reduction of the judicial workload by



automating a part of the processes subject to standardization; significant facilitation of the decision-making process related to alimony obligations by increasing its objectivity, speed and efficiency.

## Declaration on Generative AI

The authors have not employed any Generative AI tools.

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