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# The Role of AI-Based Intelligent Systems in Public Policy Formulation

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A B S T R A C T

Existing public policies have failed to adequately solve complex public problems in society. To deal with the complexities of public problems, intelligent systems are required. The input and output of an intelligent system are similar to those of a conventional system, where correct input leads to correct output. The intelligent system can receive a public problem, prioritize it, and offer a solution for it. This is a qualitative, exploratory research with an applied objective. The data collection was conducted through fieldwork using semi-structured interviews. The research population included public policy experts and Artificial Intelligence (AI) experts. Snowball sampling was utilized, reaching theoretical saturation with a final sample size of 12 people. To assess the validity and reliability of this research, the opinions and guidelines of a group of experts were considered before, during, and after the coding process, and the necessary final adjustments were made. For the qualitative data analysis, the Thematic Analysis method and the Thematic Network tool, following the Attride-Stirling approach in six steps, were used. In this research, 4 global themes, 7 organizing themes, and 143 basic themes were extracted to determine the role of the intelligent system in public policy formulation. The results showed that intelligent systems must be used to formulate intelligent policies. By using the capabilities of AI, the intelligent system can perform the process of public problem identification, agenda setting, and offering the best solution intelligently. Consequently, the public policy formulation processes are presented more precisely, effectively, and with fewer negative side effects. The knowledge required by the intelligent system to perform these processes intelligently is supplied by the capabilities of the Expert System and the Learning System.

***Keywords:*** *Public Problem, Public Policy Formulation, Artificial Intelligence (AI), Intelligent System, Intelligent Policy Formulation.*

## 1. Introduction

In today's complex environment, where scientific developments are accelerating daily, policy formulation cannot be carried out without specialized tools. Policymakers must be equipped with new tools and methods for decision-making in such a space, and to achieve this goal, they must establish a new body of knowledge in policymaking (Alvani & Sharifzadeh, 2013). The question raised is: What is the role of the intelligent system in public policy formulation? It appears that inattention to the public needs of the people constitutes public problems, and when there is no mechanism for identifying and transmitting a real public problem from the people to the government, the real public problem is not identified, the public problem does not get onto the agenda,

and no solution is offered for the real public problem. Political posturing can cause the real public problem to be rejected by policymakers and the government (Pourezat, 2021a). It seems that one of the shortcomings that can be pointed out in identifying the public problem and setting the agenda is the government's tendency to identify and prioritize the public problem in a political, unrealistic, unscientific, and subjective manner. Public policy deals with the general interests of the people, enters the boundaries of the lives of all members of society, and affects people's lives directly or indirectly(Alvani & Sharifzadeh, 2013; Peykani, 2016; Pourezat, 2021a). Many public policies, instead of solving problems and eliminating issues from the public sphere, turn into problem-creating and issue-prone areas of society (Pourezat, 2021a). It seems that if public policies are not properly formulated, members of society need a second lifetime to be able to compensate for the damages resulting from a flawed or mistaken policy, which can change the fate of individuals' lives.

One of the stages of the policy cycle is the public policy formulation stage, where public issues and problems are first identified and defined, then public problems are placed on the agenda, and subsequently, a solution is selected for the public problem (Peykani, 2016). In the view of Anderson (2003), the three processes of policy formulationnamely the process of public problem identification, the process of agenda setting, and the process of solution offering or policy formationare usually intertwined. AI-based policy formulation seeks the identification, agenda setting, and solving of the real public problem (Vardaan, 2020). A public problem refers to a situation that a large number of people in a society perceive as an undesirable, unjust, or reform-needed condition and believe that collective action and the intervention of public institutions, such as the government, are necessary to solve it (Rittel & Webber, 1973). Policies face success only if a correct solution is selected for a correctly identified problem. Policies usually fail not because they applied the wrong solution to a clear problem, but because they responded to a problem that was not correctly identified (Peykani, 2016). There is no easy and simple mechanism for hearing the voice of the general public and for presenting their issues, problems, expectations, and needs (Alvani, 2007). Given its features and capabilities, Artificial Intelligence (AI) can easily collect, identify, and analyze the priorities, will, and opinions of citizens and the publicmeaning it can access public opinion, review their needs, and become aware of public problems (Berryhill et al., 2019; Vardaan, 2020).

Numerous public problems are observed at the societal level, but action is not taken to solve all of them. In fact, only those public problems that are lucky enough to enter the social arena or be placed on the government's agenda become the basis for policymaking (Peykani, 2016). AI can better identify the priorities and urgencies of public problems in the agenda setting process. By having access to accurate, correct, and timely information, AI can determine the priority and urgency of each public problem compared to other public problems, evaluate them, assess the consequences, and place them on the agenda (Pourezat, 2021a). The Rational Model believes that we must achieve the best decision, in the best position, with the most information, and with the most accurate analyses (Pourezat, 2021a). The process of solution offering for the public problem, in Anderson's expanded model, is a process that directly follows the agenda setting stage, during which government officials, experts, and stakeholders develop and examine specific proposals or policies to address the problem that has made it onto the government's agenda (Anderson, 2015). Most of AI's achievements are in the field of decision-making and problem-solving (Armani Mehr et al., 2014). By returning to the rationality model, it is possible to move beyond the era dominated by destructive policies that ruin the nation's resources and "mal-policies" (*kaj-khatmashi*) that divert the consumption of these resources toward serving partisan and personal interests, and reach a golden age of reasonable and wise consumption of national resources for serving public interests (Pourezat, 2021a). Solution offering through AI can help create more accurate, responsive, reliable, and trustworthy policies (Vardaan, 2020). Artificial Intelligence (AI) is a new field of knowledge that emerged about half a century ago and has had an undeniable impact on most technologies related to intelligent human activities (Rahati et al., 2008). AI is an interdisciplinary research field that has gained special importance and has attracted the attention of researchers and experts, providing a wide range of useful opportunities in the public sector (Boyd & Wilson, 2017; Wirtz et al., 2018). No universal, comprehensive definition of AI is available (Grosz et al., 2016; Monett & Lewis, 2018; Wang, 2019, 2020; Wirtz et al., 2018). "AI is the science and engineering of making intelligent machines, especially intelligent computer programs" (McCarthy, 2004). AI is seen as human-made systems to which part of human authority can be delegated,



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and possibly more authority will be delegated in the future (Thierer et al., 2017). AI systems are usually designed to resemble or mimic human behavior with the aim of maximizing effectiveness and efficiency, as well as minimizing errors, in order to make correct and appropriate decisions. Based on this, AI systems are aimed at logical thinking and action and repeat the natural decision-making process compared to humans (Banerjee et al., 2018). Minsky (1985) states that intelligence usually means the ability to solve difficult problems. Rosa (2020) defines intelligence as a problem-solving tool that seeks solutions to problems in dynamic, complex, and uncertain environments. Intelligence is the ability to cope with complexity by constructing models that take on the task of controlling these complexities (Bach, 2020). Technology expands opportunity, and policymakers must consider the diverse and rich opportunities offered by AI technology (Thierer et al., 2017). Therefore, one of AI's capabilities is to assist other sciences toward becoming intelligent, and one of humanity's capabilities is to upgrade and complete AI. AI may lead to a fundamental change in the nature of policymaking. AI helps achieve a precise and explicit definition of public policymaking (Pourezat, 2021a). Caspar van Berg believes that the output of data-driven policymaking can create good governance with related characteristics: namely, transparency, accountability, legality, equality before the law, and responsibility, the result of which will be the provision of effective and efficient solutions (policies) with high quality and low cost. Wirtz et al. (2018) state that AI pursues intelligent, human-like behavior) Wirtz et al., 2018(. AI attempts to repeat problem-solving methods to achieve solutions with greater efficiency. AI positions itself as a candidate for replacing human capabilities; in other words, AI seeks to perform human abilities. Among the features of AI is that, like humans, it has perception, learning, and problem-solving capability to increase performance.

### *1.1. Systems and the Policy-Making System*

A system is a composite of interrelated parts. Each part is considered an influencing factor on the other parts, and all depend on the entirety of the phenomenon. All systems have three elements: input, the transformation or processing stage, and output. Kenneth Boulding, an American economist and supporter of Bertalanffy, played a major role in General Systems Theory. Regarding Boulding's hierarchy, the point to be noted is that it starts with the simplest system and moves toward greater complexity based on subsequent consecutive levels in the hierarchy. Every higher-level system contains lower-level systems. Thus, as you move toward higher levels in the hierarchy, each level encompasses the characteristics of the lower levels, but higher-level systems have unique characteristics that cannot manifest in lower-level systems. This implies that the theories of lower-level systems can be applied to higher-level systems, but the reverse is not true. Today, systems are used in many domains. Many thinkers have focused their attention on the idea that systems need a "brain" or "brain-like functions." A decade ago, the Japanese Kenichi Ohmae correctly predicted that successful systems would be brain-like and more intelligent. The idea of a "Policymaking Brain" will be one of the social priorities of the future governmental organization. The policy-making system must possess a type of intelligence and awareness so that it can detect errors and correct itself. The policy-making system must be sensitive and intelligent enough to recognize problems in time and take action to resolve them, thereby correcting itself and improving its performance. The policy-making system must detect problems from their signs and symptoms before they occur and try to resolve them. The self-awareness of the policy-making system gives it a dynamic and active state, removing it from passive and defensive modes. Heuristic methods should be used in the decision-making of the policy-making system.

### *1.2. Learning Systems and Expert Systems*

Turing (1950), in his famous article, proposed the construction of learning machines and subsequently training them. Learning allows an agent to operate in an environment that is initially unknown and then become more skilled than its initial knowledge alone would have permitted. Learning is the modification of any part of the agent so that that part better conforms to feedback information, thereby improving the efficiency of the whole agent. Edward Feigenbaum, a computer scientist, is known as the father of expert systems. Expert systems refer to that type of AI program that reaches a level of expertise where they can make decisions in a specific field instead of a human expert. Expert systems imitate or simulate the way of thinking or behavior of a human expert in a particular field. The knowledge-based agent in an expert system is capable of accepting new tasks in which the goals are explicitly described.


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### 1.3. *Decision Support Systems and Policy Support Systems*

Today, expert systems and decision support systems can play an effective role in the new knowledge of policymaking. Decision support systems, by solving a wide range of semi-structured or unstructured problems, can go beyond iterative problem-solving methods. AI-based decision support systems empower managers with real-time insights and recommendations, enabling them to make informed decisions. These systems can analyze complex scenarios, consider multiple variables, and provide predictions based on historical data. By integrating AI algorithms into decision-making processes, managers can reduce risks, optimize resource allocation, and develop more effective strategies. A Policy Support System is a specialized system that provides the possibility of storing records of decisions and repeatedly analyzing their results, the capacity to learn lessons from past decisions, the development of learning and intelligent systems, conditions for better analysis, review, reprocessing, and improvement of previous and new policies. Policy support systems help with decisions and the maintenance of various types of policies, reports, and errors. A system that warns future generations against repeating errors, failures, disappointments, and misfortunes, and guides them toward a better, wiser, and more successful future. By designing a Policy Support System, the groundwork for the AI-based intellectualization of the public policymaking system can be prepared in order to achieve goals.

### 1.4. *Public Policy Support System and Public Policy Laboratory*

Testing formulated policies is the best way to ensure the effectiveness of policies in practice. If the Policy Support System is placed alongside the Policy Laboratory, it adds to the system's intelligence. And certainly, if a Policy Support System exists, the Policy Laboratory will be stronger because its access to various types of policies over long periods becomes possible. Some of the highly valuable outputs of Policy Laboratories are the design of appropriate infrastructures for the intellectualization of the public policymaking system.

### 1.5. *Intelligent System*

Intelligent System: "An intelligent system is a software or hardware system that has the ability to perceive its environment and maximizes its chance of successfully achieving its goals by taking actions. Intelligent systems, utilizing technologies such as machine learning, natural language processing, computer vision, and automated reasoning, can learn from data, identify patterns, make decisions, and perform complex tasks in an autonomous or semi-autonomous manner." American Psychological Association (2023) (American Psychological, 2023). An intelligent system is a computer program that can exhibit human-like abilities such as reasoning, learning, planning, and understanding. The core of these systems is constituted by Artificial Intelligence, and especially the branch of Machine Learning. Simply put, these systems learn hidden patterns and relationships by analyzing a massive volume of data (data mining) and use this knowledge for decision-making, prediction, or automated task performance.

Studies by Riahi et al. (2025) focus on strategic decision-making in the age of AI, Rafiei et al. (2025) on designing an AI-based public policymaking model, and Sharifzadeh et al. (2024) on examining the effects of policies for developing new technologies and AI on the expansion of major political strategies (Rafiee et al., 2025; Riahi et al., 2025; Sharifzadeh et al., 2024). Akbari (2024) researched designing an intelligent legislative support system, and Shānāzeri et al. (2024) studied the use of AI in the dynamics of public policymaking, while Kohan Houshnejad (2024) addressed governance in the context of AI (Akbari, 2024; Shanzari et al., 2024). Torabi and Eghbal (2024) presented an AI governance model for government rule in Iran, and Babaeian et al. (2023) analyzed the role of AI in the public policymaking cycle, while Roshan et al. (2021) examined the application of AI in the public sector, and Pour-Ezzat (2021) addressed the design of a policy support system to curb destructive and mal-policies. Pour-Ezzat (2021) also researched the design of a policy laboratory and the wise arrangement of the decision scene to avoid trial and error in the realm of governance. Pour-Ezzat et al. (2019) researched the application of AI in governance, and Shojaeian et al. (2019) addressed the realization of e-governance in Iran and a step toward smart government (Babaeian et al., 2023; Pourezat, 2021b; Shojaian et al., 2019; Torabi & Eqbal, 2024). Additionally, in studies, Dunleavy & Margetts (2025) refer to data science and the third wave of governance, and Mahant (2025) mentions AI in public administration (Dunleavy & Margetts, 2025). Agbabiaka et al. (2025) address the requirements for trustworthy AI in automated decision-making, and Angonia et al. (2025) refer to decoding development, the frontier of AI in policy formulation


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(Agbabiaka et al., 2025; Angonia & Colleagues, 2025). Li et al. (2025) address the role of AI in agile governance, and Noordt et al. (2025) refer to the role of AI in policy initiatives for government (Li et al., 2025). Esfandiar et al. (2024) address the impact of AI on public policy development, and Konya et al. (2023) addressed the development of democratic policies using collective dialogue and AI (Esfandiar et al., 2024; Konya et al., 2023). Sun & Medaglia (2023) refer to AI in public policymaking, and Noordt & Misuraca (2022) address the impact of AI on core governmental functions (Sun & Medaglia, 2023; Van Noordt & Misuraca, 2022). Vardaan (2020) addressed governance through AI-based policymaking processes (Vardaan, 2020).

This research, titled The Role of the Intelligent System in Public Policy Formulation, focuses specifically on how to benefit from AI in the process of formulating intelligent public policies within the intelligent system. A review of the literature from previous research shows that this approach is not seen in any of the prior studies, as they do not have sufficient attention and focus on public policy formulation within an AI-based intelligent system, which was observed as a research gap. The present research has provided a new and native model for public policy formulation. Therefore, if the capability of AI and the role of the intelligent system in public policy formulation are not considered, we will continue to witness the formulation of inadequate and ineffective public policies. In this research, the intelligent system, its capabilities, and the execution of public policy formulation processes within the intelligent system were addressed, which has not been tackled in this way in previous research, and constitutes one of the innovative aspects of this research. Furthermore, the entry of AI into the public policy formulation process causes a redefinition of this process and its sub-processes, which is another innovative aspect of this research.

## 2. Methods and Materials

The present research is qualitative and of the exploratory research type, based on an applied objective and with an inductive approach. The data collection method in this research was conducted through fieldwork using semi-structured interviews. For data collection, interviews were conducted with experts in two fields: Artificial Intelligence (AI) and Public Policy Formulation. The statistical population of the research consisted of all experts who were knowledgeable in the fields of AI and policymaking. The sampling method used was snowball sampling, which finally reached theoretical saturation with a sample size of 12 individuals. To assess the validity and reliability of this research, the opinions and guidelines of a group of experts were considered before, during, and after coding, and the necessary final adjustments were made.

## 3. Findings and Results

For the qualitative data analysis, the Thematic Analysis (Theme) method was used in six steps with the proposed Attride-Stirling approach. In this research, to determine the role of the intelligent system in public policy formulation, 4 global themes, 7 organizing themes, and 143 basic themes were extracted.

**Table 1**

*Image of the first and second stages*

| Initial (open) coding of the first interview |
|---|
| Intelligent Policy Formulation (or Smart Policy Formulation), Public Problem (or Public Issue), Three Processes, Problem Identification Process, Agenda Setting Process, Solution Offering Process for Public Problems, Existing Literature, Extraction or Identification of Deficiencies, Needs, and Shortcomings in These Three Processes, Artificial Intelligence (AI), AI Capabilities (or Characteristics of AI), Addressing Needs and Shortcomings in These Three Processes, Intellectualization/Smartening of the Three Processes, Utilization of AI Capabilities in These Three Processes, Diagnosis of the Public Problem or Issue, Existence of All These Informational Means and New Technologies, Lack of Need for Current Political Frameworks, A Mechanism for Referring the Problem to Decision-Making Authorities, (Platform), Intelligent Platform (or Smart Platform), Easy Access for Members of Society to the Platform, Having a Personal Identifier or Code, Expression or Transmission of Public Issues or Problems by the People, Analysis of Issues or Problems, In the Form of a Framework, To Be Put to a Public Vote, Prioritization of Public Issues (Placing on the Agenda), Placing Public Problems on the Agenda or Prioritizing the Problem Through Public Voting, Prioritization of Public Issues by the People Themselves for the Agenda!, Through Participation (or Participatorily), Analysis of Issues with the Intelligent System, Analysis of Issues by Elites, Similar to an Electoral Mechanism, Creation of a Mechanism (Platform) for Determining the Priority of Public Problems!, Specialized Problems are Not Prioritizable by the General Public, Non-Specialized Public Problems. |

**Table 2**

*Image of the third and fourth stages*

| Basic themes and review of basic themes |
|---|
| Sovereignty or Macro-level (Leadership, Parliament, Government, Power Holders, Representatives, and Policymakers), Deficiency for Public Problem, |



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| |
|---|
| Feeling Concerned and Preoccupied with the Public Problem, Public Problem or Common Problem for the People, Complexity of Public Problems, Every Public Problem has an Identity/Specification and Coordinates, The Public Problem is Composed of Different Parts, The Gap Between Existing Conditions and Desired Conditions Defines the Problem, Fabricated Problem or Non-Problem an Issue that is Not the Real Concern or Problem of the People, Ignoring the Public Problem Leads to Conflict Between People and Sovereignty and Crisis, Need for Power Support for the Public Problem to be Identified, Transmitted, and Accepted by the Sovereignty, The Identified Public Problem Must be Acceptable by the Sovereignty as a Social Reality to Go to the Agenda, The People's Public Problem Must be Vocal/Loud to be Heard, Identified, and Put on the Agenda, Many New Problems Result from Incorrect Past Solutions, The Roots of the Public Problem are Not Scientifically and Genuinely Identified, Incorrect Solutions and Policies Create New Fabricated Public Problems, A Fabricated Problem Leads to an Incorrect Solution and Policy, Formation of a Cycle of Fabricated Public Problems, The Fabricated Public Problem Cycle Leads to a Vicious Cycle in Policy Formulation, Public Problem and Solution for the Public Problem, Processes that Exist Between the Public Problem and the Public Solution..... |

**Table 3**

*Image from the fifth stage*

| Overarching, organizing, and basic themes |
|---|
| Global Theme: Mapping the Landscape of the Current State of Public Policy Formulation. Organizing Theme: Existing Deficiency in the View of Sovereignty and Policymakers Regarding Public Problem Identification. Basic Themes: The Sovereignty does not identify and formulate policy for the people's real and fundamental public problem, consequently, the real public problem is not identified, does not go onto the agenda, and no solution is offered for it, The Sovereignty does not identify public problems from the grassroots level of society, At the macro-level, the public problem identification process lacks specific criteria, Policymakers or the Sovereignty are unaware and inattentive to the people's core needs and problems, The top-down view of the Sovereignty or policymakers toward the general public can hinder public problem identification, Late identification and entry of public problems onto the agenda, The public problem, according to policymakers, is whatever the Sovereignty or power holder recognizes and deems relevant, The public problem favored by policymakers is superficial and transient, The public problem favored by policymakers is low-cost and yields quick returns, The public problem favored by policymakers is ostentatious/performative and visible to the public, The public problem favored by policymakers is a fabricated public problem, The public problem favored by policymakers is a non-fundamental and unrealistic public problem, The public problem favored by policymakers is one whose solution is more accessible, fast, and easy, The existing deficiency in the public problem identification process can also impact the other two formulation processes. |

**Table 4**

*Concept and Characteristics of Artificial Intelligence (AI)*

| Global Theme | Organizing Theme | Basic Themes |
|---|---|---|
| Artificial Intelligence and Intelligence/Smartness | Artificial Intelligence, Concept and Characteristics of AI | 1) AI is a New Technology 2) AI is a New Tool 3) Weak AI 4) General or Medium AI 5) Strong AI 6) AI is a Double-Edged Sword 7) Tireless AI 8) Immortal and Permanent AI 9) AI is a Tool for Smartening/Intellectualization 10) AI and Human-like Thinking 11) AI and Human-like Performance/Functions 12) AI and the Replacement of Human Work and Thought Requiring Intelligence 13) AI and the Lack of Need for Some Current Political Frameworks 14) Delineating AI from Automated Systems 15) AI-Based Intelligent System 16) AI is Not Just Data Science 17) The Mission of AI is to Help Other Sciences 18) Subsets of AI 19) AI and Processes, Structures, People 20) AI's Ineffectiveness in Non-Human Models 21) AI and Intelligent System 22) AI Includes Software Written for It to Perform Processing Work 23) AI Beyond Automation 24) Limitations of Policy Formulation and AI Capabilities 25) AI and Intelligent Policy Formulation 26) AI and the Smartening/Intellectualization of the Formulation Process 27) AI and Public Problem Identification 28) AI and Agenda Setting 29) AI and Solution Offering |

**Table 5**

*Components of Intelligence/Smartness*

| Global Theme | Organizing Theme | Basic Themes |
|---|---|---|
| Artificial Intelligence and Intelligence/Smartness | Artificial Intelligence and Intelligence/Smartness, Components of Intelligence/Smartness | 1) Power of Analysis and Recognition/Cognition 2) Autonomy 3) Learning Capability 4) Prediction Capability 5) Being Active, Dynamic, and Reactive or Proactive 6) Initiative and Innovation 7) Benevolence and Generosity 8) Sociability, Cooperation, and Interaction 9) Trustworthiness 10) Rationality in AI and Being Wise |

**Table 6**

*Automated System or Automation and Intellectualization/Smartening*

| Global Theme | Organizing Theme | Basic Themes |
|---|---|---|
| Artificial | Automated System or Automation | 1) Automation is Different from Intellectualization/Smartening 2) Performing a Repetitive and |



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| | | |
|---|---|---|
| Intelligence and Intelligent System | and Intellectualization/Smartening | Simple Task in an Automated System 3) In Automation, the System is Set Up Automatically 4) The Automated System is Not Autonomous or Lack of Authority in the Automated System 5) In the Automated System, Data Analysis and Processing Does Not Exist 6) In the Automated System, Comparison and Recognition Do Not Exist 7) In the Automated System, Continuous Monitoring, Learning, and Prediction are Not Involved 8) The Automated System Lacks AI Capabilities 9) The Automated System Lacks Components of Intelligence/Smartness 10) The AI-Based Intelligent System is Beyond Automation |

**Table 7**

*Coordinates/Characteristics of the Intelligent System*

| Global Theme | Organizing Theme | Basic Themes |
|---|---|---|
| Artificial Intelligence and Intelligent System | Coordinates/Characteristics of the Intelligent System | 1) Systems Generally Take One Input and Deliver One Output 2) The System Designer Designs What Inputs the System Should Take and What Outputs It Should Deliver 3) Input and Output of the Intelligent System are Like the Input and Output of a Conventional System 4) Correct Input Brings Correct Output 5) One Important Aspect in Designing an Intelligent System is What Assets/Data are to be used to Reach What Results 6) Is the Conversion of These Assets/Data into Results in the Intelligent System Highly Complex, Requiring Human Intelligence 7) In These Conditions, AI is the Candidate for Employment and One of the Reasons for the Need for Intelligence/Smartness in the Intelligent System 8) The Intelligent System is a System with a Broad Solution/Strategy 9) Supporting All Three Formulation Processes Using AI Capabilities in the Intelligent System 10) Smartening/Intellectualization of the Three Formulation Processes 11) Definition and Delineation of All Three Formulation Processes 12) Intelligent Processes 13) Intelligent Policy Formulation Requires Intelligent Processes 14) Intelligent Processes Require Intelligent System and Knowledge 15) Intelligent System and Intelligent Knowledge 16) Intelligent System Requires Subsystem and Intelligent Knowledge for Processing and Converting Inputs to Output or Result 17) Intelligent System Requires Intelligent Subsystem 18) Placement of Intelligent Subsystems in the Intelligent System 19) Intelligent Subsystem for Public Problem Identification 20) Intelligent Subsystem for Agenda Setting 21) Intelligent Subsystem for Solution Offering 22) Intelligent Knowledge for Public Problem Identification 23) Intelligent Knowledge for Agenda Setting 24) Intelligent Knowledge for Solution Offering 25) Intelligent Process Knowledge for Public Problem Identification in the Intelligent Subsystem for Public Problem Identification 26) Intelligent Process Knowledge for Agenda Setting in the Intelligent Subsystem for Agenda Setting 27) Intelligent Process Knowledge for Solution Offering in the Intelligent Subsystem for Solution Offering 28) Intelligent Human and Intelligent System 29) Intelligent Human and Brain-like Systems 30) Human as the Model for Intelligent System Construction 31) Intelligent System Features are Similar to Human Features 32) Human as the Intelligent System Designer 33) The Designer Specifies Whether an Automated System or an Intelligent System is Desired 34) Model of Brain-like Machines or Intelligent System Similar to the Work of the Human Brain 35) Assisting or Replacing All Three Policy Formulation Processes in the Intelligent System 36) Pursuing the Creation of an Intelligent System as a Public Demand 37) Intelligent System Requires Creation, Execution, and Support 38) Creating an Intelligent System Requires Information from Policy Formulation Specialists and AI Specialists |

**Table 8**

*Capabilities of the Intelligent System*

| Global Theme | Organizing Theme | Basic Themes |
|---|---|---|
| Artificial Intelligence and Intelligent System | Capabilities of the Intelligent System | 1) Possessing All Features and Capabilities of AI 2) Easy Access for the People and Sovereignty to the Intelligent Platform 3) Communication Bridge Between the People and Sovereignty or an Auxiliary Circuit Between the People and Sovereignty 4) Establishing a Better Relationship and Commitment Between Sovereignty and the People 5) Clear Definition of the Sovereignty's Duty to the People and the People's Duty to the Sovereignty in the Intelligent System 6) Intelligent System Performance is Like a Specialist's Performance 7) Transferring Public Problems from the People and Sovereignty to the Intelligent System 8) Ease of Transferring the Public Problem to the Intelligent System by the People 9) Identification and Transfer of Real Public Problems to the Intelligent System Due to Direct Connection of the People with the Real Public Problem and Easy Access for the People to the Intelligent System 10) Trustworthiness by the People and Sovereignty 11) Direct Participation of the People in Transferring the Public Problem to the Intelligent System 12) Priority of Direct Participation over Representation 13) Non-Acceptance of Political Recommendation and Pressure in the Intelligent System 14) High Accountability in the Intelligent System 15) A Knowledge-Based, Transparent, Technological, Computational, Processing, Research, and Networked Structure 16) Use of Database and Specialized Database in the Intelligent System 17) Complexity of the Public Problem and Complex Intelligent Systems 18) Offering Solution for Complex Public Problems in the Intelligent System 19) Prediction in Addition to Learning Based on Previous Experiences and Information in the Intelligent System 20) The Intelligent System Can Receive the Problem and Predict the Result and Occurrence Upon Receiving the Public Problem in the Intelligent System 21) High Performance of the Intelligent System Compared to Human Performance 22) Prediction and Identification of Specialized Public Problems 23) Sharing Experiences and Processes in the Intelligent System 24) The Intelligent System is a Decision-Making Authority |

**Table 9**

*Comparison of Human Performance to Intelligent System Performance*



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| Global Theme | Organizing Theme | Basic Themes |
|---|---|---|
| Artificial Intelligence and Intelligent System | Comparison of Human Performance to Intelligent System Performance | 1) Elimination of Human Limitations in Intelligent System Performance 2) Delegating Complex Tasks Requiring Human Intelligence (Experts and Specialists) to the Intelligent System 3) Execution of Tasks Delegated by Intelligent Humans to the Intelligent System 4) Better, Beyond, Faster, and Higher Quality Execution of Human Tasks in the Intelligent System 5) Intelligent System Performance Accuracy is Higher than Human Performance in Almost All Issues 6) Better Execution of the Duties of Representatives and Policymakers in the Intelligent System 7) Changes in Policymaker Decisions Based on Expediency and Interest 8) Stating the Pure Truth in the Intelligent System 9) No Change in Intelligent System Decisions 10) Intelligent System Performance is Higher than Human Capability 11) There is No Fatigue in the Intelligent System 12) Performing Extensive Calculations with High Accuracy and Quality in the Intelligent System 13) Higher Speed and Work Volume in the Intelligent System 14) Stating Details in the Intelligent System |

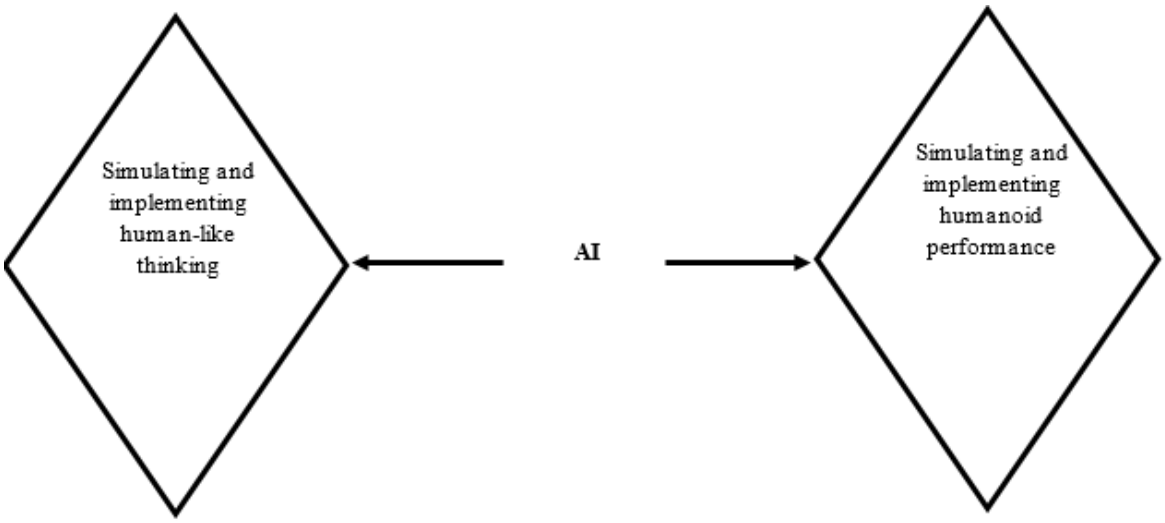
**Table 10**

*Mechanism of the Intelligent System*

| Global Theme | Organizing Theme | Basic Themes |
|---|---|---|
| Artificial Intelligence and Intelligent System | Mechanism of the Intelligent System | 1) Definition and Delineation Between All Three Stages of the Policy Formulation Process in the Intelligent System 2) Delineation is Performed by Experts in the Intelligent System 3) The Mechanism of the Intelligent System is the Result of the Intelligent Mechanism of All Three Formulation Processes 4) Intelligent Mechanism of the Public Problem Identification Process 5) Intelligent Mechanism of the Agenda Setting Process 6) Intelligent Mechanism of the Solution Offering Process 7) Providing the Necessary Knowledge for the Intelligent System from the Expert System and the Learning System 8) Benefiting from the Expert System and the Learning System in the Intelligent System 9) Possibility of Connecting Small Databases with a Large Database in the Intelligent System 10) Designing the Intelligent System Layer by Layer and Level by Level 11) Layers are Dependent on Each Other in the Intelligent System 12) In the Intelligent System, the Main Need of the First Layer Must be Addressed Before Moving to the Next or Higher Layer or Process, like Maslow's Hierarchy 13) In the Intelligent System, the First Level or Layer Can Encompass the Public Problem Identification Process 14) Necessity of Prioritizing and Addressing the Needs of Each Layer in the Intelligent System 15) The First Layer in the Intelligent System Must Have the Highest Priority and Importance 16) High Importance of the First Layer, meaning Public Problem Identification, in the Intelligent System 17) Existence of an Information Layer, Information Filtering/Refining, Analysis, and Decision-Making in the Intelligent System 18) Existence of a Reactive Command in the Lowest Layer in the Intelligent System |

**Figure 1**

*A view of artificial intelligence modeling from humans*




The model for building brain-like systems or intelligent systems is the human itself, which attempts to make the characteristics of the intelligent system similar to those of humans. Brain-like machines or intelligent systems are modeled after the work done in the human brain. Systems generally take an input and deliver an output. The system designer designs what inputs the system takes and what outputs it delivers.



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**Figure 2**

*View from: Intelligence Components Theme Network*

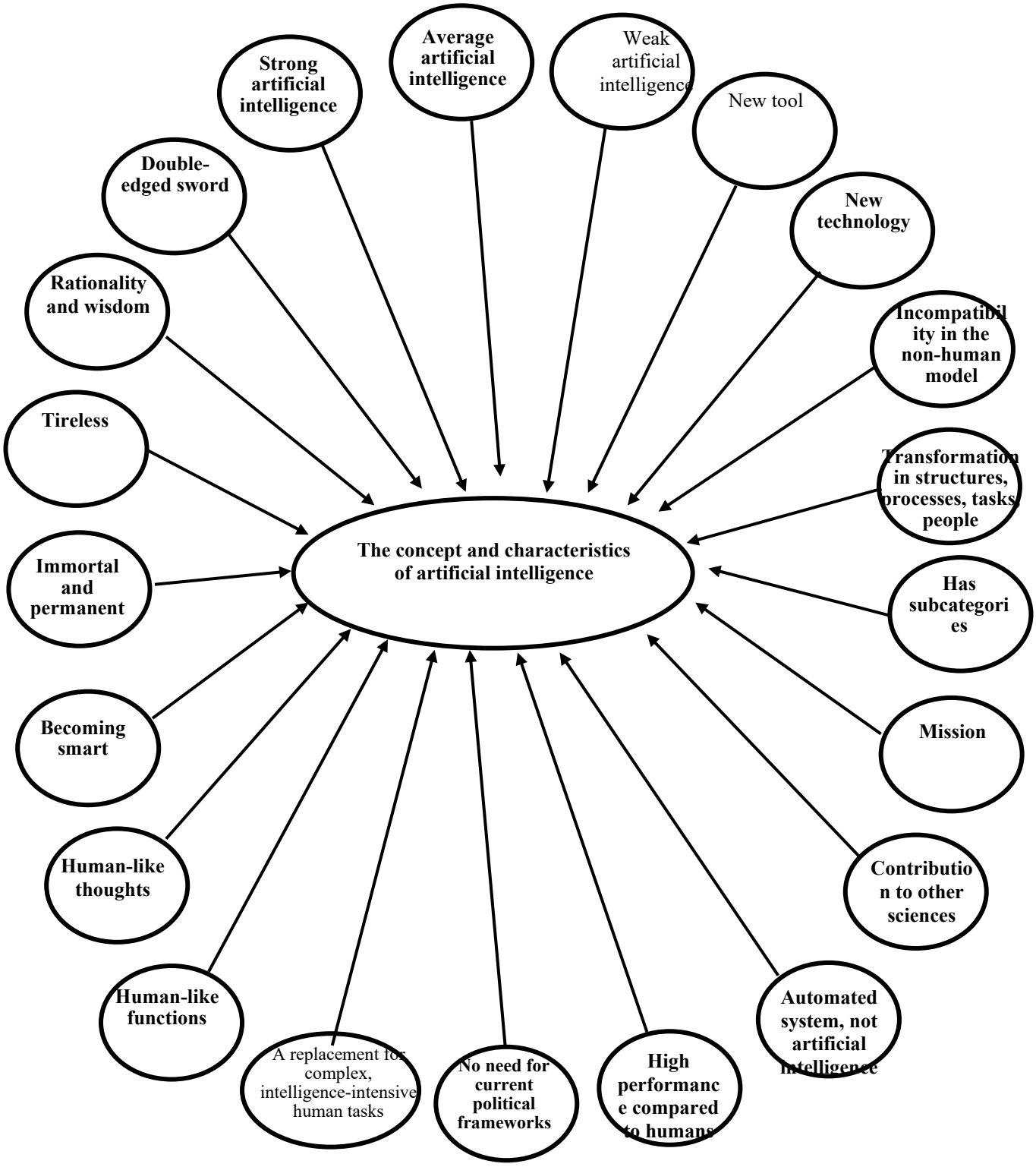


**Figure 3**

*View from: Intelligence Components Theme Network*



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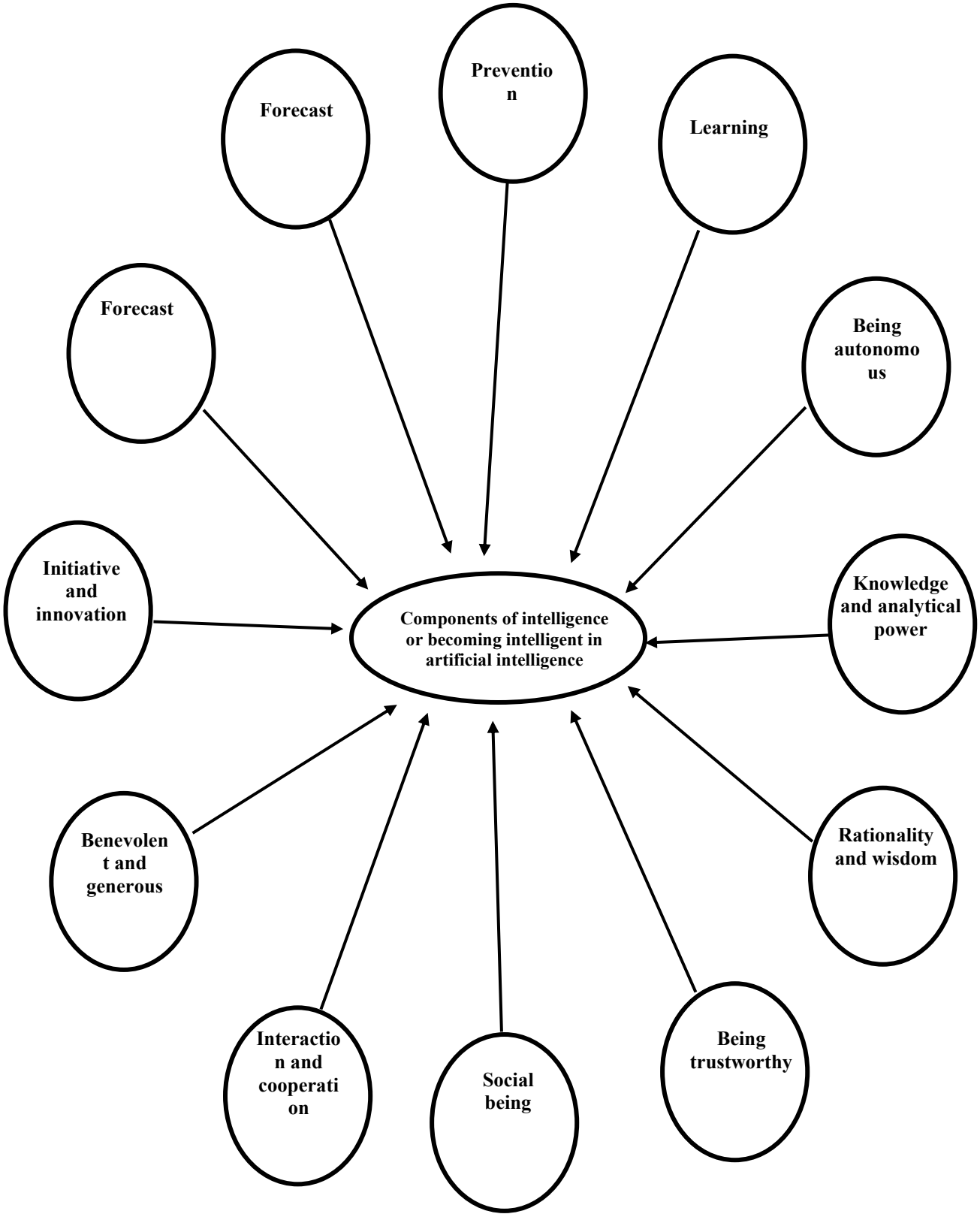


**Figure 4**

*A brief overview: from the network of themes explaining the intelligent system*



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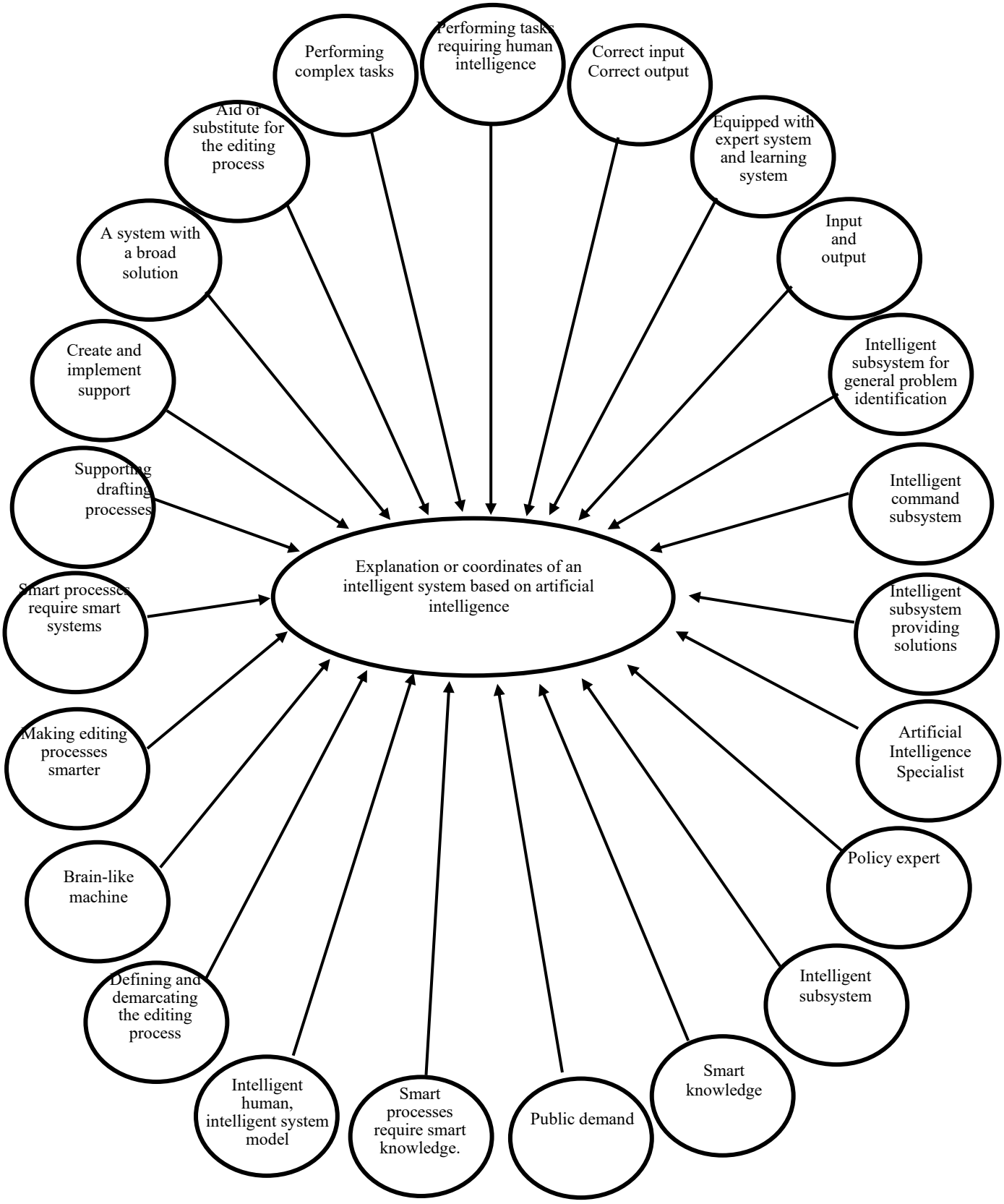


**Figure 5**

*A brief overview of: Smart System Capabilities Theme Network*



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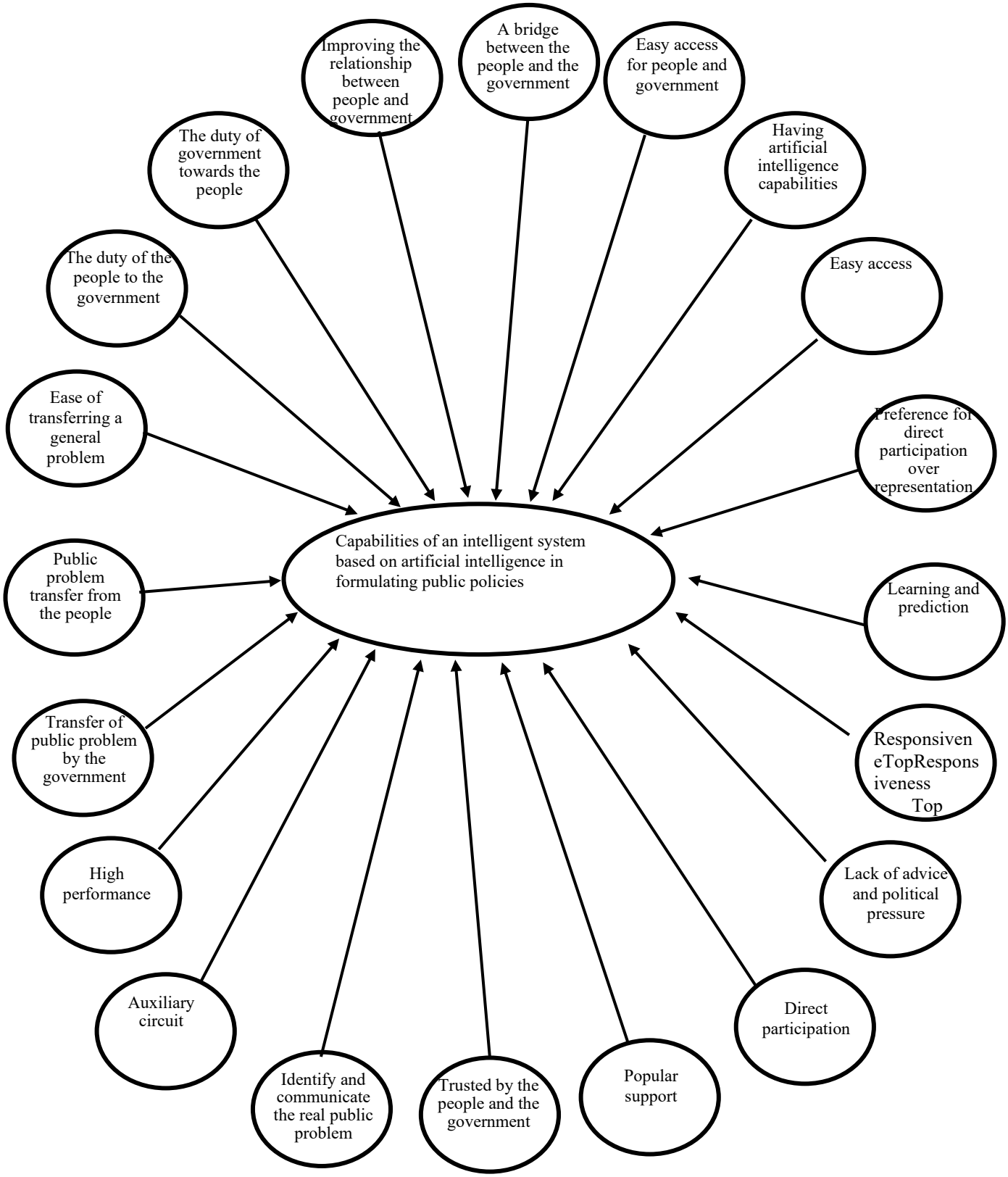


**Figure 6**

*A brief overview of: The network of themes of intelligent system performance towards humans*



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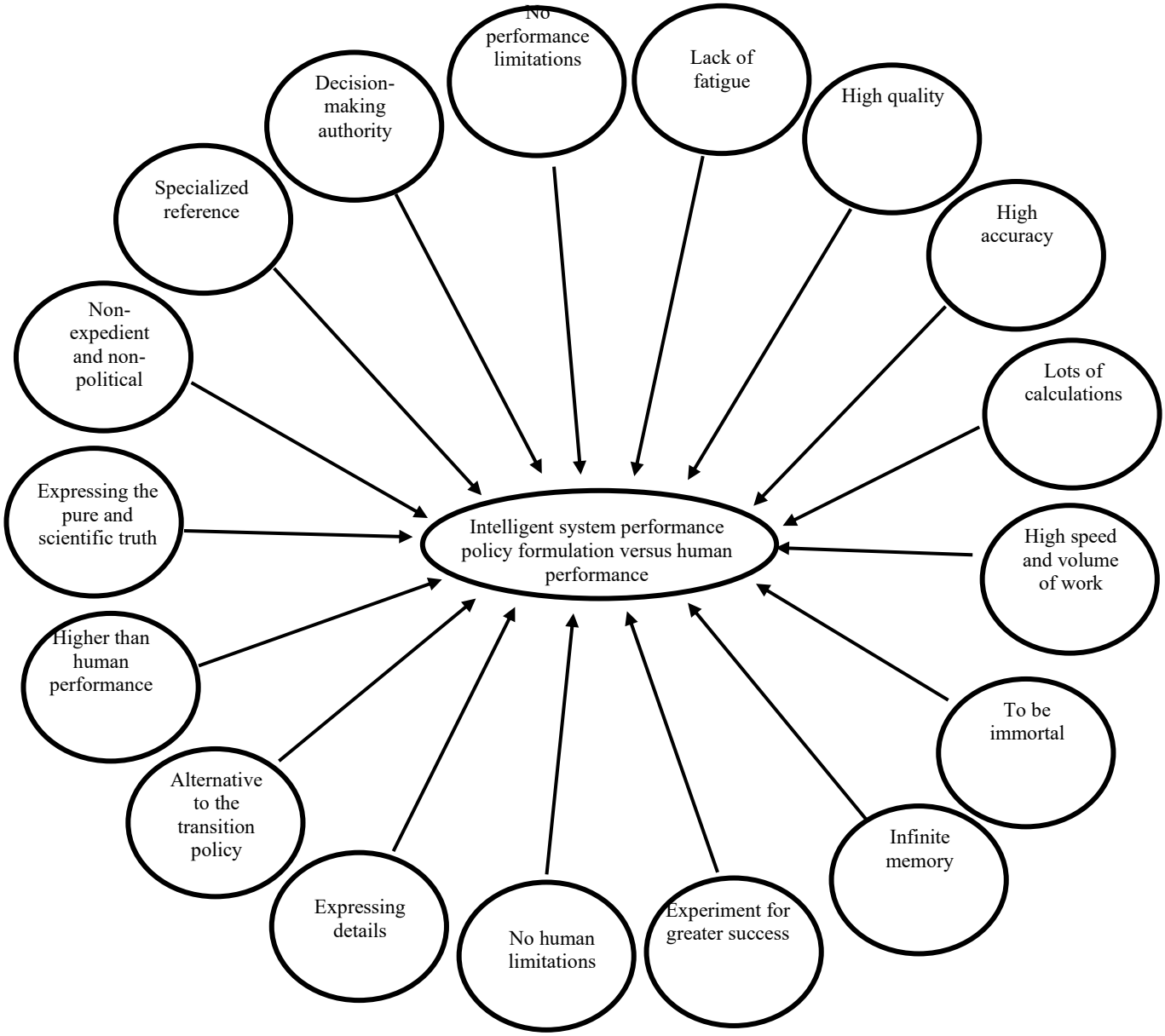


## 4. Discussion and Conclusion

The formulation of Intelligent Public Policies requires intelligent processes, and systems provide the platform for performing these processes. The execution of intelligent processes requires an Intelligent System and intelligent knowledge. The Intelligent System serves as the platform for the public policy formulation process, and the knowledge required by the Intelligent System can be supplied by the capabilities of the Expert System and the Learning System. In this research, to determine the role of the Intelligent System in public policy formulation, 4 global themes, 7 organizing themes, and 143 basic themes were extracted.

The results of this research indicated that public problem identification, agenda setting, and solution offering are performed intelligently within the structure of the Intelligent System. The research by Mahant (2025), Angonia et al. (2025), Akbari (2024), and Pour-Ezzat (2021) aligns with this study on the subject of creating an intelligent system for formulating intelligent policies(Akbari, 2024; Angonia & Colleagues, 2025; Pourezat, 2021a; Roshan, 2025). Vardaan's research (2020), titled "Governance through AI-Based Policymaking


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Processes," is consistent and aligned with the present research in the domain of public policy formulation (Vardaan, 2020). Furthermore, the studies by Pour-Ezzat et al. (2019), Shanazari et al. (2024), Sun and Medaglia (2023), Noordt et al. (2025), Li et al. (2025), Sharifzadeh et al. (2024), Roshan et al. (2021), Kohan Houshnejad (2024), Torabi and Eghbal (2024), Riahi et al. (2025), Noordt and Misuraca (2022), Esfandiar et al. (2024), and Agbabiaka et al. (2025) are aligned with the present research in terms of utilizing Artificial Intelligence and its capabilities in policymaking and some of the resultant findings (Agbabiaka et al., 2025; Esfandiar et al., 2024; Li et al., 2025; Pourezat, 2021b; Riahi et al., 2025; Roshan Seyed Ali et al., 2021; Shanzari et al., 2024; Sharifzadeh et al., 2024; Sun & Medaglia, 2023; Torabi & Eqbal, 2024; Van Noordt et al., 2025; Van Noordt & Misuraca, 2022). However, this research specifically focuses on the intelligent processes of public problem identification, agenda setting, and solution offering within the Intelligent System.

The findings of the research demonstrated that all the characteristics and capabilities existing for AI also apply to the Intelligent System. In addition to learning, the Intelligent System can also predict. The Intelligent System can receive the public problem and offer a solution for it. The Intelligent System can be considered a system with a comprehensive solution and a decision-making authority that operates like an expert and provides details. The Intelligent System has a knowledge-based, transparent, technological, computational, processing, research, and networked structure.

Based on the research findings, it was determined that by creating an AI-based Intelligent System structure, the problems identified for traditional and non-technical structures can be limited. In the performance of a machine or system, many human limitations are eliminated, and the performance of the Intelligent System is superior to human performance; thus, high functional capacity, high speed, extensive calculations with high accuracy and quality, lack of fatigue, and unrestricted performance of the machine or system compared to humans are characteristics of the Intelligent System.

The research results show that the use of AI and the delegation of tasks requiring human intelligence from expert and specialist individuals to the Intelligent System is possible, and the Intelligent System performs the tasks delegated by the intelligent human like or beyond, faster, and with higher quality than the human themselves. Therefore, the Intelligent System can replace the policymaker and policymaking, take over many of the duties of representatives and policymakers, and perform them much better, because the policymaker changes their decisions based on expediency and interests, but the AI or Intelligent System states the pure truth and does not change its decisions based on personal interest and expediency.

Other characteristics and capabilities of the Intelligent System include easy access for the public and the sovereignty to this platform or system, and the Intelligent System acts as a communication bridge between the public and the sovereignty. The Intelligent System can specify the duty of the sovereignty to the people and the duty of the people to the sovereignty and act as an auxiliary circuit between the people and the sovereignty. The transfer of public problems from the people and the sovereignty to the Intelligent System, and the ease of transfer of the public problem to the Intelligent System by the people, leads to the identification and transfer of real public problems due to the people's direct connection with the real public problem and easy access to the Intelligent System. The direct participation of the public in transferring the public problem to the Intelligent System and the superiority of direct participation over representation is evident. Political recommendation and pressure are not accepted in the Intelligent System, and accountability is high in the Intelligent System.

Public problems are identified by the people or the sovereignty and transferred to the Intelligent System. The public problems identified and transferred to the system by the people or the sovereignty are collected and recorded in the Intelligent System. The Intelligent System summarizes, processes, or analyzes the public problems transferred by the people or the sovereignty using AI capabilities. The definition and clarification of public problems and the non-acceptance of non-public problems are performed in the Intelligent System. In the Intelligent System, definition and delineation exist for all three formulation processes. The definition and delineation between all three stages of the policy formulation process in the Intelligent System are designed and performed by experts.

The research results indicate that by adding AI capabilities to the processes of public problem identification, agenda setting, and solution offering or policy formation in the Intelligent System, these processes are performed intelligently. Therefore, some or all of the policymakers' duties can be delegated to the AI-based Intelligent System. The knowledge required by the



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Intelligent System to perform these processes intelligently can be supplied by the capabilities of the Expert System and the Learning System. The Intelligent System can have a combination of the Expert System and the Learning System, enabling it to simultaneously benefit from the capabilities of both. The Intelligent System utilizes a database and a knowledge base for the Learning System and the Expert System.

## Authors' Contributions

All authors equally contributed to this study.

## Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

## Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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## Declaration of Interest

The authors report no conflict of interest.

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## Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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