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Artificial Intelligence Supported Crisis Management in Corporate Processes

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Abstract

Artificial intelligence-supported crisis management in corporate processes can provide significant advantages in the school environment. Crises can occur for various reasons such as natural disasters, security threats, health problems or technical glitches, and artificial intelligence can make the management of such crises faster, more effective and organized. Thanks to big data analysis, possible risks can be identified and preventive measures can be taken in line with the data obtained from past events. Thanks to real-time data analysis and automatic response systems, the most accurate action plan can be created in the event of a crisis. In this study, the role and importance of artificial intelligence in schools during crisis and the contributions of artificial intelligence in post-crisis evaluation processes are discussed. Artificial intelligence-supported crisis management is thought to have a great potential in terms of minimizing the impact of crises in the school environment, making fast and accurate decisions, and optimizing post-crisis recovery processes. In this context, it is recommended that educational institutions integrate artificial intelligence into their crisis management strategies.

INTRODUCTION

Crisis management in the school environment is critical to ensure the safety of students, teachers and other employees, to maintain the continuity of education and to minimize the negative effects of crises. Crisis management should be actively planned and carried out not only during the crisis, but also

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before and after the crisis. A well-crafted crisis management plan ensures the sustainability of education while ensuring the safety of students and staff.

Today, artificial intelligence (AI) is integrated into crisis management processes, enabling these processes to be carried out more effectively and quickly. AI contributes to school crisis management in areas such as big data analysis, early warning systems, automated communication management and resource optimization, helping to identify risks in advance and perform the most appropriate response in the event of a crisis. Thus, educational institutions can be better prepared for crises, while the safety of students and employees can be maximized.

In addition, educators can leverage AI-driven platforms to create personalized learning experiences that adapt to student needs. AI tools encourage student engagement and community engagement by providing effective communication and support through chatbots and virtual lectures (Olabiyi & Henry, 2024).

Traditional Crisis Management Methods and Their Limitations

Traditional crisis management methods are approaches that have been used for many years and are based on specific procedures. However, in today's rapidly changing and complex crisis environments, these methods have some limitations. Schools implement crisis management processes to ensure the safety of students and staff, maintain continuity of education, and respond quickly to crises.

As Kahn et al. (2013) point out, traditional crisis management models often adopt an approach based on engineering competencies. In this approach, the following steps are usually followed in crisis situations:

1. **Identifying Problems**: In the event of a crisis, the problems that arise are identified. This is the identification of problems related to input (data, resources, manpower, etc.) and operations (business processes, organizational structures).

2. **Solution Generation**: Steps are taken to find solutions to the identified problems. These steps involve systematic and methodical approaches, often coming from engineering disciplines. For example, standard solutions such as how things should be done and what procedures to apply in a crisis can be suggested.

However, Kahn and his colleagues note that this traditional model can result in "ineffective outputs." That is, this approach often fails to provide a deep understanding of crises and to manage them effectively in all aspects. This is because these models mostly focus on solving technical, procedural,

and operational problems. This can often lead to addressing crises on a superficial level and only acting towards an immediate solution. However, crisis management is not limited to technical solutions; Broader organizational, psychological, and strategic factors also need to be considered.

Over time, crisis management research has expanded beyond this traditional engineering approach. More modern crisis management approaches address not only technical and operational aspects, but also factors such as organizational culture, leadership style, psychological states of employees, communication strategies, etc. This perspective recognizes that crises are not only a matter of problem solving, but also that the human factor, organizational structures, social dynamics and strategic decisions are also effective.

However, in many crisis management literatures, it is possible to see that the "solve the problem" approach is dominant. This approach focuses specifically on specific elements of leadership and leadership styles within the organization. Too often, crisis leaders do not adequately address the cultural and human dimensions of the organization, while preferring more technical and direct ways to solve problems. As a result, it is emphasized that this model may have limited effects and that more integrated and multifaceted crisis management approaches should be adopted.

Traditional Crisis Management Methods

1. **Contingency Plans**

   Predetermined action plans are created against crises such as fire, earthquake, flood and violent incidents.

   Specific procedures are defined for the school administration, teachers and students.

2. **Regular Drills and Trainings**

   Students and staff are regularly drilled for crises such as fires, earthquakes and attacks.

   Information is provided in order not to panic and to act correctly in the event of a crisis.

3. **Use of Communication Channels**

   Traditional methods such as telephone, e-mail, and school announcement systems are used for communication between parents, students, and school staff.

   In times of crisis, announcements are usually made in written or verbal form.

4. **Guidance and Psychological Support Services**

   Psychological support is provided through the guidance service for students and staff after the crisis.

Special counseling processes are carried out for individuals who have experienced trauma.

5. **Safety Precautions**

Security guards can be present at the school entrances.
Physical security measures such as camera systems and alarm systems are taken.

Limitations of Traditional Methods

1. **Lack of Flexibility**

Since emergency plans are usually prepared according to predetermined scenarios, they may be insufficient in sudden and unexpected crises.
Today, updated plans for crises such as cyberbullying, cyberattacks or epidemics may not be sufficiently developed.

2. **Slow and Hierarchical Decision-Making Processes**

Adherence to the approval mechanisms of the school administration in a crisis can delay rapid intervention.
If students, teachers, and parents are not actively involved in the crisis management process, there may be a lack of coordination.

3. **Communication Deficiencies**

Traditional announcement and announcement systems may be inadequate in a crisis.
Due to the incomplete use of digital platforms (social media, mobile applications), parents and students may not receive timely information about the crisis.

4. **Limited Use of Technology**

Traditional methods do not make enough use of technologies such as AI-powered forecasting systems, instant location tracking, and big data analytics, which can help better manage crises.
Specific strategies may not have been developed for cyber security threats or crises in online course platforms.

5. **Inadequacy of Psychological Support Systems**

Psychological support provided to students and teachers after a crisis may not always be sufficient.
Especially in traumatic crises such as violent incidents or natural disasters, the need for individual psychological support can be overlooked.

Today, in order for crisis management to be more effective, schools need to integrate traditional methods with modern approaches.

The Contribution of Artificial Intelligence (AI) to Crisis Management in Educational Institutions

Artificial intelligence (AI) can make significant contributions to crisis management in educational institutions. We can examine these contributions under headings such as early warning systems, rapid decision-making in times of crisis, communication management, resource optimization and psychosocial support:

1. Early Warning Systems and Risk Analysis

AI-based systems can provide early warning by anticipating potential crises in educational institutions (natural disasters, cyber-attacks, health crises, security threats, etc.). It can detect potential risks by using analysis based on sensors, camera images and historical data.

2. Rapid Decision Making and Response in Crisis

AI-supported decision support systems offer instant data analysis to managers in the event of a crisis and recommend the most effective response plans. For example:

When a fire breaks out in a school, AI can analyze data from motion sensors and security cameras inside the building to determine the safest evacuation routes.

In pandemic situations such as COVID-19, AI can optimize classroom arrangements by analyzing transmission risks.

3. Communication and Information Management

AI-based chatbots and automated notification systems can provide accurate and fast information flow to students, teachers, and parents in times of crisis.

Example: During an earthquake, automatic SMS or e-mail notifications can be sent about the safety of students and staff.

Social Media Analytics: AI can prevent the spread of disinformation by detecting and correcting misinformation about the crisis on social media.

4. Resource Optimization and Logistics Support

In times of crisis, educational institutions need to use their resources efficiently. AI can analyze the school's available resources and ensure optimal distribution.

Example: AI can plan the most appropriate transportation routes or offer distance learning solutions to students who have difficulty accessing school after a natural disaster.

5. Psychosocial Support and Guidance

After the crisis, students and educators may be psychologically challenged. AI-powered counseling systems can provide customized guidance and support based on individual needs.

Example: After a traumatic event in a school, AI-powered platforms can analyze students' emotional states and recommend early intervention.

Types of Crises Encountered in the School Environment

In a study, Kalogiannidis et al. (2024) investigated how artificial intelligence (AI)-powered components improve risk assessment and support business continuity. Elements such as natural language processing (NLP), AI-powered data analytics, predictive maintenance, and AI integration in incident response planning were discussed, and the resilience of businesses against natural disasters, cyberattacks, and economic fluctuations was examined.

The research was conducted using a cross-sectional design and quantitative method with a sample of 360 technologists. The results reveal that AI technologies have a major impact on business continuity and predictive risk assessment. In particular, AI has been found to significantly increase the accuracy and speed of risk assessment processes.

Tyagi and Bhushan (2023 as cited in Kalogiannidis et al. (2024) state that predictive risk assessment for business continuity has advanced significantly thanks to AI-powered data analytics.

In their study, Lie Eide et al. (2025) examined the limitations of traditional methods in crisis management training and how technologies such as artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) can bridge this gap. While traditional approaches face challenges such as high cost, lack of realism, and infrequent implementation, new technologies offer more scalable, cost-effective, and immersive educational environments.

The study analyzes the difference between scientifically proven crisis management training methods and practices in organizations and discusses how new technologies can make training processes more flexible, frequent, and effective.

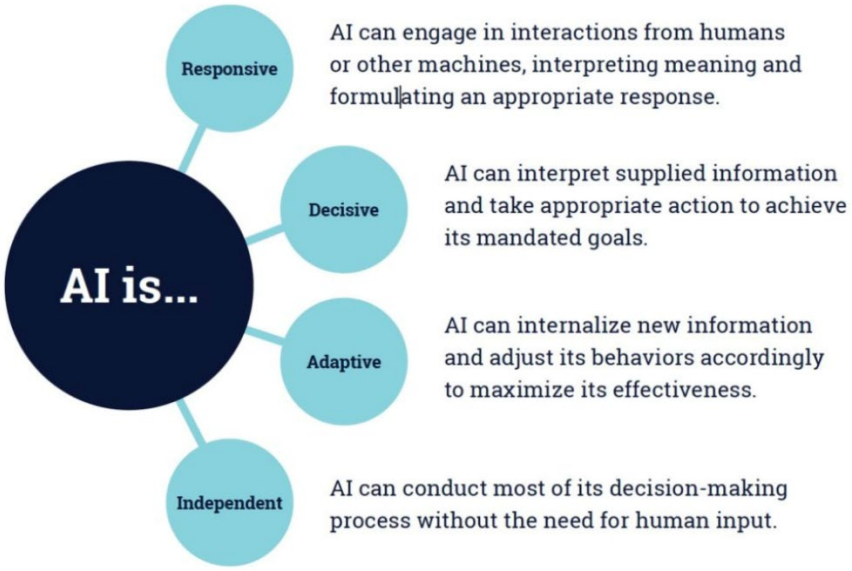

Figure 1. What AI can do in education Image

Source: Klutka et al. (2018)

Figure 1 is an infographic that describes the four key characteristics of artificial intelligence (AI). The center of the figure is "AI is..." (Artificial Intelligence...) The statements, which are divided into four branches, highlight the different capabilities of AI:

Responsive: AI can respond to interactions from humans or other machines, interpret meaning, and generate an appropriate response.

Decisive: By analyzing the information provided, the AI can take appropriate action to achieve the set goals.

Adaptive: Internalize new information and adjust their behavior to be most effective.

Independent: Can handle most decision-making processes without human input.

This figure emphasizes that AI can function as a flexible, learning, and decision-making system. We can think about how these features add value, especially in areas such as crisis management, business continuity and predictive risk assessment.

Table 1. Management Strategies for Types of Crises in the School Environment

Type of Crisis	Management Strategies
Natural Disasters (Earthquake, Flood, Fire, Storm)	Emergency evacuation plans, disaster drills, safe building infrastructure
Health Crises (Pandemic, Infectious Diseases)	Hygiene measures, distance education plans, cooperation with health authorities
Violence and Security Threats (Violence at School, Threats)	Security cameras, security guards, communication strategies in times of crisis
Technological Crises (Cyber Attacks, Power Outages)	Redundant systems, cyber security training, alternative communication channels
Psychosocial Crises (Bullying, Suicide, Traumatic Events)	Guidance services, psychological support, awareness trainings

Table 1 shows that crises require different strategies according to their nature, and each plays different roles in the preventive, preparedness, response and recovery phases. New technologies such as artificial intelligence and virtual reality can enable these strategies to be implemented more effectively.

Table 2. Advantages and Challenges of AI-Powered Crisis Management

Advantages	Challenges
Rapid detection and early intervention: AI enables the early detection of crises through sensors, security cameras, and data analytics, allowing immediate intervention.	Data privacy and ethical concerns: AI systems processing student and staff data raise issues related to data security and ethics.
Reduction of human errors: AI minimizes delays and mistakes that occur in manual processes.	Protection of student privacy: The use of security cameras, facial recognition systems, and data tracking tools in schools may raise concerns about student privacy.
More efficient use of resources: AI helps distribute available resources (shelter, healthcare, transportation) in the most effective way during a crisis.	Over-reliance on technology and system failures: Malfunctions or incorrect decisions made by AI-based systems can cause disruptions in crisis management.

Prevention of crises through early warning systems: AI can predict and send alerts for crises such as earthquakes, fires, and cyber-attacks.	Possibility of inaccurate predictions: AI systems trained on incomplete or incorrect data may make faulty crisis predictions and generate false alarms.
Real-time decision support: AI provides school administrators with the best action plan during a crisis, enabling faster and more informed decision-making.	Cost and infrastructure requirements: The implementation and maintenance of AI systems can be costly, and schools may need upgraded infrastructure to support these technologies.
Automated communication management: AI facilitates instant communication with students, teachers, and parents, ensuring efficient information flow during a crisis.	Lack of emotional and human factors: AI may not fully understand students' psychological needs during a crisis and may be inadequate in providing emotional support.
Remote learning and continuity of education during crises: AI offers solutions for uninterrupted education during crises such as pandemics or natural disasters.	The necessity of maintaining human involvement: Despite advanced AI-supported systems, eliminating human decision-making in crisis management entirely can be risky.
Psychosocial support services: AI-powered counseling systems can support students and teachers' mental well-being after a crisis.	Resistance and acceptance process: School administrations, teachers, and parents may resist AI implementation in crisis management or distrust the system.

While AI enhances crisis management by making processes more effective and efficient, it also introduces challenges that need to be carefully considered. A successful crisis management strategy should integrate AI with human decision-making, ensuring that ethical, technical, and economic challenges are properly addressed.

Result

The integration of artificial intelligence into crisis management increases security in educational institutions and enables crisis processes to be managed more effectively. Thanks to artificial intelligence-based systems, it becomes possible to predict risks before the crisis, to make fast and accurate decisions in the event of a crisis, and to carry out an effective recovery process after the crisis. AI's ability to generate adaptive and scalable scenarios makes it an invaluable tool for overcoming resource constraints while maintaining high-quality education (Lalonde & Roux-Dufort, 2013).

While traditional crisis management methods are generally based on specific scenarios, artificial intelligence systems can determine the most appropriate response strategies with big data analysis, instant information from sensors, and past crisis data. Artificial intelligence plays an important role, especially in the fields of early warning systems, automatic communication mechanisms, resource management and psychosocial support. In this way, the impact of crises on the sustainability of education is minimized and the safety of students, teachers and school staff is ensured.

However, some important aspects need to be taken into account to ensure the effective use of AI in crisis management. First of all, data privacy and ethical issues should be taken into consideration, and the reliability of these systems should be increased by protecting the personal information of students and employees. In addition, excessive reliance on AI's decision-making mechanisms can run the risk of ignoring the human factor. Therefore, AI-supported crisis management strategies should be carried out in a balanced manner with the human factor.

As a result, the use of artificial intelligence technologies in crisis management by educational institutions makes crisis processes more predictable, manageable and efficient. In the future, the widespread use of crisis management strategies supported by artificial intelligence will be an important step that will increase security and sustainability in education systems. By integrating artificial intelligence into crisis management processes, educational institutions should become more prepared for crises and use these technologies effectively.

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