The Role of Artificial Intelligence in Agile Organization Management

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Abstract:

**Purpose:** The article aims to explore the role that artificial intelligence (AI) plays in agile organizational management. It focuses on how AI can make companies more agile, innovative, and adaptable, allowing them to better respond to rapidly changing market conditions.

**Design/Methodology/Approach:** The study is based on an analysis of the literature on the subject and empirical research among students from three Polish universities. It uses a methodology that is at the intersection of qualitative and quantitative research, which allows for a deeper understanding of the impact of AI on organizations.

**Findings:** Research shows that artificial intelligence has a significant impact on decision-making processes, streamlining and accelerating employee adaptation to new tasks and improving the quality and efficiency of reports and analyses. Respondents saw the benefits of using AI, such as better understanding of material, faster preparation of reports, and support in creating abbreviations and summaries of long texts.

**Practical Implications:** The practical application of artificial intelligence in agile management of organizations can significantly contribute to increasing their competitiveness and innovation. Organizations should focus on integrating AI systems that are capable of translating complex issues, automating processes, and providing innovative solutions, which can support the development of employee competencies and improve the quality of intellectual work.

**Originality/Value:** The article makes an important contribution to the literature on agile management, focusing on the role of artificial intelligence. Its originality lies in the combination of theoretical reflections with the results of empirical research, which allows for a better understanding of how modern technologies can affect the future of managing organizations in a dynamically changing environment.

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1. Introduction

In the era of digitalization, dynamic market changes and the growing importance of technology, organizations around the world face the challenge of constantly adapting to new realities. This adaptation is not just a matter of choice, but a necessity to survive and thrive in an increasingly competitive environment (Chen and Li, 2021).

A key element that comes up in this discussion is the role of artificial intelligence (AI) in agile organization management. This paper aims to explore how AI affects organizational agility, making companies more flexible, innovative, and willing to respond quickly to change (Cegarra-Navarro, Sánchez-García, Marco-Lajara, and García-Pérez, 2021).

Agile management, although not a new concept, has gained prominence in recent years as a key strategy for companies seeking to increase their responsiveness and adaptability. The implementation of AI in business processes opens up new possibilities for organizations, enabling them to automate tasks, optimize decisions, and personalize customer experiences.

However, the use of AI to support organizational agility also brings challenges, such as the need for continuous employee education and adaptation, change management, and the ethical aspects of using technology (Chen and Li, 2021).

In the context of the growing role of technology in management, studying the impact of AI on organizational agility becomes essential. This article, through the analysis of the literature on the subject and the results of empirical research, aims not only to understand the role of AI in agile management, but also to identify potential benefits, challenges and directions of development for organizations striving to achieve greater agility. As a result, it will be possible to better use the potential of artificial intelligence to shape the future of organizations in a changing world.

2. Literature Review

2.1 The Essence and Determinants of Agile Organization Management

Agile organizational management is characterized by the ability to quickly adapt to a changing business environment, respond effectively to new challenges (Bessant,
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Brown, Francis, Meredith, and Kaplinsky, 1999), and effectively take advantage of emerging opportunities. The essence of this approach is not only flexibility and dynamism in decision-making, but also the involvement of all members of the organization in the process of continuous learning and innovation. Determinants of agile management can be identified in several key areas (Almahamid, Awwad, and Adams, 2010).

The first is an organizational culture that promotes openness, collaboration, and knowledge sharing (Meredith and Francis, 2000). It is an environment where employees are encouraged to experiment and share ideas, and mistakes are seen as learning opportunities (Chen and Li, 2021).

The second element is structural flexibility, which allows the organization to quickly adapt to new conditions by modifying processes, project teams, or project structures depending on current needs and goals (Overby, Bharadwaj, and Sambamurthy, 2006).

The third determinant is customer focus and the ability to quickly adapt products and services to changing market requirements and preferences (Anderson and Wilson, 2017). This approach is based on the continuous collection and analysis of customer feedback, which allows for iterative improvement of the offer (Goldman, Nagel, and Preiss, 1995).

The fourth aspect is the use of advanced technologies, including information systems, artificial intelligence and automation, which support agile working methods and enable effective management of projects, processes and data (McNamee, Schoch, Oelschlaeger, and Huskey, 2012).

Finally, an essential element of agile management is leadership focused on strengthening trust, delegating authority, and fostering the autonomy of teams (Cappelli and Tavis, 2018). Such leaders promote a culture of openness, accept uncertainty as part of the decision-making process, and encourage innovation and proactive problem-solving (Narasimhan, Talluri, and Mahapatra, 2006).

Agile organizational management is characterized by an integrated approach that combines people, processes, and technologies to ensure that the organization has the ability to dynamically grow and compete effectively in a rapidly changing business environment (He and Harris, 2021). Key determinants of this management model include a collaborative organizational culture, structural flexibility, customer orientation, advanced use of technology, and leadership that fosters innovation and self-reliance of teams (Bray et al., 2019; Kadlubek et al., 2022).

An additional, important element of agile management is the development of employees’ competencies in the field of agile work and project management. Investing in a team’s education and skill development not only increases an
organization's ability to effectively implement agile methodologies, but also builds a culture of continuous improvement and adaptation (Leberecht, 2016). It is important that employees have not only the technical skills necessary to perform their tasks, but also soft skills (Kidd, 1994), such as teamwork, communication, and conflict management, which are key to functioning efficiently in a fast-paced environment (Martucci, de Felice, and Schirone, 2012).

Equally important in the context of agile management is the involvement and participation of the customer in the value creation process. Agile involves working closely with the client at every stage of the project, from defining requirements to testing and deploying solutions (Sahopta, 2012).

Such synergy makes it possible to identify and meet market needs faster, thus increasing customer satisfaction and the value of the products and services provided (Raišienė, Bilan, Smalskys, and Gečienė, 2019).

The implementation of agile practices also requires continuous monitoring and evaluation of progress (Teece, 2007), which is made possible by methodologies such as Scrum or Kanban. Regular project reviews, retrospectives, and iteration planning are fundamental to maintaining the pace of work and continuously improving processes (Bondos, 2014). As a result, agile management is characterized not only by the ability to adapt, but also by the ability to learn on the fly and optimize activities in real time (Stverkova and Pohludka, 2018).

To sum up, extending the agile management perspective to include employee competence development, customer engagement, and continuous monitoring of progress and process adaptation enriches and complements the previously mentioned determinants (Brown and Jones, 2018). This allows us to create a holistic approach to management that is able to effectively respond to the changing conditions and challenges of the modern business world (Velinov et al., 2023).

2.2 Artificial Intelligence and Agile Organization Management

Contemporary organization management increasingly takes into account the use of modern technologies, including artificial intelligence (AI), as a key element influencing the increase of its agile character.

It is observed that AI has a significant impact on decision-making processes, streamlining and accelerating the mastery of material by employees, which is possible thanks to the ability of systems to explain complex issues and make them easier to understand (Kumkale, 2022; Tyagi et al., 2023).

Such AI functionality is particularly valuable in a fast-paced business environment, where the speed of assimilation and adaptation of new knowledge can determine an organization's success (Fosso Wamba, 2022).
In addition, AI significantly affects the quality of reports and analyses, offering tools for their precise preparation. By automating and optimizing data collection and analysis processes, organizations can achieve better results while reducing the likelihood of errors. This, in turn, translates into an increase in the efficiency and effectiveness of project and task management (Kurnia and Chien, 2020).

In the context of identifying and correcting errors, AI supports the process of continuous improvement and quality assurance of work. These systems are able to catch inaccuracies and suggest corrections, which is invaluable when creating documents and studies that require high precision. This allows teams to focus on the more strategic aspects of their work, confident that detailed tasks are being completed with accuracy (Sanchez and Naga, 2001).

An important aspect of the use of AI is also its ability to stimulate creativity and innovation by providing interesting solutions and inspiration. When employees are confronted with problems that require innovative approaches, AI can offer alternative solutions, helping to accelerate the creative process and project delivery (Cegarra-Navarro, Sánchez-García, Marco-Lajara, and García-Pérez, 2021).

Artificial intelligence also plays a key role in the education and development of employees' competences, offering tools to create personalized tests and learning materials, which makes it easier to prepare for assignments and credits. In addition, AI's ability to develop abbreviations and summaries of long texts allows for more effective knowledge management within an organization, allowing employees to absorb information faster (Skyrius and Valentukevi, 2021).

In the context of agile management, it is also crucial to use AI to create compilations of existing texts, which makes it easier to collect and synthesize knowledge from various sources. This approach supports learning and innovation processes in the organization, enabling rapid adaptation to changing market requirements (Todorovich, 2020).

To sum up, the role of artificial intelligence in agile organization management is multidimensional and includes improving decision-making processes, improving the quality of work, stimulating innovation, supporting the development of competences and effective knowledge management.

3. Research Methods and Materials

3.1 Methods

In January 2024, a scientific study was conducted to determine the role of artificial intelligence in agile organization management. The research sample consisted of 956 students from three Polish universities. In the course of the research, sociodemographic data of respondents were obtained, diversified in terms of the
level of education, gender, age, type of studies and professional activity. The
dominant level of education among the respondents is a bachelor's or engineer's
degree, covering 83.4% of the population, while a master's degree is held by 16.6% of respondents.

The gender distribution in the study group shows a slight predominance of women
(54.8%) over men (45.2%). The largest age group is 21-25 years old, accounting for
almost half of the population (46.9%), while the least numerous is the group aged
26-30 (8.9%). Respondents under the age of 20 account for 28.1%, the 31-35 age
group is 6.7%, and those over 35 are 9.4% of the respondents.

As far as the type of studies is concerned, the majority of respondents attend part-
time studies (61.1%), while full-time studies are chosen by 38.9% of respondents. In
terms of professional activity, the largest percentage are full-time employees
(37.6%), and 31.7% are employed under a contract of mandate or specific work.

The unemployed constituted 21.4% of the respondents. A small percentage of respondents are entrepreneurs, of which 6.5% run their own business and only 0.2% manage a farm. The group combining full-time work with self-employment accounts for 2.6% of respondents.

3.2 Results

In the course of the research, an attempt was made to determine the role of artificial intelligence in the process of agile management of an organization (Table 1).

<table>
<thead>
<tr>
<th></th>
<th>Definitely</th>
<th>Rather</th>
<th>I don't have an opinion</th>
<th>Rather</th>
<th>Definitely</th>
</tr>
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<tbody>
<tr>
<td>explains issues that I don't understand, thanks to which he masters the material better and faster (1)</td>
<td>64</td>
<td>118</td>
<td>126</td>
<td>400</td>
<td>248</td>
</tr>
<tr>
<td>helps me to prepare reports for counting (2)</td>
<td>147</td>
<td>207</td>
<td>156</td>
<td>316</td>
<td>130</td>
</tr>
<tr>
<td>points out and corrects errors, thanks to which my studies become better (3)</td>
<td>103</td>
<td>174</td>
<td>153</td>
<td>366</td>
<td>160</td>
</tr>
<tr>
<td>provides interesting solutions when I run out of ideas (4)</td>
<td>57</td>
<td>114</td>
<td>109</td>
<td>422</td>
<td>254</td>
</tr>
<tr>
<td>creates questions or tests so that they are better prepared for exams (5)</td>
<td>129</td>
<td>206</td>
<td>215</td>
<td>273</td>
<td>133</td>
</tr>
<tr>
<td>I prepare abbreviations and summaries of long texts for me (6)</td>
<td>128</td>
<td>175</td>
<td>130</td>
<td>324</td>
<td>199</td>
</tr>
<tr>
<td>creates compilations of existing texts (7)</td>
<td>104</td>
<td>173</td>
<td>229</td>
<td>314</td>
<td>136</td>
</tr>
</tbody>
</table>

Source: Own study.
In a study evaluating the role of AI in organizational management, respondents were asked to rate various AI features. In the context of learning and work support, 64 people expressed strong dissatisfaction, and 118 people rather dissatisfied when AI explained issues that were difficult to understand.

However, 400 people tended to agree with this statement, and 248 strongly supported it. In the case of assistance in the preparation of reports, 147 respondents were strongly opposed, 207 tended not to see such a role for AI, 316 rather saw AI help, and 130 strongly recognized such a function.

When it comes to AI pointing out and correcting errors to improve the quality of studies, 103 respondents expressed strong dissatisfaction and 174 were rather dissatisfied, while 366 rather positively and 160 strongly positive. When it comes to providing interesting solutions, when respondents lacked ideas, 57 expressed strong dissatisfaction, 114 tended not to see the role of AI in it. However, 422 tended to see such a helpful role for AI, and 254 was definitely in favor of it.

Creating questions or tests for better preparation for exams by AI was met with 129 votes strongly against and 206 rather opposed. Meanwhile, 273 respondents rather viewed it positively, and 133 strongly supported this role for AI. In the category of AI developing abbreviations and summaries of long texts, 128 participants were strongly against it and 175 were unlikely to see the role of AI in doing so, with 324 rather finding it helpful and 199 definitely seeing it as beneficial.

The last AI feature was about compiling existing texts, where 104 people expressed strong dissatisfaction, and 173 rather did not see the role of AI in it. On the other hand, 314 people rather saw a benefit in it, and 136 definitely confirmed the help of AI in this function.

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<tbody>
<tr>
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<td>0.99</td>
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<tr>
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<td>4</td>
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<td>6</td>
<td>0.95</td>
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The analysis of the correlation Table 2 allows us to observe the relationships between the various aspects in which the respondents assessed the impact of AI. A high correlation between the first and fourth statements (0.99) suggests a strong correlation between the perception of AI as a tool for explaining issues and providing interesting solutions. Similarly, the high correlation coefficient between the third and sixth statements (0.95) indicates that respondents who found AI helpful
in correcting errors also perceive it as an effective tool in developing abbreviations and summaries of long texts.

The mean correlation values between the second and fifth statements (0.86) may indicate a moderate relationship between the AI assessment in the context of helping to prepare reports and the creation of questions or tests to prepare for assessments. On the other hand, lower correlation values between the first and fifth statements (0.58) suggest that the perception of AI as a learning facilitator is not necessarily related to its effectiveness in creating educational tools such as questions and tests.

Correlation values between individual statements reflect the degree to which positive or negative evaluations of one AI function can be predicted based on evaluations of other AI functions. The results indicate a complex but important pattern in which respondents experience and evaluate a variety of AI applications in the context of organizational management.

4. Discussion

Based on the analysis of correlations between various aspects of the use of artificial intelligence in organization management, several conclusions can be drawn. Firstly, there is a very strong correlation between the assessment of artificial intelligence as a tool for explaining incomprehensible issues and providing interesting solutions.

This indicates that respondents who perceive AI as effective in one of these areas are likely to feel the same way about the other area. This suggests that a general understanding and acceptance of AI in one function may translate into a positive perception of its other applications.

Secondly, the responses indicate that AI is seen as a useful tool for correcting errors and developing material abbreviations. The high correlation between these tasks may mean that AI is recognized as a reliable support in improving the quality of intellectual work.

The third observation concerns a moderate correlation between the use of AI in the preparation of reports and the creation of questions or tests. This can be interpreted as a sign that AI is useful in tasks that require analysis and synthesis of information, but its effectiveness can be assessed differently depending on the specific application and user expectations.

Finally, lower correlation values in certain areas, such as the development of educational tools, indicate that assessments of the effectiveness of AI in this role are less predictable. This may indicate the need for further research and development of AI technology in an educational context to better understand its potential applications and effectiveness.
These conclusions highlight the potential of artificial intelligence as a versatile tool to support organizational management, but also highlight the need to further investigate its role in various contexts of intellectual and educational work. They suggest that the use of AI can be more valuable when users are aware of its capabilities and limitations, and when it is appropriately tailored to the specific tasks and needs of the organization.

5. Conclusions

Empirical research and the analysis of the literature on the subject allow us to draw several conclusions. Firstly, artificial intelligence is perceived by users as a significant support in the process of learning and intellectual work, especially in explaining complex issues and providing alternative solutions to problems. This perception is supported by high correlation values, which may indicate the maturity of AI technology in these areas.

Second, although assessments of AI's role in reporting aid are more fragmented, moderate correlation values with other functions suggest that as AI evolves and adapts to specific tasks, it may become a more valuable tool in this field.

Thirdly, the high correlation between detecting and correcting errors and developing abbreviations and summaries of long texts indicates a strong AI background in editorial processes and information synthesis. This may suggest that the effective use of AI in one editorial task can translate into a positive experience in other related tasks.

Finally, lower correlation values for the development of learning tools such as questions and tests may indicate the need for a more personalized and user-centered approach to AI implementation. Future research and development should focus on understanding the specific needs of users and adapting AI tools to increase their efficiency and acceptance.

In the light of these conclusions, the role of artificial intelligence in agile organization management seems to be multidimensional and contextual, depending on the specificity of tasks and users' openness to technologies. The effectiveness of AI as a tool supporting intellectual and educational work is potentially high, but requires further research to optimize and adapt AI tools to individual needs and specific tasks in organizations.

Based on the research conducted and conclusions resulting from the role of artificial intelligence in organizational management, it is possible to propose several recommendations for companies that strive to use the potential of AI in their operations. First, companies should invest in the development and implementation of AI systems that are capable of explaining complex issues and providing innovative solutions. This will not only increase the efficiency of decision-making processes,
but also support the development of employees' competences through easier acquisition of knowledge.

Second, it is recommended that enterprises carefully analyze and adapt AI functions to specific organizational needs, especially in the preparation of reports and analysis. Personalisation of AI tools can contribute to better use of data and improve the quality of intellectual work.

Third, it is important for companies to promote the use of AI in editorial processes, such as detecting and correcting errors or developing summaries and summaries. Using AI to improve the quality of materials can not only save employees time, but also increase the credibility and professionalism of studies.

Another recommendation is to invest in the development of artificial intelligence to create personalized learning tools, such as questions and tests. The development of such tools can significantly contribute to better preparation of employees for professional challenges and increase the effectiveness of training processes.

Finally, companies should provide ongoing education and training to employees on the use and opportunities offered by AI. Being aware of the potential benefits and understanding how to best use these tools at work is crucial for effective AI integration in your organization.

In conclusion, the effective use of AI in managing an organization requires a strategic approach that includes investments in technology, adapting tools to specific needs, promoting their use in key areas of the business, and educating and training employees. The implementation of these recommendations can significantly contribute to increasing the competitiveness and innovation of enterprises.

6. Limitations

The limitations of the conducted research on the role of artificial intelligence in the management of an organization may include several key aspects. The first is a limited research sample, which may not reflect the full diversity of AI user experiences and perspectives across industries and types of organizations.

The second limitation relates to the scope of AI functions studied, which were selected based on available knowledge and technology, which may not take into account all potential applications of AI in management. The third limitation is the potential for measurement errors resulting from respondents' subjective interpretation of statements, which may affect the reliability and validity of the results.

Future research directions may include expanding the research sample to include participants from a variety of sectors and organizational levels to gain a more
comprehensive picture of the role of AI in organizational management. Another direction may be the exploration of new and previously unexplored AI functions that may have potential applications in management, including the development of predictive technologies and adaptive AI systems capable of responding to dynamically changing business conditions.

An important area of future research is also the analysis of the impact of AI integration on organizational culture and teamwork dynamics, especially in the context of increasing automation and digitization of work processes. Additionally, research may focus on identifying barriers and challenges in AI implementation, as well as developing strategies to mitigate potential risks related to ethics, privacy, and data security.

Ultimately, future research should also investigate the long-term effects of using AI in management, including the impact on an organization's productivity, innovation, and competitiveness. The development of research methodologies that allow for a detailed analysis and evaluation of the effectiveness of the use of AI in various aspects of organizational management will be crucial for understanding and maximizing the benefits of integrating AI technologies into business practice.

7. Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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