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How AI can increase resilience in small and medium-sized companies

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How AI can increase resilience in small and medium-sized companies

Abstract

The article examines how generative artificial intelligence (AI) can be integrated into the strategic management process to strengthen the resilience of small and medium-sized enterprises (SMEs). The strategic management process is divided into three phases: First, the collection and structuring of unstructured data from the macro- and microeconomic environment takes place. Here, AI provides support by efficiently collecting and clustering relevant information, enabling decision-makers to better assess current trends and developments. In the second phase, the evaluation of internal resources, AI helps to capture implicit knowledge within the company and systematically analyze it in order to uncover strengths and weaknesses. In the final phase of strategy development, AI combines internal and external data, generates new strategic approaches and thus supports the derivation of concrete fields of action. AI acts as a partner that significantly improves decision-making and strengthens the company's resilience through sound strategic planning.

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1 Introduction

Generative AI, its capabilities and the strategic use of the technology in companies have become an ongoing topic in management magazines. However, taking the right initiatives in this regard is challenging, considering the multitude of opportunities and threats that surround companies. Daily updates on technological opportunities, pressure from various social stakeholders to take responsibility for a more sustainable economy, or anticipating and reacting to the next international crisis are just some of the factors from a company's macroeconomic environment that, together with strategic measures from competitors within the industry, have an impact on the company (Hutzschenreuter & Harhoff, 2021). Small and medium-sized enterprises (SMEs) in particular often lack the expertise and capacity to deal strategically with such a complex environment, which demands more from decision-makers than a short-term market positioning strategy and a stable sales process based on their experience (Singh & Ramdeo, 2023).

The current gap

Previous articles already describe the approach of viewing AI as a self-acting, so-called “autosapient”, cooperation partner for humans. Autosapient is a word created by Heimans and Timms (2024), which is made up of the components “auto”, for acting autonomously, and “sapient”, for being in possession of knowledge (Heimans and Timms 2024, Bansal 2024). However, existing publications lack an approach to establishing AI within strategic management as an autosapient partner with the relevant expertise.

The solution

The current capabilities of AI offer a previously untapped opportunity for systematically dealing with the complexity of the business environment at the strategic level. Equipped with the expertise of strategic management, the technology can act as an autosapient partner to process unstructured data from the macro- and microeconomic environment, collect and evaluate the necessary internal information from the company and, on this basis, deliver new approaches for strategic positioning. Although the decision on the strategic direction and the associated initiatives remains with the decision-maker, the basis for this decision can be significantly improved using technology.

2 The role of systematic strategic management as a tool for increasing resilience

Over the years and given the rapidly changing business environment, resilience has become a fundamental characteristic for the success of any organization. Business resilience refers to “an organization's ability to absorb stress, recover critical functions, and thrive in changing circumstances” (Reeves & Whitaker, 2020).

Economic fluctuations, technological upheavals and competitive pressure are just some of the challenges that companies must face in order to remain competitive and therefore relevant in the long term. In order to adapt to such changes in the environment and be successful, organizations are forced to implement a systematic strategic management approach in which resilience is integrated as a pillar of the company's overall strategy and decision-making process, rather than viewing it as a separate entity or function (Denyer, 2017).

Specifically, to increase their resilience, companies need to establish a system that continuously assesses the macro and micro environment, such as technological trends, regulatory changes and new market entries. In this context, internal capabilities must also be assessed and optimized against current market realities, a core element of strategic management. Although the need for such a setup to increase resilience is by no means new, the pressure to establish it is increasing due to the growing volatility of the business environment. The problem that small and medium-sized companies in particular face is a lack of resources and skills to establish a system that continuously assesses the corporate structure and supports managers in dealing with it systematically and strategically in order to contribute to the company's resilience.

3 Process of strategic management

Strategic management is defined as follows: “The field of strategic management is concerned with the significant planned and emerging initiatives undertaken by managers on behalf of shareholders, including the use of resources to improve the performance of organizations in their external environment” (Lynch et al. 2024, p.8). The process of strategic management, as we see it, can be described as a systematic approach divided into three main phases that are continuously worked through. First, unstructured data from the macro and micro environment must be collected and transformed into structured data. In the second phase, the company's internal data must be evaluated and combined with the information obtained in the first phase. Finally, the results of the two previous phases must be systematically combined in order to define strategic fields of action in new and existing markets. Each phase includes well-known frameworks and methodologies, which we will review below at a conceptual level to lay the foundation for our approach to utilizing generative AI in each of these areas.

3.1 Assessing the environment as a basis for strategy

Robust strategic planning requires the assessment of data from the macro and micro environment. The sources of such data are almost infinite. Among the most commonly used are market reports, white papers, newsletters, magazines and economic indicators. To use these effectively, they need to be continuously transformed into well-structured and clustered information that decision-makers can act on. Proven methods for this are the PESTEL analysis and Porter's Five Forces analysis, which are briefly explained below.

PESTEL analysis: This method evaluates the macro environment of companies based on the following categories: political, economic, social, technological, environmental and legal, abbreviated as PESTEL. For each of these categories, the latest trends and changes are monitored

and assessed for their potential impact on a company's industry. The information for this analysis comes from a variety of sources, from publicly available media and statistics to proprietary sources (e.g. Song et al. 2017; Sandberg et al. 2016).

Porter's Five Forces: This framework analyzes the microenvironment of companies, in particular the markets in which a company operates, with a focus on the competitive situation. Five main forces are evaluated: the bargaining power of suppliers, the bargaining power of customers, rivalry between existing competitors, the threat of new market entrants and the threat of substitute products (Porter 1989). As with the PESTEL analysis, trends must be derived from various unstructured data sources and converted into actionable insights (Grundy 2006).

3.2 Assessing internal resources for strategy formation

There are a number of well-established resource-oriented methods and frameworks that focus on the assessment of an organization's capabilities rather than its environment. Below we take a brief look at the VRIO method as well as SWOT analysis, although the resource-oriented perspective is only a part of the latter (Barney, 1991).

VRIO method: The VRIO method evaluates a company's resources to determine whether they can serve as a basis for competitive advantage. After identifying the relevant resources, each is evaluated according to the following four criteria:

- I. Value: Does the resource increase efficiency or customer value?
- II. Rarity: Is the resource scarce?
- III. Imitability: Is it difficult for competitors to copy the resource?
- IV. Organization: Is the company structured in such a way that it can make optimal use of the resource? If a resource fulfills all four criteria, it offers a sustainable competitive advantage.

SWOT analysis: The SWOT analysis helps companies to evaluate their strategic position by first analyzing the following four aspects (Houben, Lenie, & Vanhoof, 1999):

- I. Opportunities: External factors that can be exploited.
- II. Threats: External challenges.
- III. Strengths: Internal advantages.
- IV. Weaknesses: Internal disadvantages

By analyzing these four elements, a company can develop strategies that leverage strengths, minimize weaknesses, take advantage of opportunities and defend against threats, which supports effective decision making. While opportunities and threats are input information from the first phase of the strategic management process, the aspect of combining internal and external perspectives of SWOT analysis is relevant in the third phase. However, the most important part of the SWOT analysis in this phase is the derivation of a company's strengths and weaknesses.

3.3 Deriving strategic fields of action and corresponding strategies

In order to lay the foundation for strategic initiatives, internal strengths and weaknesses must be identified and combined with the results of the external analysis to determine strategic fields of action and the corresponding initiatives. A common framework for this is the SWOT analysis and the Ansoff matrix.

SWOT analysis: This well-known framework has already been explained above, but is mentioned again as it combines internal strengths and weaknesses with external opportunities and threats to develop new approaches for the company to achieve market success.

Ansoff-Matrix: This method is used to identify new approaches to growth. Within a 2x2 matrix, growth strategies are divided into the following categories (Ansoff, 1957):

- Market penetration: Increasing the market share of existing products in existing markets.
- Market development: Introduction of existing products in new markets.
- Product development: Development of new products for existing markets.
- Diversification: Introduction of new products in new markets.

These methods systematically support managers in examining approaches for securing their market position and identifying new growth areas.

4 The challenge for small and medium-sized enterprises

For small and medium-sized enterprises (SMEs), implementing a structured and method-based strategic management process is a challenge. Compared to large companies, which are equipped with separate departments and correspondingly allocated resources, SMEs generally have significantly limited financial and human resources (Singh & Ramdeo, 2023).

A direct consequence for SMEs is a lack of knowledge and expertise in strategic management. For this reason, advanced and method-based strategic management, as described in the previous chapter, is rarely found. The management level of companies often consists of entrepreneurs and managers who have demonstrated outstanding expertise in their specialist area, but who have not been originally trained in the field of strategic management or have only received a few in-depth training courses in this area due to a lack of time. For this reason, there is only limited awareness, but above all the expertise to apply the methods and frameworks, and strategic fields of action are developed and processed based on experience (Wang, Walker, & Redmond, 2007).

Even if SMEs are aware of this situation, they often encounter obstacles in acquiring the necessary expertise. The number of specialists equipped with the relevant skills is limited and salary demands are high (Dey et al., 2022). Consultation with appropriate consultancies is also usually associated with considerable investments. Particularly in difficult economic situations, the cost pressure therefore outweighs the willingness to invest in a field that usually only achieves medium-term results on the company's success, but at the same time contributes significantly to the company's resilience (Zutshi et al., 2021). The complexity and speed of change of the business environment, which require continuous application of methods and frameworks, further accelerate the resource requirements and the resulting problem (Esmaeilzadeh, Ranjbar, & Jandaghi, 2024).

We believe that generative AI provides the basis for leveraging the benefits of strategic management methodologies and frameworks in small and medium-sized enterprises. The technology, while one of the biggest drivers of existing uncertainty, can thus provide the basis for increased resilience in small and medium-sized enterprises.

5 Multi-agent AI and the autosapient approach to mitigate technological risks and acceptance barriers

A common mistake we see time and time again is that AI solutions are developed with the goal of delivering a final “correct” solution and automating decision-making. The concept of “autosapient” AI, as described in the Harvard Business Review article “Leading in a World Where AI Wields Power of Its Own”, offers a different perspective on the goals of AI systems. Autosapient systems are designed to learn autonomously, continuously improve and interact with human actors. They are fundamentally different from conventional approaches that aim to deliver a final outcome. In these models, we see the opportunity to scale expertise into the decision-making process, providing an optimized foundation for human judgment (Agrawal, Gans & Goldfarb, 2018).

The four levels of AI models

To better understand the transformation of AI systems, it is necessary to consider the evolution from simple language models to complex multi-agent systems. Four levels of AI models can be distinguished, each of which correlates with increasing task complexity (Guo et al. 2024), (Parthasarathy et al. 2024):

- I. **Simple language models (LLM - Large Language Model):** These basic systems process and generate natural language. They are suitable for general information queries and simple decision-making processes. LLMs can analyze large amounts of text and provide simple answers, but their capabilities are limited to processing static information.
- II. **Specifically trained language models (LLM):** These models are tailored to specific tasks or domains and provide more detailed and context-aware insights based on industry- or company-specific data. They aim to optimize performance for a specific issue. They go beyond generic answers and are particularly valuable in areas that require specialized expertise.
- III. **AI agents:** An AI agent can autonomously perform complex, specialized tasks and interact with third-party systems via interfaces. It acts as an advanced decision-making assistant for a specific area of application.
- IV. **Multi-Agent-AI:** These advanced systems consist of several specialized agents that work together to perform highly complex tasks. Each agent contributes with its own expertise, resulting in more comprehensive and coordinated decision-making. Multi-agent AI systems are particularly well suited to support the expertise-based component of a decision, which significantly improves the quality and effectiveness of decision-making.

A major opportunity for multi-agent AI systems lies in the implementation of verification agents, which can mitigate the technological risk of hallucination - a phenomenon in which AI models produce inaccurate or misleading information (Sun et al., 2024). For the purposes of this article, we refer to them as gatekeeper agents. This problem is extremely important especially in critical decision-making processes where accuracy is of utmost importance. Gatekeepers act as filters within the multi-agent system, rigorously evaluating the quality of other AI agents' results before they are presented to the next user or integrated into broader decision-making processes. It is important to emphasize that the role of a gatekeeper can be performed by a dedicated AI agent or a human agent at any stage. An example of such an architecture is shown in Figure 1.

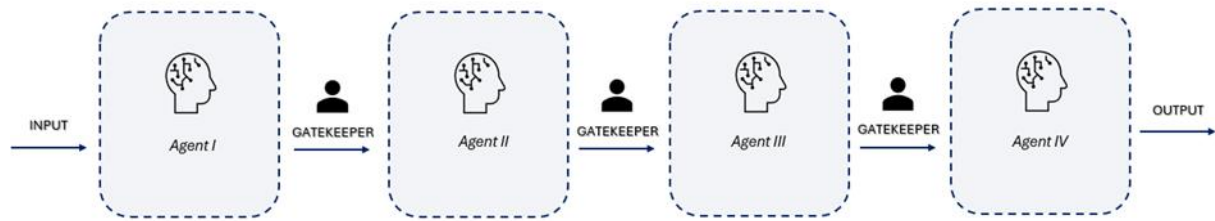


Figure 1: Multi-Agent System with Gatekeepers as Quality Check

The concept of gatekeeper agents is closely related to the autosapient approach, where AI systems are designed to continuously learn, improve and interact with human stakeholders in a meaningful way. By integrating gatekeeper agents, the AI system not only increases its reliability but also builds trust with users. These agents check the validity of generated content against established facts and known data to ensure that any result deemed unreliable or suspicious is flagged or corrected at each stage before it reaches the end user. This additional layer of verification is crucial to reduce the risk of hallucination and thus protect the integrity of the decision-making process (Sun et al., 2024).

In addition, gatekeeper agents lower the barriers to acceptance for the integration of AI into enterprise environments. One of the main concerns of organizations and individuals has been the unpredictability of AI outcomes. By implementing a mechanism that actively monitors and corrects potential errors, the system becomes more transparent and trustworthy. This transparency fosters greater user trust, as decision makers can view AI not just as a tool for generating ideas, but as a reliable partner for achieving accurate and informed results (Lin et al., 2024)

In combination with the autosapient approach, where the AI system continuously learns and improves, gatekeeper agents ensure that the process remains dynamic yet safe by performing regular quality checks. Together, these elements create a more resilient AI framework capable of delivering consistent and reliable results.

6 New opportunities through generative AI in strategic management

In the third sections, we have already discussed the systematic nature of strategic management, in particular the division into the three phases of the process. In the following, we will explain the specific added value of generative AI in each phase.

The first phase: collecting and structuring external data

The main challenge in this phase lies in the amount of unstructured data that is available on the corporate environment. Collecting and classifying this data into usable information for further processing is only possible for humans with a very high time investment. Generative AI can drastically optimize this process. With specific training in the identification and systematic processing of relevant data sources, structured information can be aggregated on a daily basis and evaluated according to its relevance for the company. Regardless of whether the information is processed as part of a multi-agent approach or by a human, the technology's ability to process human language can provide a significantly improved basis for strategic decisions or at least a tactical response to a change in the market environment. For example, a series of news feeds and newsletters can be processed, transferred into topic clusters and evaluated according to relevance. Only new topics are then forwarded for review.

The second phase: evaluation and integration of internal resources

This phase is characterized by the collection and evaluation of internal resources, especially those that form the basis of the current competitive advantage. This information is not always explicitly available, but is implicitly distributed in the knowledge of individual players. This is referred to as “sticky information”, i.e. internal knowledge that is often difficult to access or share because it is implicit or unwritten. Generative AI has a positive effect here on two levels. Firstly, natural language can be used to interact with the relevant people in the company in order to extract the relevant information. Secondly, the dialog can be geared towards specific criteria, such as those of the VRIO method, and thus reveal strengths and weaknesses that the decision-makers were previously not explicitly aware of. One example of this is the AI-based analysis of customer reviews, which can now be translated into explicit strengths of the company's own product that were not previously the subject of central, company-wide awareness (Popescu & Etzioni, 2007)

The third phase: Deriving strategic fields of action

After the first two phases have primarily laid the foundation for strategic decisions, the results are brought together in this phase and translated into concrete fields of action and initiatives. This phase traditionally relies heavily on human creativity and judgment and is certainly the area of strategic management that will continue to be most heavily influenced by human judgment in the future. However, the ability of generative AI to generate new content by recognizing patterns in trained data offers immediate added value here as food for thought for new combinations of internal resources and external opportunities (Magni, Park & Chao, 2024). Even after the identification of relevant fields of action, support can be provided in the derivation of concrete initiatives, the assessment of feasibility and the completion of the corresponding catalogs of measures. Specifically, new approaches to growth can be generated by applying the guiding principles of the Ansoff Matrix to internal resources and external framework conditions.

Overall, we consider generative AI to be a great opportunity in the field of strategic management. The technology's ability to process large amounts of data, deal with human language and generate new content can be converted into significant added value, especially if the technology is enriched with the methodological expertise of strategic management and provides the necessary depth in the results. The following section explains the specific approaches for this.

7 Examples of the use of AI-supported strategic management

7.1 Improving trend analysis with multi-agent AI

In the words of Michael Porter: “The essence of strategy formulation is the relationship between a company and its environment”. This insight underscores a fundamental truth in strategic management: to remain competitive, companies must not only understand their internal capabilities, but also keep an eye on the external forces shaping their industry. In today's rapidly evolving business landscape, the ability to recognize emerging trends and assess whether an organization has the internal resources to address them is more important than ever.

A multi-agent AI system that acts as an autonomous partner enhances this strategic process by learning from patterns, making informed decisions and adapting to changing conditions. This system enables companies to effectively adapt to their environment, responding quickly and strategically to market dynamics while ensuring that their decisions are aligned with long-term goals.

By utilizing the autonomous capabilities of a multi-agent AI system, companies can develop strategies that are both dynamically responsive to the evolving business landscape and deeply rooted in a comprehensive understanding of external trends. This combination of environmental awareness and strategic foresight forms the basis for effective strategic management.

Phase 1: Collecting external data for trend identification

The first step is the **Data Collection Agent**, which searches and reviews a variety of external sources such as industry reports, technology blogs, competitor news and social media. In the technology sector, for example, this agent could detect the emergence of a new programming language or a breakthrough in artificial intelligence. The data is filtered to ensure relevance and focuses on topics that match the company's strategic interests.

Next, the **Data Preprocessing Agent** cleans this data and prepares it for analysis by performing tasks such as tokenization, standardization and removing noise. This ensures that the data is prepared for accurate trend identification.

After pre-processing, the **Topic Identification Agent** is used to analyze these external trends in detail. This agent uses machine learning models, particularly those based on Large Language Models (LLMs), to group unstructured text data into logical clusters or topics. For example, the agent can use natural language processing (NLP) techniques to identify recurring topics and categorize them into different clusters such as “emerging AI technologies” or “sustainable energy solutions”.

Once clusters are formed, the agent assigns labels to these groups, which can be done using sophisticated topic modeling (TM) techniques to ensure accurate topic formation. These labels are then compared against a predefined database or taxonomy of existing topics, taking into account hierarchical relationships within the topics to determine the correct level of specificity. For example, the system might recognize that “machine learning” is a broad category, while “transformer models in NLP” is a more specific subtopic of it.

The **Topic Validation and Novelty Agent** then compares the newly identified topics with those in the existing database. This step evaluates the novelty and relevance of the topics by determining whether they are truly new developments or whether they are variations on existing trends. The agent uses a hierarchical topic analysis to ensure that the trends are assessed at the right level of granularity so that the organization can focus on truly important and novel insights.

Trend Identification Agent: Once the themes have been validated, this agent analyzes the patterns in the data over time using statistical methods and machine learning techniques. It can use time series analysis, moving averages or other models to identify and predict trends. For

example, if the data shows that a new AI technology is increasingly mentioned and sentiment is positive, this agent can predict its future spread and thus provide important insights for strategic planning.

Phase 2: Assessment of internal capabilities

In the second phase, the focus shifts to understanding the company's internal capabilities and resources.

- I. **Internal Data Collection Agent:** It collects internal company data, such as employee capability inventories, R&D reports and project status, to assess the company's current situation against the new trend.

For example, if the trend is an emerging technology, this agent would collect data on the company's existing technical skills, ongoing training programs, and current technology infrastructure.

- II. **Capability Assessment Agent:** Analyzes whether the company has the necessary skills and resources to address the external trends identified. This could include assessing technical expertise, resource availability and current capabilities.

Assuming that demand for a new product is increasing in the company's industry, this agent analyzes whether the company's current processes and available machinery are suitable for the production of such products.

Phase 3: Strategic decision making and actions

Based on clear guidance from the Capability Assessment Agent and the Trend Identification Agent, the **Recommendation Agent** summarizes the findings into actionable strategies. For example, if a new technology emerges, the agent can recommend whether the company should invest in employee training, partner with a specialized company or outsource the work entirely.

This agent could be reformed with input from the **Capability Development Agent**, who is solely concerned with screening available courses, capturing training costs, course duration, as well as the cost of outsourcing skills.

This decision-making process is not limited to the technology industry. In the manufacturing industry, for example, when a new product comes to market, the system might analyze whether it makes sense to invest in new production capacity or outsource production to another company, or perhaps just participate in the supply chain by buying and selling the product.

Develop agile and strategic responses with a versatile multi-agent AI system

By integrating external trend detection and internal skills assessment, companies can make informed decisions about how to respond to market changes. Whether they decide to develop new capabilities internally, partner with other companies or outsource production, companies can respond flexibly and confidently and maintain their competitive advantage in a rapidly evolving market.

Trend analysis has many potential applications in different industries and business objectives, from identifying new technologies in the technology sector to assessing market demand for new products in manufacturing. The modular nature of the multi-agent AI approach allows for easy customization to meet the specific needs of any business, regardless of its field of activity or objectives. This flexibility ensures that the system can be customized to focus on the most relevant data sources, apply the most appropriate analytical techniques and deliver actionable insights that are directly aligned with the company's strategic priorities.

By using this adaptable multi-agent system, organizations can not only accelerate their

decision-making process, but also ensure that their strategies are based on comprehensive, high-quality data. This approach provides a robust framework for staying ahead of market changes, making it an invaluable tool for companies looking to maintain and grow their competitive advantage in a rapidly evolving business landscape.

7.2 Managing growth strategies with the Ansoff matrix and multi-agent AI

After identifying emerging trends and assessing internal capabilities through the multi-agent AI system, organizations have valuable insights. The next crucial step is to develop a forward-looking growth strategy that aligns with the company's long-term goals.

To achieve this, companies can improve their strategic decision-making and action phase by integrating the Ansoff matrix into the multi-agent AI system. This approach utilizes both internal and external data and guides the company through the creative process of designing innovative growth options.

Strategic decision making and action

After the trend analysis is complete, the Multi-Agent AI system uses the Ansoff Matrix to creatively explore potential growth strategies, supported by comprehensive data collection and feasibility checks:

- I. **Creative Agent:** The Creative Agent utilizes the collected data and combines internal and external insights while working within defined contextual boundaries. This agent is designed to generate unconventional ideas:
 - **Drawing on cross-industry insights:** The agent analyzes successful strategies from different industries and creatively adapts them to the context of the company. For example, a strategy that was successful in the technology industry can serve as inspiration for a new approach in manufacturing.
 - **Incorporate emerging trends:** By incorporating the latest trends identified earlier in the process, the agent ensures that its suggestions are both innovative and relevant to current market dynamics.
 - **Use generative AI for idea generation:** The creative agent uses generative AI to develop novel growth strategies by synthesizing data from various sources. For example, it can develop innovative product concepts by combining successful features from different industries or develop new market entry strategies based on emerging consumer trends by merging the ideas into new combinations.
- II. **Gatekeeper Agent:** Before the creative agent's suggestions are forwarded, they are subjected to a feasibility check by the gatekeeper agent. This agent acts as a critical filter that checks each idea against real-world constraints such as financial viability, availability of resources and market conditions. By ensuring that only feasible ideas are pursued, the gatekeeper maintains the balance between creativity and practicality.
- III. **Feedback-loop with people:** The system includes a collaborative feedback loop in which the creative agent's suggestions are reviewed and refined by human decision makers. This enables the marriage of AI-driven innovation with human strategic judgment and ensures that the final strategies are both creative and aligned with the organization's vision.
- IV. **Recommendation Agent:** Once ideas have passed feasibility testing and been refined through human collaboration, the Recommendation Agent determines the final growth strategy. Whether the recommendation concerns market penetration, product development, market development or diversification, it is supported by innovative

thinking, rigorous feasibility analysis and strategic alignment with the company's goals.

By integrating the Ansoff matrix into the multi-agent AI system, companies can improve their strategic planning with a balance of creativity and practicality. The Data Gathering Agent provides a solid foundation of relevant data, the Creative Agent generates innovative strategies within defined boundaries, and the Gatekeeper ensures feasibility. This combination, along with human collaboration, enables organizations to pursue growth strategies that are both visionary and achievable, helping them maintain a competitive edge in a rapidly evolving business landscape.

8 Conclusion

The systematic and strategic alignment of companies is a key prerequisite for increasing resilience. In our view, multi-agent AI-supported strategic corporate management offers valuable and new approaches to make this resource-intensive and sometimes cost-intensive expertise more accessible to small and medium-sized enterprises and thus increase the resilience of companies. However, acceptance hurdles may also arise here, as is already known from AI applications at an operational level. In our opinion, designing the system as a partner and not as a substitute for decision-making and integrating the gatekeeper approach into the overall multi-agent AI construct are the most effective measures for technically countering this risk. For decision-makers in the companies concerned, it will primarily be a matter of learning how to use the technology in this critical field of action, establishing it and transferring it into routines in order to counter unsteady and complex framework conditions in the best possible way.

Finally, it should be mentioned that the establishment of the approach described in this article offers a great opportunity for the transfer of knowledge between research and practice. New results from theory can be integrated in further expansion stages, used by the system in the appropriate context and significantly increase the value creation of new research results in business practice.

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