

CHAPTER 8

SUSTAINABLE GROWTH IN SMEs WITH GENERATIVE AI: REAPING REWARDS, TACKLING CHALLENGES, WITH HUMAN INSIGHTS

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ABSTRACT

Generative artificial intelligence (Gen-AI), which refers to autonomous creation of content, is an area of artificial intelligence (AI) that presents a lot of potential for small- and medium-sized enterprises (SMEs). This technology can boost productivity, help to communicate and attract customers, and stimulate innovations, thus becoming a major asset for SMEs in the increasingly competitive environment. This chapter provides insight into the role of Gen-AI in leveraging the innovativeness in SMEs and identifies key strategies for successful implementation, including enhancing employee skills, fostering effective leadership and company culture, promoting collaboration, and building strong external partnerships. It highlights crucial tactics for successful execution; additionally, it also offers insight into how Gen-AI leads to economic and social benefit. The study discusses data privacy and security issues as the majority of AI applications depend on massive informatics, and protection of data ethical concerns, as well as the appropriate training of the workforce, has to be accurately addressed to ensure that AI fits into the SME business strategy. Lastly,

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this study also demonstrates how the adoption of AI in SMEs is providing an upper hand to tackle competitive scenarios.

Keywords: Generative AI; SMEs; sustainability; entrepreneurial resilience; entrepreneurial orientation

JEL Classifications: 031; M13; Q01; L26

1. INTRODUCTION

AI has become a real game-changer in today's business landscape, as they have reduced business activities from traditional manual completion to autopilot. One of the benefits of such techniques is that they tend to work autonomously to complete most of the processes, so that people can focus on performing more valuable tasks in organisations. What takes this transformation to the next level is the ability of technology to create new outputs, including text, images, and different forms of media through generative models. In this way, Gen-AI supports thought-provoking content and solutions, which help advance strategic programs. Gen-AI is changing the dynamics of business for SMEs, where organisations can receive access to meaningful tools, they could only dream of using earlier. In this sense, technology is democratised to foster further scalability and creativity. SMEs can adopt Generative AI easily, using it to grow, innovate, and bridge gaps in knowledge and technology (Acar & Gvirtz, 2024). SMEs play a significant role in the global economy in all fields, especially in emerging and developing nations, because they provide more than 50% of employment opportunities in the global economy and account for 90% of enterprises globally (The World Bank, 2023). Despite the potential that has previously been identified as contributing to the improved business operations of SMEs, studies in AI management contain limited information on how it can be practically applied, much less so for new forms of AI that are less than two years old. Some questions have not been raised about their use by SMEs, largely because of the novelty of the concept. Comparatively, Large Language Models (LLMs) are more flexible and scalable; they generally accept more intricate inputs and generate more realistic results. Moreover, unlike previous forms of AI that have mostly targeted repetitive tasks, LLMs are set to disrupt those 'thinking' jobs or tasks (Felten et al., 2023). Furthermore, practitioner-oriented literature has focused on the application of AI for big players in the global economy but has paid little attention to issues concerning SMEs. In general, SMEs do not possess complementary resources, either in the form of hardware and software, or human capital, such as expertise in data science, all of which are crucial when implementing Gen-AI (Bughin, 2023). Moreover, working in SMEs, employees are often faced with the challenges of multitasking, where they are fully responsible for Gen-AI implementation without any help or direction (Wei & Pardo, 2022). Gen-AI has to be implemented across organisations, and managers, especially at SMEs that are usually responsible for carrying out different operations, must ensure that everything runs

smoothly, and these businesses often do not have adequate infrastructure and well-defined processes to sustain external business relationships. Based on such considerations, there is a need for greater clarity on the organisational and human capital factors that characterise employees and leaders in SMEs to support and drive advanced applications of AI. In this chapter, we will discuss the opportunities and risks that Gen-AI brings to SMEs. The following research question has been addressed: How is Gen-AI used by SMEs to unlock innovation and scalability? The study reveals that the substantial success factors of Gen-AI are employee competency, leadership, entrepreneurial orientation (EO), and resilience, whereas work values, culture and climate, cooperation and collaboration, and relationships with other stakeholders are essential constructs that help in building a suitable infrastructure. It provides readers with realistic recommendations that can be used practically to incorporate Gen-AI into SMEs. Furthermore, we provide scrutiny evidence to support how Gen-AI enables these enterprises to build resilience and an entrepreneurial spirit (Chaudhary et al., 2023).

2. GENERATIVE ARTIFICIAL INTELLIGENCE

With the introduction of OpenAI's ChatGPT in November 2022, Gen-AI gained widespread popularity within two months of its launch, with an astounding 100 million active users; it is the fastest-growing consumer application ever (Hu, 2023). The remarkable growth of Gen-AI has led to its adoption across various industries, with employees in most enterprises utilising and experimenting with its benefits (Budhwar et al., 2023). The amazing ability of Gen-AI to emulate human behaviour in nuanced and complex circumstances can be credited to its success. With the use of sophisticated algorithms and machine-learning (ML) techniques, it can create original and lifelike content, including pictures, movies, and even lengthy stories (Dwivedi et al., 2023). Gen-AI analyses vast amounts of digital content, including text, photos, audio, and video, and finds patterns in the data, absorbing their distribution and producing outputs that are based on the features of the learned data (Soni, 2023). These outputs are often indistinguishable from their real-world counterparts, blurring the line between what is generated and what is organic (Soni, 2023). The marketing, advertising, and entertainment industries have benefited greatly from the adoption of GenAI (Kanbach et al., 2024). In the coming years, Gen-AI is expected to have a profound impact on how technology and innovation evolve, given its extensive and versatile range of potential uses (Wamba et al., 2023). Gen-AI can be utilised by small firms to perform comprehensive comparative evaluations of their competitors, market dynamics, and industry (Mannuru et al., 2023). SMEs can greatly benefit from this information by using it to take advantage of new opportunities and decide on the best course of action for them now and in the future (Agrawal, 2023). By utilising the sophisticated capabilities of Gen-AI, small businesses can acquire a competitive edge and accelerate their growth in a business climate that is changing quickly.

3. UNLOCKING THE POTENTIAL OF GEN-AI FOR SMEs

One of the main advantages of Gen-AI is its ability to automatically create content. This can be achieved in two different ways (Felten et al., 2023). Primarily generative writing systems, such as ChatGPT, can automatically produce unique content, including market reports, with minimal human participation through advancements in language modelling. In addition to the cutting-edge advancements in picture production, programmes such as Midjourney, DALL·E, and Stable Diffusion can produce images from text descriptions (prompts) and enhance the efforts of digital designers by producing eye-catching graphics for advertising campaigns. With customisation, insight generation, and content creation as the top three application domains, Gen-AI is quickly gaining popularity in the marketing space (Kshetri et al., 2023). In this chapter, we propose that SMEs can benefit from using Gen-AI in their operations because they can improve both scalability and creative ability. Gen-AI models offer outstanding possibilities for efficient and successful theoretical concept learning (Abdul-Hamid et al., 2022). Open AI is one of the most effective tools for knowledge generation and advancement. These models provide a thorough understanding of interdisciplinary and related applications by combining big data analytics, ML, algorithms, AI, and Gen-AI (Akhtar et al., 2023; Gozalo-Brizuela & Garrido-Merchan, 2023; Sættra, 2023). The operational community can gain from and increase work productivity through the use of Gen-AI in product design and production facilitation (Noy & Zhang, 2023). Smart product platforming (SPP) powered by Gen-AI plays a significant role in promoting the construction of closely connected product families and obtaining optimal outcomes, and flexibility in SPP is particularly crucial for the production of environmentally friendly products for the circular economy (Sarkar & Bhuniya, 2022; Van den Broeke et al., 2018). Material resources are disposed of in landfills or incinerators as part of the conventional one-way process of the ‘take, make, dispose’ production approach, which means that their economic worth is not fully utilised. A circular economy is a production and consumption manufacturing approach that, in contrast to a linear system, enables companies to increase their productivity, efficiency, and use of resources (Awan et al., 2021). This is particularly crucial for the production of environmentally friendly products in a circular economy (Hettiarachchi et al., 2022).

3.1. *Shifting Gears and Stepping Up Productivity*

Technologies such as Gen-AI can automate tasks that currently account for 60%–70% of an employee’s time at work. On the other hand, our earlier estimate suggests that half of the time workers spend at work could be automated by technology. As Gen-AI can now comprehend natural language, which is necessary for tasks that take up 25% of the workday, the potential for technical automation is increasing at a faster rate. Thus, Gen-AI affects knowledge work more than other types of jobs, especially in occupations requiring higher education and pay. Compared to non-users, Gen-AI can increase a highly trained worker’s productivity by as much as 40% (Somers, 2023).

Recommended software solution: Software, such as Siemens NX, an all-inclusive Computer-Aided Design (CAD)/ Computer-Aided Manufacturing (CAM) software, can be used by SMEs to optimise manufacturing processes. Product development can be accelerated and material waste can be reduced using Siemens NX to automate design tasks and enhance production processes. In addition, it can help automate quality control and production scheduling.

3.2. Eco-Logistics: Greener Routes, Smarter Moves

The development of Gen-AI has enormous potential for fundamentally changing logistics and supply chain management (Richey et al., 2023). Organisations can create effective strategies to ensure continuous operations by thoroughly examining potential interruptions and risk areas. AI offers viable alternatives in the event of supply chain interruption, contingent on various factors linked to traditional logistics service quality measures (Mentzer et al., 2001). The industry-leading digital freight network, for instance, can reduce carbon emissions by 36% because of its intelligent freight automation technology. With the help of their recently launched Green Appointment Windows feature, shippers can now arrange their freight inside a flexible window, giving them access to leading carriers at cheap prices and helping reduce carbon emissions.

Recommended software solution: ZBrain is an AI system that uses client proprietary data to create highly tailored LLM-based apps that optimise the supply chain and logistics processes. Through ZBrain's special 'Flow' feature, users may write complex business logic without knowing how to code. This makes it possible to easily incorporate media models, big language models, and prompt templates into an app's logic. ZBrain programmes can improve operational efficiency, reduce errors, and increase productivity by managing inventory, demand forecasting, fleet management, and route optimisation (Takyar, 2023).

3.3. Facilitate More Informed Choices

Gen-AI enables SMEs to make decisions with greater precision (i.e., based on data and validated information). It helps close the knowledge gap with established competitors by supporting decision-making in business operations, growth, and sustainability. Gen-AI enables data-driven, proactive, and agile decision-making for instant business effects, which SMEs can leverage. Gen-AI can be used by SMEs in the field of personalised medicine to develop customised models and treatment plans based on individual physiological data and electronic records of family medical history (Kuzlu et al., 2023). For example, sharing in-depth subject-matter knowledge across several parties and sources is necessary to transform enterprise data into knowledge. It can take days, weeks, or even months to complete the process. However, the timeline is shortened by the power of Gen-AI, which allows real-time insights to be obtained in a matter of minutes, from data to knowledge.

Recommended software solution: BMW North America gathers and analyses its enterprise data utilising the next-generation AI platform Enterprise Knowledge Harmoniser and Orchestrator (EKHO). Large-language models are used by the platform to intelligently respond to complicated queries across various cases, as it is the leading all-in-one solution for operational performance management.

3.4. *Augment Creativity and Empowering Innovation*

Accenture reported that 82% of businesses see Gen-AI as a crucial technological innovation lever. The democratisation of creativity was significantly aided by Gen-AI. It can offer insights that people would not have thought of and broaden the range of potential outcomes of AI Tech Park (2023). As innovation is the lifeblood of SMEs, leveraging Gen-AI in creative tasks can benefit SME competitiveness (Kanbach et al., 2023).

Recommended software solution: Software such as Alpha3D for a marketing campaign can enhance their work by creating captivating three-dimensional (3D) pictures, whereas Midjourney, DALL-E, and Stable Diffusion can create images from text descriptions (prompts). Creatives may focus on expressing their ideas and save time, effort, and energy by using Gen-AI technologies.

3.5. *Product Differentiation*

The development of a unique and imaginative positioning and offering is essential for differentiation. AI is valuable not only for its ability to evaluate large volumes of data and identify market gaps but also for its capacity to generate and test novel tactics for distinction. Marketers can use AI and ML to predictably analyse market trends and consumer behaviour to comprehend and forecast demand (Dar & Jaiswal, 2024). To enhance distinction and generate greater value for clients, Gen-AI can make it easier to explore potential product opportunities for particular target market segments (Rajaram & Tinguely, 2024). For example, in the fragrance and beauty care sector, for example, SMEs can employ Gen-AI technologies to tailor scents and beauty care products and investigate new combinations of raw materials (Still, 2024).

Recommended software solution: SCENTMATIC's KAORIUM offers a completely new method for fragrance discovery, scent to words and words to scents, by decoding the mysterious world of scents, which enables users to find new perfumes through language and intuition with the use of cutting-edge technologies.

4. NAVIGATING CHALLENGES OF GEN-AI FOR SMES

Despite its many benefits, Gen-AI has significant drawbacks, either from the nature of the ML algorithms that underpin it or from how SMEs use the technology. Marketing professionals, for instance, might be hesitant to use Gen-AI to create advertising pictures because they might closely identify with the work and elevate them in the SME. If Gen-AI can complete these tasks, they may feel threatened. Gen-AI models' propensity for hallucinations, which results in 'random inaccuracies or falsehoods expressed with unjustifiable confidence' in their outputs, is another significant difficulty (Mukherjee & Chang, 2023).

4.1. *Financial Burden*

To integrate Gen-AI into the operational ecosystem and accomplish personnel reskilling, SMEs must invest in the necessary process infrastructure. High-performance graphics processing units (GPUs) and substantial amounts of memory are essential computing resources required for training the generation of AI

models. However, limited access to high-performance computing resources may make it difficult for mid-sized or small firms to train and implement these AI models, and workers need to be upskilled and given access to a Gen-AI-enhanced work environment to adapt to the latest technologies. SMEs can use affordable online courses such as MOOCs to retrain and upskill their workforce. In addition, they can approach industry unions for resources or use Edx, LinkedIn Learning, DataCamp, Google AI, Kaggle, Microsoft Learn, or Udacity. SMEs may create an environment that enables technical and non-technical staff to quickly improve their skills by offering seminars, in-person and online training courses, practical experience, and mentoring. An example of this would be a business that would utilise AI models to offer its audience customised product recommendations but lacks the processing power and infrastructure necessary to train the models. This restricts the startup's capacity to offer customised recommendations.

4.2. Handling Technical Intricacies

Businesses find Gen-AI models to be complex because of their many parameters. For most enterprises, these models are typically difficult to train.

The Director of Commercial and Information Technology (IT) of a pharmaceutical business asserted that we lack access to the right set of skills – not only technical but also skills associated with implementing the use cases, such as legal, data privacy, and compliance. The technology may become costly and detrimental to the environment due to the crucial computation of resources needed to put this into practice. Models designed to manage these technical nuances may introduce other issues, such as deep-pocketed entities. Thus, it is expected that most organisations will use cloud Application Programming Interface (APIs) with limited tailoring to implement Gen-AI.

4.3. Hallucination

Among the well-known limitations of Gen-AI, there is so-called hallucination, which may be textual, auditory, visual, or of any other nature (Alkaissi & McFarlane, 2023). Hallucination refers to the creation of output that is logically incorrect or unrelated to the provided input (Ji et al., 2023). According to Azamfirei et al. (2023), while the responses generated by Gen-AI may look right, they may not need to be sensible, and in the long run, the result is that hallucination delivers misinformation. The outputs created by the Gen-AI models demonstrate hallucinations because the generators have a high tendency to produce 'random inaccuracy or falsehoods with high assertiveness' (Mukherjee & Chang, 2023). As part of a case law citation for a personal injury case against an airline, a small law firm attorney based in New York employed a Gen-AI chatbot (Weiser, 2023). The legal cases provided by the chatbot were fictional, and the information provided was incorrect legal advice. Finally, the judge penalised the lawyer to avoid verifying his references.

4.4. Privacy and Security

However, data security and privacy are significant challenges for Gen-AI. It refers to the practice of protecting information from unauthorised access, use,

disclosure, alteration, or destruction (Fang et al., 2016; Sood, 2013). And which includes private information that owners do not wish to disclose to others (Fang et al., 2016).

The large amount of private and personal data used through the training of Chat GPT during its construction work raises issues related to privacy (Siau & Wang, 2020).

The more it is adopted and integrated into people's day-to-day experiences, people's experiences are enhanced in terms of convenience; however, at the same time, Chat GPT is gathering vast amounts of data about them. Risks and precautions symbolising possible intentional and unintentional public transmission of data also arise from private information.

4.5. Authenticity

The increasing progress of Gen-AI makes it more difficult for people to determine whether a piece of work is authentic because of the indistinct line that Gen-AI creates between information produced by computers and content produced by humans. Concerns regarding authenticity and reliability are raised as images that appear to depict individuals or events in the actual world could be created by deep fake AI (Akhtar et al., 2022). Large-scale image and video manipulation could result from the Gen-AI's capability, exacerbating the issue of false information spreading on social media platforms (Gragnaniello et al., 2022). An artistic portrait or piece of music could be the direct result of an algorithm in the art. Because algorithms often provide standardised and repetitive outputs, some have argued that the artwork produced by AI lacks authenticity (McCormack et al., 2019). Clients might not know if they are speaking (e.g., textually or verbally) with a human or conversational Gen-AI chatbot. Because Gen-AI interactions can evoke strong emotions in users, there is a risk that Gen-AI will unethically take advantage of psychological vulnerabilities (Tingley & Rajam, 2024).

5. STRATEGIC ELEMENTS TO GET MOST OF GEN-AI

Gen-AI and EO have the potential to revolutionise SMEs and micro-firms (Abaddi, 2023; Hughes et al., 2021). The potential of SMEs to create social value and a sustainable economy is affected by the adoption of digital technologies. The moderating effects of human capital demonstrate that businesses can use Gen-AI and prosper, especially if their workforce is well educated, skilled, and equipped with technical expertise in the field Soni (2023). Additionally, EO significantly moderates the association between SME performance and social and economic value creation (Vrontis et al., 2022). EO refers to how entrepreneurs approach opportunities, innovate, and take calculated risks (Donthu & Gustafsson, 2020; Dubey et al., 2020; Wales et al., 2013). Strong EO and entrepreneurial resilience allow businesses to bounce back from setbacks, adjust to changing conditions, and prosper in the face of difficulties (Zighan et al., 2021).

AI is vital for EO because it promotes creativity, takes calculated risks, and anticipates and identifies new business prospects (Davidsson & Sufyan, 2023;

Shepherd & Majchrzak, 2022). These findings suggest that businesses can gain from using Gen-AI solutions if they have the required weapons to overcome the challenges of our substantial resources, such as skilled human resources, strong leadership EO, and resilience, next on the ladder will be the required financial and technological infrastructure (Shepherd et al., 2019).

AI–human collaboration: a pathway to transformative results is shown in Fig. 8.1.

5.1. Employee Proficiency

To handle and overcome the significant hurdles of Gen-AI deployment and the discomfort that follows, employees must possess three essential skill sets: learning orientation, technological savvy and curiosity, and adaptability. First, SMEs’ workforce must acquire new skills quickly and with minimal formal training. SME workers must learn independently and use creativity to solve a majority of problems because they operate in tiny structures (Haryanto et al., 2017). As a result, individuals must demonstrate a strong learning orientation, which is the capacity to continuously unlearn and acquire new skills to function in a different system. SME personnel usually have some degree of decision-making control over the usage of Gen-AI and are directly involved in its deployment (Gonza’lezVarona et al., 2021). As such, they will require aptitude and inquisitiveness to explore new technological features and remain updated with the rapidly changing landscape of technology as well as the most recent breakthroughs in Gen-AI tools, use cases, and policies. This entails trying out Gen-AI for new use cases and participating in workshops, conferences, industry exchanges, and training initiatives that are pertinent to professional development. Tech-savvy staff members need to be aware of possible security vulnerabilities and efficient methods for data and application protection to comprehend the cybersecurity implications of Gen-AI systems (Chui et al., 2023). SME workers must exhibit a high level of adaptability – the capacity to realign and satisfy the rapidly changing needs coming from Gen-AI deployment because they oversee numerous elements of the technology and play multiple functions inside the organisation (Wishart, 2018). Because incorporating



Fig. 8.1. AI–Human Collaboration: A Pathway to Transformative Results.
Source: Authors’ compilation (2024).

Gen-AI into workflows changes job responsibilities and tasks, SMEs must maintain flexibility and an agile mentality to learn new skills in working with these technologies. This entails the ability to decode Gen-AI results and apply human expertise to them (Iskender, 2023).

5.2. Strong Leadership

SME leaders must exhibit resilience in the face of challenges and suffering associated with the implementation of Gen-AI (Martínez-dei-Ri'o et al., 2023). The capacity to endure adversity in the face of challenges with confidence and composure, and revival in the face of setbacks such as business disruptions, financial burden, and resistance among the employees can be called resilience.

While SMEs can adapt to technological change, their limited resources limit their ability to create value. SME leaders must strategically allocate resources while considering potential and costs into consideration (Walt et al., 2015). Perspective: The ability to recognise and take advantage of Gen-AI has potent potential for scalability, creativity, and commercial expansion while working with few resources. Leaders are responsible for several SME functions. They must guarantee smooth departmental integration and alignment with overarching corporate objectives (Menkhoff et al., 2023). The agent of change is a spokesperson for employee buy-in, enabling them to recognise the scalability and creative advantages of Gen-AI. Fostering an inventive mentality that sees and accepts it as advantageous to all parties involved. For instance, showing staff members how Gen-AI may improve their existing roles. As SMEs have flexible organisational structures and operational procedures, their leaders can adapt swiftly to changing market situations (Walter, 2021). Swiftly resolves process disturbances caused by Gen-AI using targeted superior solutions. Leaders are responsible for several SME functions. They must guarantee smooth departmental integration and alignment with overarching corporate objectives (Menkhoff et al., 2023). The agent of change is a spokesperson for employee buy-in, enabling them to recognise the scalability and creative advantages of Gen-AI. Fostering an inventive mentality that sees and accepts it as advantageous to all parties involved. For instance, showing staff members how Gen-AI may improve their existing roles (Wang et al., 2023). As SMEs have adaptable organisational structures and operational procedures, their leaders can react swiftly to changing market situations (Walter, 2021). Promptly resolving the process disturbances caused by Gen-AI with targeted superior solutions.

5.3. Entrepreneurial Resilience

Entrepreneurial resilience enables organisations to continue carrying with their business operations, even in the face of adversities such as natural catastrophes, economic downturns, or other unanticipated calamities (Iyengar et al., 2021). It entails having the capacity to think creatively, adjust rapidly to changing conditions, and remain optimistic and resolute in the face of difficulties. Businesses that possess entrepreneurial resilience can withstand adversity and become stronger and more resilient than before (Anwar et al., 2021). Even in the face of unforeseen obstacles, they stay committed to accomplishing their goals because they have a

clear understanding of them (Chaudhary et al., 2024). Applying lessons learned from past experiences to new situations is a crucial component of entrepreneurial resilience. Consequently, organisations can create plans to lessen the effects of upcoming disruptions and be better prepared for them (Arve et al., 2023). All things considered, any organisation aspiring to thrive in today's rapidly evolving business landscape must possess entrepreneurial resilience (Anwar et al., 2023). Organisations can prosper in the face of uncertainty and adversity by remaining adaptable, upbeat, and receptive to new ideas (Williams et al., 2017).

5.4. Entrepreneurial Orientation

A collection of traits allows entrepreneurs and businesses to spot and seize the opportunity to take first-mover advantage (Kreiser & Davis, 2010). This orientation includes several characteristics, such as creativity, risk-taking, proactiveness, and competitive aggression. Businesses with a strong EO are typically more inventive, proactive, and risk-taking to meet their objectives (Hughes et al., 2022). These characteristics enable people to be more resilient, competitive, and long term. Thus, it can be said that an entrepreneurial firm's EO is essential because it highlights the need to be creative, proactive, and willing to take risks to achieve sustainable growth. EO is a company's attitude and mindset about innovation, taking calculated risks, and being proactive in seeing and seizing market opportunities (Van Dis et al., 2023; Wales et al., 2020). This type of thinking is essential for helping a company deal with the difficulties of a dynamic and uncertain business environment (Zighan et al., 2022). A strong entrepreneurial attitude makes SMEs more flexible, robust, and nimble when facing obstacles. However, SMEs without this perspective are more likely to find it difficult to deal with uncertainty, which could lead to them stagnating or failing to grow over time. As a result, a strong EO is crucial for businesses looking to thrive and stay competitive in today's dynamic world (Zavo, 2024).

6. GUIDING PRINCIPLES FOR GEN-AI IMPLEMENTATION IN SMES: STRATEGIC MOVES TO GAIN THE UPPER HAND

SME executives ought to consider Gen-AI as a transformative, all-encompassing technology such as electricity or the Internet (McAfee et al., 2023). They should be aware of the impending difficulties in generating meaningful value using Gen-AI technology. In our opinion, given the correct circumstances, Gen-AI may spur innovation and simplify work procedures, giving SMEs a long-term competitive advantage. To do this, SMEs need to take advantage of technological advancements with agility and creativity and prepare themselves to adjust to a constantly shifting environment (Rajaram, 2023).

6.1. Design the Right Ecosystem to Upskill the Workforce

SMEs should create an ecosystem that supports upskilling for technical and non-technical staff by fostering a combination of seminars, training (both practical

and virtual), practicals, and mentoring to polish the skills. It is necessary to train employees in both soft and hard skills, such as adaptability (Jebara, 2004), curiosity, programming, data science, and ML. It is important since Gen-AI models may lie; therefore, employees need to be trained on how to test if the outputs from algorithms are realistic and whether they are meeting their objectives (McAfee et al., 2023). SMEs can rely on business partners, as Gen-AI advocates, tying the business together with technology. It is also possible to assist in the dissemination and tailoring of Gen-AI by being active in open-source communities (Shrestha et al., 2023). Due to limited resources, SMEs can leverage cutting-edge technologies for building teams from sites such as **MOOC- Massive Open Online Course**, EdX, LinkedIn Learning, DataCamp, and Google AI, or borrow from industry bodies, and businesses should start incorporating cross-functional teams including AI specialists and domain and end users (Jarrahi et al., 2023). This will sometimes be necessary because they do not have the required experience or skill sets.

6.2. *Exemplary Work Ethics and Strong Leadership*

It takes leadership to guide and encourage the deployment of Gen-AI present lucid vision with courage. SME leaders must demonstrate how shifting to innovative Gen-AI-powered modes of cooperation would help SMEs achieve their expansion goals (Martínez-Del-Río et al., 2022). To convey their vision, they must exhibit the mental and emotional fortitude and strength of the character necessary to overcome obstacles without sacrificing their principles or goals. This requires Gen-AI in SMEs, and strong leadership and clear communication of the vision are essential for advancing its deployment of Gen-AI. SME leaders must demonstrate how the company can achieve its growth objectives through the transition to innovative kinds of Gen-AI collaboration. They also need to unite staff members around a single objective and clarify why Gen-AI is a strategic requirement for SMEs. SME leaders should completely comprehend and address the problems of their staff to negotiate and win their support. SME executives must assuage employees' concerns about Gen-AI by adopting an empathic decision-making approach. This is because the advanced features of AI can partially automate work duties. Encouraging workers to implement Gen-AI SME leaders must promote the innovative collaborative opportunities of Gen-AI by becoming prominent and potent change agents (Kaplan & Haenlein, 2020). They must show that implementing Gen-AI adheres to fundamental principles, including legal data management procedures, open decision-making processes regarding model designs and data sources, distinct accountability frameworks, and robust ethical principles (Porter, 2023).

6.3. *Teamwork and Strategic Solutions*

Coordination is the essence of management without coordination, and no obstacles can be overcome. To use current Gen-AI interfaces and/or customise Gen-AI apps, SMEs must overcome significant adoption difficulties. This could involve addressing the intricacy and opacity of algorithms, reducing algorithmic aversion, and minimising the risk to workers' professional identity. SMEs leaders must also determine which approaches improve forecast accuracy and take

preventative actions to deal with ethical, legal, and reputational issues (González-Varona et al., 2020). The shift to human-Gen-AI collaboration presents several difficult, multiple challenges that require strong conflict management, problem-solving, negotiating, and alignment abilities from SME leaders and staff (Van Der Walt, 2015). A prerequisite for SMEs' productivity and long-term success is to include all stakeholders in an effort to alleviate the obstacles associated with the adoption of Gen-AI.

6.4. Partnerships With External Entities

SMEs need to look at how much they depend on their suppliers for solutions in Gen-AI to come up with the right partnership and collaboration models. Regarding the use of Gen-AI, SMEs have two choices to dive into the adoption; it's either the 'take' or 'shape' approach. The 'take' approach is when one opts to go with the readily available, simpler, and more cost-effective out-of-the-box solutions that do not offer much in terms of customisation and may in turn lead to such issues as non-compliance to set guidelines, data breach, and reliance on few external vendors. In contrast, for SMEs mostly involved in the software development industry, such tools are aids, such as GitHub's Copilot, where code is generated through language models (LLMs), but human coding is essential (Azamfirei et al., 2023; Olubiyyi, 2024). With the 'shape' approach, the emphasis is on customising Gen-AI on hand-focused problems and thus performing those tasks with much higher accuracy. On the other hand, although this provides clients with more comprehensive and niche-specific solutions for complex challenges, it requires extensive domain knowledge, investment in time, and other resources. Open-source AI is an alternative for SMEs in building AI products using resources available for free on the Internet, especially those provided by large companies, such as Meta. This strategy enables the SMEs to then grab the code, amend, and use them which is less restrictive compared to the 'take' of such resources (Bluebox, 2023). There are opportunities for SMEs to work with other parties to create unique Gen-AI tools and the required hardware and software infrastructures. Instead, SMEs can develop GPTs (i.e., customised versions of ChatGPT) that do not require coding expertise and have sophisticated prompts or specialised knowledge as a middle-of-the-road option. The selected strategy should consider the SME's strategic objectives.

7. FUTURE TRENDS OF GEN-AI IN SMEs

Despite such opportunities, current levels of Gen-AI in SMEs are still low, and the potential of the technology for the future is incredible as follows. In the future, as Gen-AI technology advances, more of them are likely to incorporate Gen-AI in various activities within their businesses. One such trend is the trend of automating most of the tasks, which will allow SMEs to save most of their resources. As such, by utilising AI technologies in content generation, customer service management, and data processing, SMEs can free up more of their employees' time to focus on strategies to implement those plans. In doing so, this notion of a shift towards automation will mean that SMEs will become more competitive

against large firms, due to their inherent capability to enhance operational efficiency and flexibility trends, which is the use of Gen-AI for customer targeting and engagement. Because AI has the characteristics of data analysis, SMEs can develop incredibly targeted marketing efforts, product promotions, and messages to their customers. Such individualisation is becoming critical today, especially when more market players compete for consumers. In light of the above, SMEs stand to benefit from the use of Gen-AI to provide solutions that will help improve customer satisfaction, loyalty, and retention, thus fuelling business growth. In addition, ML chatbots and virtual assistants are anticipated to become enhanced, offering SMEs the opportunity to provide a more personalised real-time customer service that enhances the value of the overall customer experience and is going to transform the development of products and services increasingly within the realms of SMEs. For this reason, the use of technology to generate new ideas, designs, and prototypes will result in cheaper and faster innovation for SMEs. For example, it can help develop new product designs and effectively manage supply chains and new business models. This will help SMEs to better meet changes in market and consumer requirements with more speed and awareness of the changes occurring in the market. In addition, by using Gen-AI, SMEs can derive new revenue sources by creating AI-generating content such as art, music, and digital goods that can be sold in different ways. However, the use of Gen-AI for SMEs also faces challenges that will arise with its use among businesses. Some of the issues that will be highlighted with the integration of AI are the issues of data privacy and security, as the continuous availability of data will be necessary to support AI systems. SMEs must be mindful of data protection laws and establish practical measures to safeguard the data that they collect. Furthermore, the successful integration of Gen-AI also poses a challenge in that implementing the technology will require SMEs to invest in training their employees (Brundage et al., 2020). The authors have suggested that employees will require appropriate training to cooperate with the systems and gain optimum value from AI. This can be accomplished by developing training programs, sourcing new talent within the organisation, or even outsourcing to develop the right skill set.

8. CONCLUSION

Gen-AI is a relatively new technology that may transform SMEs as it can lead to improvements in efficiency, customer experience, and the ability to innovate. Lack of financial and human capital can severely limit SMEs, thus making AI assets, including content generation, customer relations, and data processing, widely beneficial (Eisfeldt et al., 2023). This automation can result in cutting costs and allowing human resources to deal with issues that prop up growth. In addition, the level of Gen-AI is growing, and more approachable tools are available in the market that do not necessarily need a profound background in AI to implement them, which is especially useful for combating information overload for SMEs. Moreover, with the application of Gen-AI, customer experiences can be personalised for a large number of customers (Akhtar et al., 2024). Another

way that AI can truly benefit customers is through proficient integrated direct marketing, offers, and content based on data analysis. Chatbots and virtual assistants based on AI enhance and advance customer support, thereby increasing customer retention rates (Khan, 2024; Nah et al., 2023). Consumers expect more personalised experiences in the current markets; thus, SMEs that adopt AI should be in a better place to unlock the potential of satisfying consumers' expectations. Another activity in which Gen-AI can be helpful for SMEs is innovation. The technology can make changes to the design quickly and develop new products based on it, for example, art pieces, with the help of AI or music compositions. These capabilities allow SMEs to quickly and inexpensively bring new products to the market, expand into new areas, and avoid becoming 'the next Ikea'. AI also brings opportunities for mass customisation and helps SMEs provide products tailored to specific clients, which may generate new demand and more profit. Although Gen-AI has great potential for use in SMEs, its application is not without difficulty. Data privacy and security are major issues because the majority of AI applications depend on massive informatics. Companies need to obtain legal requirements concerning their businesses, including the General Data Protection Regulation (GDPR), to contain customer data and avoid legal troubles. Ethical issues remain paramount because biased systems are integrated into AI systems. Lack of bias: This is a significant concern for SMEs to avoid jeopardising customer trust in any AI system implemented in the business. In addition, there is a skill deficiency in SMEs regarding the deployment of AI solutions. Quite often, an organisation may require upskilling the existing workforce or hiring outside talent to obtain the best out of AI.

Thus, Gen-AI is a revolution for SMEs that simultaneously poses certain threats and risks to be adjusted while utilising the opportunities provided by modern technologies. Field analysis shows that AI can offer SMEs a competitive advantage through automation, delivering personalised customer experience and promoting product innovation. Nevertheless, threats and concerns, such as data protection and ethical concerns, as well as the appropriate training of the workforce, must be accurately addressed to ensure that AI fits into the SME business strategy. Those with the skills to steer around these hurdles stand to gain from Gen-AI and perform well in the market, which is likely to become more competitive. As time progresses, early adopters among SMEs will become masters in the sector, a model of imitation by others to come.

9. POLICY FRAMEWORK

Policy frameworks must address the following strategic areas to drive sustainable growth in SMEs using Gen-AI: In fact, AI technologies must be accessible and affordable for SMEs by providing governments with targeted incentives and resources to integrate such systems into business processes. A national imperative will be workforce development, in preparing workers for these AI-based skills and promoting human creativity problem-solving with AI systems. Finally, strong ethical guidelines must be developed to encourage the responsible use of AI,

especially involving personal information and privacy. They must also reiterate the importance of human-AI collaboration, with AI being used to improve not replace human judgement, especially in strategic decision-making. Finally, ensuring an environment that celebrates AI innovations with a strong focus on sustainability striving for AI innovations prioritises the criteria of ‘green’ or efficiently utilising resources for sustainable development. This scope concerns the active management of carbon-neutral and environmentally sustainable processes. By focusing on energy-effective algorithms and minimising the impact of AI systems on the environment, we should be capable of creating technological enhancements for humanity that meet the two goals technological and environmental. For instance, Google contributing efforts to carbon-neutral AI where its data centres are being conditioned for efficiency. The Geothermal Cooling Project, developed by Google in collaboration with Green Energy, spear innovation and demonstrated how AI can be utilised to create new technology that is practical and eco-friendly by cutting energy consumption by 40%. This clearly shows that the advancement of innovation and sustainability go hand in hand towards the future of the planet through AI.

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