World Journal of
Advanced Science and Technology

Journal homepage: https://zealjournals.com/wjast/

ISSN: 2945-3178 (Online)

(REVIEW ARTICLE)

Check for updates

SMEs' dependency on large corporations' technology for sustainability in the United States

Afolabi Salami *

Clinton School of Public Service, University of Arkansas at Little Rock, Little Rock, Arkansas, United States.

World Journal of Advanced Science and Technology, 2024, 06(02), 035–046

Publication history: Received on 14 August 2024; revised on 09 September 2024; accepted on 20 September 2024

Article DOI: https://doi.org/10.53346/wjast.2024.6.2.0052

Abstract

Introduction/Background: This study discusses how small and medium-sized firms (SMEs) depend on major corporations for key technology resources that support sustainability initiatives. While SMEs contribute considerably to economic development and innovation, they typically rely on bigger enterprises for access to new technology and market possibilities. This partnership gives SMEs benefits like greater operational efficiency and global market access but also creates obstacles such as budgetary limits and technical reliance. The essay explores techniques for SMEs to effectively exploit new technologies, balancing partnership with larger firms while retaining their autonomy and competitiveness in a quickly shifting business climate focused on sustainability.

Materials and Methods: The materials used for this study were sourced from different databases which include scholarly journal articles, reports, and government gazette and policy papers in the areas of business, small and medium scale enterprises, entrepreneurship, management and economics. The inclusive criteria ensured that only those articles that investigated the merits and demerits of SMEs dependence on large corporation were utilised. The review of literature was conducted on 50 documents published between 2009 and 2024.

Results: The findings as revealed from the reviewed literature revealed the different merits and demerits of SMEs dependence on large corporation. Case studies of Tesla, Microsoft, Walmart, and Amazon demonstrate the intricate reliance of SMEs on major firms in the United States. Tesla's reliance on SMEs for crucial components like batteries underlines the reciprocal advantages and dangers involved, since SMEs' stability rests on Tesla's performance. Microsoft helps SMEs through initiatives that stimulate innovation and technology adoption, boosting their capabilities. Walmart gives SMEs with access to huge distribution networks, enabling sales growth. Similarly, Amazon's platform gives SMEs tremendous market reach but also brings issues in competitiveness and price. Together, these instances show the potential and challenges SMEs confront in their relationships with bigger enterprises.

Discussion: Encouraging supplier growth and enhancing supply chain resilience are vital for establishing a sustainable SME environment. Policymakers may promote SMEs through mentorship programs, financial aid, and tax incentives for partnership with large enterprises. Addressing financial impediments with targeted funding and boosting skills development through collaborations with educational institutions would help SMEs embrace new technology. Additionally, establishing technology-sharing activities and developing a legal framework that supports fair competition are vital. Fostering innovation among SMEs and supporting sustainable practices will eventually boost their competitiveness and contribute to broader economic and environmental goals, benefitting both SMEs and bigger organizations.

Conclusion: The reliance of SMEs on big corporations provides noteworthy hurdles and possibilities that require for the adoption of effective government involvement. Through the elimination of financial obstacles, the upgrading of technical skills, the promotion of fair competition, and the encouragement of innovation and sustainability,

governments may build a fair climate that enables SMEs to prosper alongside bigger firms. This approach not only allows SMEs access to resources and contemporary technology, but it also stimulates economic variety and creativity, which in turn contributes to continuous development and competitiveness in a dynamic market.

Keywords: Small and Medium Scale Enterprises (SMEs); SMEs dependence; SMEs Sustainability; Technology

1 Introduction

Globally, small and medium-scale enterprises (SMEs) are major drivers of invention and economic growth (Ojeleye and Ojeleye, 2024). They explain a good share of job creation, therefore promoting employment possibilities and poverty reduction in both rich and poor countries (Abisuga-Oyekunle *et al.,* 2020). Usually more flexible and adaptable than big businesses, SMEs provide better response to consumer preferences and market developments (Brozović *et al.,* 2023). Globally, they provide a diversified business environment by encouraging competition and innovation across sectors, therefore addressing local demands and difficulties as well as contributing to a varied corporate scene (Doh *et al.,* 2019). Their contribution to value chains, local entrepreneurship, and export stimulation makes them absolutely essential for both global economic resilience and sustainable development.

With about half of the private workforce employed and more than 99% of all companies in the American economy, SMEs are rather important (McQuaid and Webb, 2020). The average revenue 35 of a small business range from $750,000 to $38.5 million a year especially in rural and underprivileged areas, they are vital for encouraging local economic growth (George, 2023). Moreover. small businesses with fewer than 500 employees are the backbone of the United States economy (Edwards, 2018). Driving technical innovation and business disruption, SMEs in the United States help sectors including tech, manufacturing, and services by their capacity for invention and scalability has produced many ground-breaking businesses that have expanded internationally and hence stimulated more economic development (Cukier *et al.*, 2021). Furthermore, important to the U.S. worldwide trade are SMEs since many of their exported goods and services sustain the nation's standing in the world.

While SMEs contribute considerably to the economy, their longevity typically rely on the assistance and infrastructure supplied by larger firms. Many SMEs operate within the supply chains of multinational corporations, providing specialised items or services that feed into bigger commercial operations (Chen, 2019). This interconnectedness helps SMEs to access bigger markets and benefit from the economies of scale that large firms enjoy (Liang *et al.,* 2021). Additionally, SMEs typically rely on the technological, financial, and logistical frameworks built by big firms to boost their own operation (Pylaeva *et al.,* 2022). For instance, cloud computing services given by IT giants or financial help through collaborations with major banks provide essential resources that SMEs need to succeed.

Moreover, larger firms play a crucial role in supporting SME innovation through collaboration, mentorship, and investments (Audretsch *et al.,* 2023). Corporate collaborations often help small enterprises overcome constraints such as restricted access to cash, marketing channels, and worldwide networks (Beckmann *et al.,* 2023). By linking themselves with huge firms, SMEs can establish reputation, attract more clients, and access global supply chains, which might otherwise be out of reach (Li, 2023). This symbiotic relationship illustrates that while SMEs generate local economies and innovation, their long-term sustainability is often related to the success and collaboration of bigger corporate entities.

However, their road toward sustainability is sometimes impeded by a lack of resources and access to modern technologies that are crucial for implementing sustainable practices (Pylaeva *et al.,* 2022). Large firms, with their significant financial powers and technological skill, are positioned to lead in sustainability efforts. As consequence, SMEs increasingly find themselves dependent on the technology and ideas generated by these larger corporations to meet their own sustainability goals (Li, 2023). This dependency raises crucial questions concerning the dynamics of collaboration and competition between SMEs and large enterprises, as well as the ramifications for the broader business ecosystem.

The convergence of technology and sustainability is more crucial than ever, with enterprises across industries aiming to decrease their environmental footprint and boost their operational efficiency. Technology acts as a catalyst for sustainable practices, enabling firms to monitor their resource consumption, optimize supply chains, and incorporate renewable energy solutions (Young, 2023). For SMEs, harnessing the technical improvements developed by large organisations can be a game-changer, giving avenues to improve their sustainability metrics while remaining competitive in a more aware industry. This study addresses the dependency of SMEs on major corporation technology

for sustainability, evaluating both the benefits and drawbacks of such reliance, and the potential tactics that SMEs might employ to exploit these technologies effectively.

1.1 Statement of the Problem

Small and medium-sized firms (SMEs) in the United States have major difficulties in achieving sustainability due to limited access to contemporary technologies and resources (Grigorescu and Ion, 2019). As sustainability becomes more important in today's business landscape, SMEs frequently struggle to compete with larger enterprises that have the financial and technological capabilities to design and adopt sustainable practices (Naudé, 2024). This mismatch makes SMEs reliant on major corporations, as they attempt to use proven technologies to increase their operational efficiency and product offerings. However, financial constraints, together with a lack of technical skills and understanding, prohibit many SMEs from properly using emerging technologies (Rizos *et al.,* 2016). As a consequently, SMEs risk falling behind on their sustainability initiatives, jeopardising their long-term viability in a changing market.

Furthermore, SMEs confront a double-edged sword as they rely on major corporations to adopt technology. While working with larger organisations could provide access to sophisticated resources and knowledge, it may also provide issues in keeping autonomy and adaptability (Zhani *et al.,* 2021). The reliance on these agreements could expose SMEs to changes in corporate strategies or market dynamics, therefore jeopardising their ability to develop freely. This study underlines the important necessity for SMEs to find sustainable routes to acquire and deploy technology that support growth without becoming too reliant on larger corporations. Addressing these problems is crucial to guarantee that SMEs survive while contributing to wider sustainability goals.

Aim and Objectives of the Study

The aim of this study is to examine the interplay of SMEs dependency on large corporation technology for sustainability

- To explore the role of technology in SMEs sustainability
- To investigate the benefits and challenges dependency of SMEs on large corporations
- To analyse case studies of dependence of SMES on large corporations in the United States

2 Literature Review

This section reviews literature on SMEs, SMEs dependency and SMEs sustainability

2.1 Concept of SMEs

Small and Medium Enterprises (SMEs) are described in numerous ways across scholarly literature, typically depending on the economic circumstances. According Kersten (2017), SMEs are firms with a small number of employees and minimal financial turnover, often under 250 employees. Muller *et al.* (2014), defines SMEs as firms with less than 250 people, and either an annual turnover not surpassing €50 million or a balance sheet total not exceeding €43 million. Bika and Frazer (2021), stresses that SMEs are defined by their substantial autonomy, being controlled and managed by respective owners or part-owners, and having a modest market share in their field. Additionally, Sidek *et al.* (2020), SMEs are classified as enterprises with fewer than 300 employees and less than $15 million in annual sales in emerging countries. Lastly, the World Bank (2021) cited by Okijie and Effiong (2024), specifies SMEs as formal firms with up to 300 employees and $15 million in annual revenue, underlining their vital role in job creation and economic development. These definitions highlight the variation in how SMEs are characterised across different countries and settings.

2.2 Concept of SMEs dependency

The idea of SMEs dependency refers to the reliance of small and medium-sized firms on external resources, generally from bigger companies, for their existence, growth, and sustainability. According to Li *et al.* (2023), SMEs usually depend on big firms for access to innovative technology, markets, and supply networks, establishing a symbiotic connection. Xie *et al.* (2022) defined dependency as the requirement for SMEs to engage with larger enterprises to address resource restrictions, such as limited capital and innovative capabilities. Fernandes *et al.* (2022), believed that SMEs rely on exterior networks and partnerships for crucial expertise and technological inputs that they cannot create in-house. Similarly, Makwara (2022), contends that SMEs' dependency on larger enterprises can lead to both possibilities and weaknesses, as they depend on these corporations for vital resources while maintaining a subservient position in the partnership. Ramirez-Portilla *et al.* (2023), argued that in quickly dynamic marketplaces, SMEs typically depend on larger firms for access to fluid skills, such as technology improvements, to remain competitive. These definitions

underscore the complex nature of SME dependency, stressing the reliance on larger enterprises for crucial resources and competencies.

2.3 Concept of SMEs sustainability

SMEs sustainability refers to the capacity of SMEs to ensure long-term profitability while managing financial, social, and environmental goals (Burlea-Schiopoiu and Mihai, 2019). To Yusoff *et al.* (2018), sustainability in SMEs requires integrating sustainable practices into their basic business models, assuring financial success while decreasing environmental impact and contributing to social well-being. Das *et al.* (2020), underlined that SMEs' sustainability comprises their capability to adjust to changing market demands and resource restrictions while retaining competitiveness and profitability. Matinaro *et al.* (2019), SMEs' sustainability is described as their dedication to eliminating negative environmental consequences and developing social responsibility, although typically having fewer resources than bigger enterprises. Cardoni *et al.* (2020), suggested that for SMEs sustainability means managing limited resources efficiently, reducing waste, and adhering with environmental standards, which can also bring competitive benefits. Szczepańska-Woszczyna and Kurowska-Pysz (2016), described it as the development of new business models that provide shared benefit for both the business and humanity, guaranteeing resilience in the midst of economic, environmental, and social crises.

2.4 The role of technology in SMEs sustainability

Technology plays a vital role in the sustainability of small and medium-sized firms (SMEs), helping them to achieve long-term profitability while addressing environmental, social, and economic concerns (Vrontis *et al.,* 2022). In the context of sustainability, technology is defined as the set of tools, processes, and innovations that organisations apply to run more efficiently, decrease their environmental imprint, and remain competitive in the market. For SMEs, which frequently confront limited financial and human resources, technology becomes a crucial enabler for reaching sustainability goals. It allows them to overcome resource limits, enhance operational efficiency, and adopt practices that benefit the environment and society (Chege and Wang, 2020).

One of the most significant ways technology contributes to SMEs' sustainability initiatives is through the use of renewable energy solutions. Renewable energy technologies, such as solar panels, wind turbines, and bioenergy systems, assist SMEs minimise their dependency on fossil fuels, consequently cutting their carbon emissions and energy expenses (AlZayani *et al.,* 2020). By shifting to renewable energy, SMEs not only contribute to global efforts to address climate change but also position themselves as environmentally responsible firms, which can attract eco-conscious consumers and partners.

Efficient resource management systems are another essential technology pushing sustainability in SMEs. These systems let organisations to monitor and optimize their usage of water, energy, and materials, eliminating waste and ensuring that resources are utilised in the most sustainable way possible (Nuryyev *et al.,* 2020). Technologies such as smart grids, water conservation tools, and energy management systems help SMEs decrease their environmental impact while simultaneously enhancing their cost-effectiveness. By utilising fewer resources and minimising waste, SMEs can dramatically enhance their sustainability performance, contributing to both environmental protection and financial benefits (AlZayani *et al.,* 2020).

Advanced manufacturing technologies also play a vital role in boosting the sustainability of SMEs (Yeo and Ong, 2024). Innovations such as 3D printing, automation, and precision manufacturing enable organisations to make things with better efficiency, reducing the demand for raw materials and lowering energy use (Atieh *et al.,* 2023). These technologies also allow SMEs to make items with less waste and greater quality, leading to more sustainable production methods. By implementing new manufacturing technology, SMEs may reduce their environmental impact and improve their overall competitiveness in a fast-shifting market.

Information technology and data analytics are key instruments for SMEs trying to attain sustainability (Ferreira *et al.,* 2023). With the support of data analytics tools, organisations can monitor and assess their sustainability performance in real-time, making educated decisions to enhance their operations. For instance, predictive analytics can help SMEs forecast future energy needs and manage their resource usage accordingly, while cloud computing lets businesses to store and distribute data more efficiently, minimising the need for physical resources (Prasad *et al.,* 2023). Additionally, digital platforms enable SMEs to engage with other firms and stakeholders, enabling innovation and knowledge sharing that can lead to more sustainable practices.

3 Methodology of Data Collection

The research approach used in this study to investigate the research objectives is secondary data analysis, which analysed both qualitative and quantitative data collected for this study. However, primary data collection methods such as interviews were not used. To collect qualitative data, a comprehensive review of relevant literature was conducted. In order to discover key themes about the effects of SMEs' dependence on large corporations, case studies of successful SME dependence on large corporations in the United States were examined, as well as techniques for SMEs to utilise large corporate technologies. To do this, over 60 scientific journal publications, reports, government gazettes, and policy papers on SMEs, entrepreneurship, and financing were thoroughly reviewed.

4 Results and Discussion

4.1 Challenges and Opportunities Presented by dependency of SMEs on large corporations

The reliance relationship between small and medium-sized firms (SMEs) and large companies in the United States stems from the need for access to innovative technology and resources that SMEs cannot often produce or purchase on their own (Li *et al.* (2023). Small and medium-sized enterprises (SMEs) frequently lack the scale, financial resources, and in-house knowledge to develop or sustain cutting-edge technical solutions, leaving them reliant on partnerships with larger firms (Fernandes *et al.,* 2022). These major corporations have the R&D capability, infrastructure, and capital to produce new tools and systems that SMEs may use. In this mutually beneficial connection, SMEs receive access to critical technologies, while large businesses profit from SMEs' agility, innovation, and specialist market knowledge (Makwara, 2022). This partnership is especially vital in areas where innovation and sustainability are critical, as SMEs must remain competitive and adopt new technology to survive in a continuously changing business market.

One of the key attractions for SMEs that embrace large business technologies is access to advanced resources and experience. Large firms invest extensively in the creation of sophisticated technologies that necessitate extensive R&D efforts, and SMEs can frequently gain access to these advances through strategic partnerships or technology-sharing arrangements (Costa and Castro, 2021). Smaller firms can now use tools that they would not have been able to design or purchase on their own. By accessing large firms' resources, SMEs can strengthen their operational capabilities, gain access to world-class expertise, and stay current on technical advances. These alliances can also expose SMEs to worldwide markets and global supply chains, increasing their growth potential.

Another major benefit for SMEs who embrace large company technologies is increased operational efficiency (Yuen and Baskaran, 2023). Large firms frequently create technologies aimed at streamlining production processes, reducing waste, and improving energy efficiency (Mohamed *et al.,* 2019). SMEs can incorporate these technologies into their operations, allowing them to cut expenses while increasing production. For example, SMEs can cut labour costs, minimise errors, and speed time-to-market by implementing modern manufacturing systems, automation tools, or cloud-based solutions. Improved efficiency not only helps SMEs compete more effectively, but it also frees up resources that may be reinvested in other areas of the business, such as innovation or expansion (Teoh *et al.,* 2022). This operational boost is crucial for SMEs to achieve long-term growth and remain competitive in their industry.

Furthermore, employing major company technologies can result in better product offers for SMEs. SMEs can use cutting-edge technologies and systems to improve the quality, functionality, and innovation of their products and services (AlZayani *et al.,* 2020). For example, using modern data analytics systems enables SMEs to gain a deeper understanding of client preferences and market trends, resulting in more targeted and inventive product development. Similarly, having access to advanced manufacturing technologies allows SMEs to produce higher-quality goods that meet or surpass industry requirements (Fernandes *et al.,* 2022). This improved competence not only helps SMEs differentiate themselves in the market, but it also allows them to cater to more demanding or high-value clientele, hence expanding their business opportunities.

Despite these advantages, SMEs encounter numerous hurdles when using major business technologies. One of the most significant impediments is budgetary limits. Many SMEs have limited budgets and cannot afford the significant initial expenditures associated with obtaining new technologies (Cotrino *et al.,* 2020). Large organisations can provide technology solutions through licensing or leasing arrangements, but the costs can be too high for small businesses (Pylaeva *et al.,* 2022). Furthermore, maintaining and upgrading these systems necessitates ongoing expenditure, which may tax the financial resources of SMEs. Without sufficient cash, SMEs may fall behind in technological adoption, limiting their competitiveness and long-term viability.

Another difficulty for SMEs is the lack of technical skills and knowledge required to effectively integrate and manage large enterprise technologies (Elhusseiny and Crispim, 2022). Advanced technologies frequently necessitate specialised knowledge, and SMEs may lack the skilled manpower to deploy and maintain these systems. Recruiting and training personnel to manage new technology can be time-consuming and expensive for SMEs. Furthermore, the learning curve involved with implementing advanced tools may interrupt daily operations, particularly in firms already dealing with tight timetables and small teams. This skill gap can impede the full use of major business technologies and generate a need on external support from larger corporations, prolonging the relationship's unequal power dynamics (Ingaldi and Ulewicz, 2019).

Additionally, SMEs confront market competition from larger enterprises (Galli-Debicella, 2021). Even when SMEs use the same technologies as major organisations, they frequently struggle to compete on the same level due to the scale and resources accessible to larger companies (Prasanna *et al.,* 2021). Large enterprises may invest in ongoing innovation, marketing, and global distribution networks, providing them a major competitive advantage over smaller companies. Small and medium-sized enterprises (SMEs) may struggle to scale their operations at the same rate or have access to the same market share. This competition can also affect pricing strategies, as larger companies might offer cheaper costs due to economies of scale, putting more pressure on SMEs to differentiate themselves or operate in niche areas (Galli-Debicella, 2021).

In sum, while SMEs in the United States profit substantially from implementing major business technologies, the reliance relationship brings both opportunities and drawbacks. Access to sophisticated resources, increased operational efficiency, and expanded product options can all help SMEs thrive and innovate. However, budgetary restrictions, limited technical skills, and severe market competition continue to be significant impediments to effectively harnessing these technologies. SMEs must handle these issues strategically in order to maximise the benefits of technological adoption while remaining competitive and sustainable.

4.2 Case Studies to illustrate dependency of SMEs on large corporations in the United States

Numerous case studies illustrate the dependency of SMEs on giant corporations in the United States, highlighting the intricacies of this connection. These case studies highlight how SMEs negotiate obstacles including resource constraints and market competitiveness while also using technology, resources, and knowledge from bigger companies to develop, innovate, and preserve sustainability.

4.2.1 Tesler and her Supplier Network

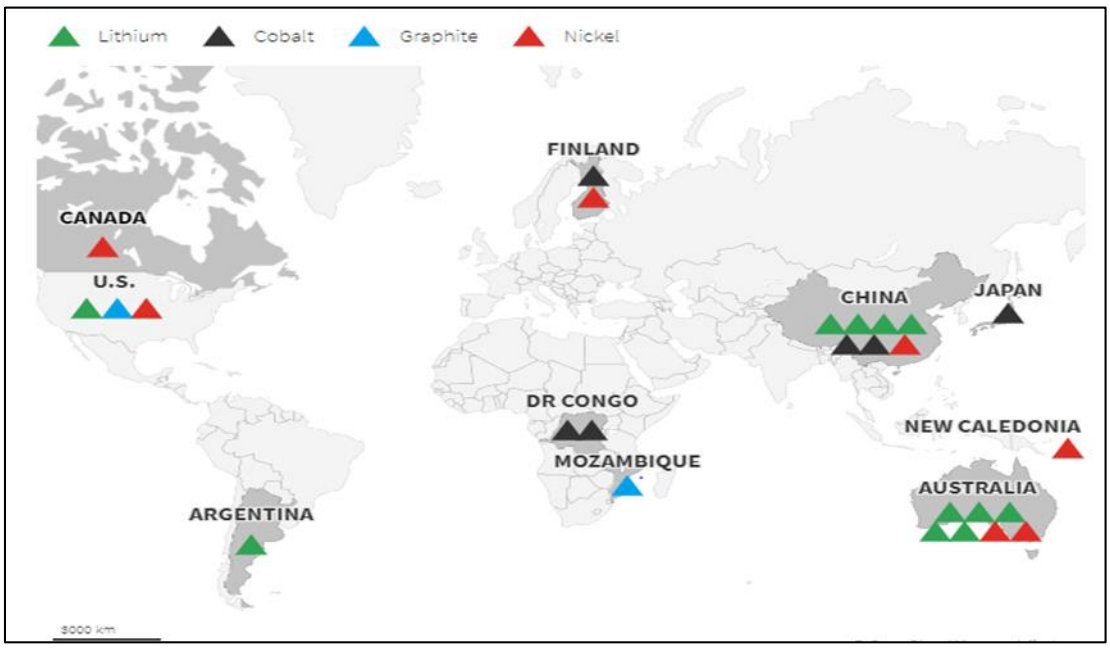

Figure 1 Tesla's battery supply chain network (Tesla 2020 and 2021 Impact Reports, company press releases)

Leading producer of electric vehicles (EV), Tesla depends on a network of SMEs for materials, components, and specialist services. Many of these SMEs—especially in battery technology, electronics, and software development—

dependent on Tesla's inventions and worldwide supply chain mostly for survival and expansion. For instance, the company works with smaller companies providing essential parts including electric drivetrains and battery cells. Access to Tesla's sophisticated technologies, market reach, and R&D investment helps these SMEs develop and scale by means of their benefits. This reliance, meantime, also exposes weaknesses for the SMEs. Long-term contracts and Tesla's ongoing success will determine a great share of their income and corporate stability. Many of these SMEs would suffer financial difficulties and the need to find new customers rapidly should Tesla decide to bring manufacturing in-house or switch suppliers.

Tesla since 2015 has concluded deals with more than hundreds of SMEs suppliers of battery raw materials, more than half of them situated in China and Australia, according to published reports and Tesla papers. Contracts cover present and future supply of such critical EV battery elements as lithium, nickel, cobalt and graphite. Here are some major locations.

4.2.2 Microsoft's Cloud Technology and SME Adoption

The U.S. cloud computing market is witnessing substantial expansion, driven by the rapid pace of digital transformation and the adoption of new technologies such as AI and 5G. In 2023, the public cloud computing market earned $292 billion in sales and is anticipated to reach $476 billion by 2028, exhibiting substantial increase (Vailshery, 2024). In united states alone the cloud computing market is worth roughly $175 billion (Grand View Research, 2024). Experts believe that cloud computing will become a crucial tool for firms wanting to utilise AI in their operations. Small and Medium Enterprises (SMEs) with low capital investment are playing a vital part in this expansion, increasingly relying on cloud solutions for their IT services, infrastructure and data storage needs. Microsoft's Azure cloud platform shows the reliance of U.S. SMEs on large enterprises for technical solutions. Many SMEs, especially in industries like software-as-a-service (SaaS) and information technology, depend on Microsoft's cloud services for data storage, analytics, and application development. The expenses of establishing and maintaining their own data infrastructure are typically too costly for these smaller enterprises, both in terms of capital expenditure and technological competence. By adopting Microsoft's cloud architecture, SMEs can focus on their main business activities without having to manage the intricacies of data management. However, this dependence comes with risks. SMEs are usually wedded to Microsoft's ecosystem, making it tough to migrate to other platforms. Additionally, any changes in price or service delays could drastically influence their business operations.

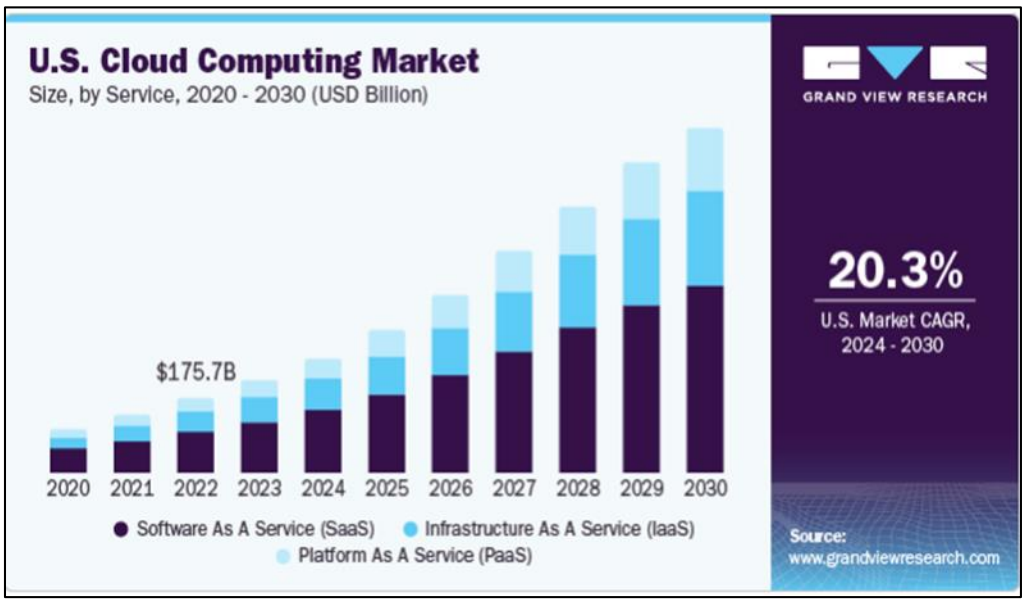

Figure 2 U.S. Cloud Computing Market (Grand View Research, 2024)

4.2.3 Walmart's Retail Supply Chain

Walmart's supply chain is another clear illustration of SME dependent on major businesses. Many small firms that make consumer items rely significantly on Walmart's distribution network to reach clients across the U.S. These SMEs benefit from Walmart's huge retail infrastructure, getting access to millions of prospective customers and efficient logistics. For example, small food producers and household products manufacturers typically depend on Walmart for a large amount of their earnings. However, this reliance can also put SMEs at a disadvantage. Walmart's strict requirements for price,

packaging, and supply chain efficiency compel SMEs to continually innovate and minimise costs. Additionally, Walmart's dominance in the retail industry offers it enormous negotiation leverage, frequently pushing SMEs to accept lower profit margins or risk losing a critical retail partner. Hicks (2009), highlighted that as Walmart dominates the retail market, smaller firms frequently have little alternative except to accept reduced profit margins or risk losing a critical retail partner. Thus, while Walmart provides SMEs access to development prospects, it simultaneously forces them to continually innovate and cut costs to remain competitive, underlining the dual nature of this reliance.

4.2.4 Amazon and SMEs dependence

Amazon has become a significant platform for many SMEs in the United States, allowing them access to a wide global marketplace and enabling them to sell items to millions of prospective customers. By adopting Amazon's services like Fulfillment by Amazon (FBA), SMEs may outsource important logistical responsibilities such as storage, shipping, and customer care, allowing them to focus on developing their businesses. However, Amazon's dominance in e-commerce has generated a troublesome reliance for SMEs in the U.S (Mitchell and Knox, 2021). While the platform provides SMEs access to a wide client base and logistical help, it often abuses them through excessive fees, control over branding, and competitive behaviours (Matsakis, 2023). Amazon charges hefty fees and other costs for services like Fulfillment by Amazon (FBA), which eats into SMEs' profit margins (Gardner, 2022). Moreover, SMEs run the prospect of Amazon developing rival private-label items, utilising data from their own sales to undercut them (Mitchell and Knox, 2021). Amazon's dominance over regulations and algorithms further weakens small firms, putting them subject to abrupt changes that damage visibility and profitability (Gardner, 2022). Gardner (2022), argued that that splitting up Amazon will revitalise entrepreneurship by enabling fair competition and diminishing the e-commerce giant's monopolistic power, eventually helping SMEs and stimulating innovation in the marketplace.

5 Policy Implication

Encouraging supplier growth is vital in creating a broad and resilient supplier base for major organisations. Policymakers can design programmes geared at boosting the capacities of SMEs, enabling them to fulfil the severe standards of bigger enterprises. Such initiatives might incorporate mentorship programs where established organisations share their experience and best practices with SMEs, allowing them to better their operational efficiency and product quality. Financial help for capacity building—such as grants for improving facilities or acquiring new technologies—can further empower SMEs. By investing in their development, governments not only guarantee that SMEs are better suited to service giant firms like Tesla but also stimulate economic growth and job creation within local communities. This proactive strategy helps alleviate the dangers associated with reliance by helping SMEs to diversify their client bases and reduce exposure to variations in demand from any single major enterprise.

Strengthening supply chain resilience is another key part of this interaction. Given the dependency of SMEs on big firms, strategies should focus on enabling SMEs to diversify their markets and customer bases. This may be done through incentives that encourage SMEs in exploring new business prospects beyond their principal clientele. For instance, governments might grant cash incentives or tax benefits to SMEs that successfully develop partnerships with many major firms. By increasing this diversification, SMEs will be less sensitive to the dangers associated with dependency on a single client, which may be particularly risky in times of economic crisis or when major firms decide to restructure their supply chains.

Secondly, financial hurdles remain one of the most important difficulties for SMEs striving to embrace modern technology and develop their operations. To ease these issues, governments might develop funding programs geared exclusively for SMEs that service bigger enterprises. Low-interest loans, grants, and equity financing solutions created for SMEs can offer the necessary resources to invest in modern technology, therefore leveling the playing field. This financial support is vital as it helps SMEs to implement new methods and retain competitiveness without endangering their financial stability. By addressing the financing gap, policymakers may empower SMEs to expand their operational capacities, leading to higher innovation and productivity.

In addition to direct financial support, adopting tax incentives for major firms that participate in long-term collaborations with SMEs can further build a sustainable environment. These tax benefits can drive bigger enterprises to invest in their suppliers, enabling SMEs access to sophisticated technology and knowledge without carrying the whole financial burden. Such alliances may create a win-win situation where huge firms profit from the agility and creativity of SMEs, while SMEs get access to essential resources needed for growth and development. Ultimately, these initiatives can help bridge the financial divide and develop a more strong and collaborative partnership between SMEs and major enterprises.

Addressing the skills gap inside SMEs is critical for effective technology adoption and management. Policymakers should promote efforts that provide targeted training and skill development opportunities for the workforce of SMEs. Collaborations with educational institutions can be particularly useful in designing programs that focus on the unique technology demands of SMEs. By customising educational programs to match with the growing demands of the business, policymakers may guarantee that SMEs are equipped with the required skills to harness innovative technology. Such programs not only boost the operational capability of SMEs but also contribute to the wider objective of building a competent workforce that can support innovation and growth in diverse areas.

Moreover, implementing technology-sharing programs between major organisations and SMEs can greatly lessen the skills barrier encountered by smaller firms. Large firms can build platforms or incubators that allow SMEs to access breakthrough technology and receive training on their efficient deployment. These platforms may offer SMEs with the technical expertise necessary to employ new technologies efficiently, hence boosting their competitiveness. By creating a collaborative climate, governments may assist knowledge transfer and innovation, enabling SMEs to harness the advantages of technology without paying the complete expense of its acquisition and administration. Establishing a legal framework that supports fair competition is crucial for guaranteeing that SMEs may prosper in a marketplace dominated by bigger firms. Policymakers must create measures to shield SMEs from anti-competitive activities, such as unexpected alterations in contracts or unfair pricing tactics by bigger enterprises. Ensuring that SMEs have a fair opportunity to compete on equal footing not only supports their survival but also fosters a more active and diverse market environment. This regulatory framework can assist promote competition, fostering innovation and avoiding monopolistic actions that could limit the growth of smaller enterprises.

Additionally, active monitoring of market dynamics and the influence of major firms on SMEs is necessary. Policymakers should frequently examine the issues faced by SMEs to provide timely responses that promote their development and sustainability. By being informed about new trends and possible dangers, policymakers may implement policies to defend the interests of SMEs, ultimately building a healthy business ecosystem. This proactive approach to regulation can assist preserve the delicate balance between major enterprises and SMEs, ensuring that both can coexist and grow in a competitive market.

Promoting innovation within the SME sector is vital for advancing sustainable practices and technology. Policymakers can establish innovation incentives expressly for SMEs creating sustainable technology, encouraging them to engage in research and development initiatives. Such awards can give financial assistance for creative projects that match with wider environmental aims, encouraging a culture of sustainability and responsibility among SMEs. By promoting innovation, policymakers may help SMEs differentiate themselves in the market and contribute to the general growth of sustainable practices within the sector.

Moreover, promoting sustainable relationships between SMEs and major enterprises may provide considerable benefits for both sides. Policymakers should support collaborative initiatives that focus on creating sustainable technologies and practices, resulting in shared benefits and knowledge transfer. By promoting these relationships, governments may encourage a culture of innovation and accountability across the supply chain. This collaborative approach not only increases the viability of SMEs but also helps to greater societal objectives of sustainability and environmental care. Ultimately, by focusing on creativity and long-term sustainability, policymakers could foster a supportive atmosphere that enables SMEs to expand while tackling important global challenges.

6 Conclusion

The dependence of SMEs on giant corporations provides both enormous obstacles and excellent possibilities that require effective governmental interventions. By eliminating financial hurdles, boosting technical skills, supporting fair competition, and encouraging innovation and sustainability, governments may create a more equal environment for SMEs to prosper alongside bigger enterprises. This strategy not only helps SMEs to harness modern technology and resources but also enhances the entire economy by fostering variety, adaptability, and innovation within the corporate environment. Ultimately, establishing a collaborative ecosystem between SMEs and major businesses will contribute to sustained economic growth and greater competitiveness in an ever-evolving market.

References

[1] Abisuga-Oyekunle, O.A., Patra, S.K. and Muchie, M., 2020. SMEs in sustainable development: Their role in poverty reduction and employment generation in sub-Saharan Africa. *African Journal of Science, Technology, Innovation and Development*, *12*(4), pp.405-419.

[2] AlZayani, F., Mohammed, A. and Shoaib, H.M., 2024. The impact of smart technologies on SMEs' sustainability: the mediation effect of sustainability strategy. *Competitiveness Review: An International Business Journal*, *34*(1), pp.28-50.

[3] Atieh, A.M., Cooke, K.O. and Osiyevskyy, O., 2023. The role of intelligent manufacturing systems in the implementation of Industry 4.0 by small and medium enterprises in developing countries. *Engineering Reports*, *5*(3), p.e12578.

[4] Audretsch, D.B., Belitski, M., Caiazza, R. and Phan, P., 2023. Collaboration strategies and SME innovation performance. *Journal of Business Research*, *164*, p.114018.

[5] Beckmann, M., Garkisch, M. and Zeyen, A., 2023. Together we are strong? A systematic literature review on how SMEs use relation-based collaboration to operate in rural areas. *Journal of Small Business &* Entrepreneurship, 35(4), pp.515-549.

[6] Bika, Z. and Frazer, M.L., 2021. The affective extension of 'family'in the context of changing elite business networks. human relations, 74(12), pp.1951-1993. https://doi.org/10.1177/0018726720924074

[7] Brozović, D., Jansson, C. and Boers, B., 2023. Strategic flexibility and growth of small and medium-sized enterprises: a study of enablers and barriers. Management Decision. https://doi.org/10.1108/MD-05-2022-0577

[8] Burlea-Schiopoiu, A. and Mihai, L.S., 2019. An integrated framework on the sustainability of SMEs. Sustainability, 11(21), p.6026. https://doi.org/10.3390/su11216026

[9] Cardoni, A., Zanin, F., Corazza, G. and Paradisi, A., 2020. Knowledge management and performance measurement systems for SMEs' economic sustainability. Sustainability, 12(7), p.2594.

[10] Chege, S.M. and Wang, D., 2020. The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. Technology in Society, 60, p.101210.

[11] Chen, C.L., 2019. Value creation by SMEs participating in global value chains under industry 4.0 trend: case study of textile industry in Taiwan. Journal of Global Information Technology Management, 22(2), pp.120-145. https://doi.org/10.1080/1097198X.2019.1603512

[12] Cotrino, A., Sebastián, M.A. and González-Gaya, C., 2020. Industry 4.0 roadmap: Implementation for small and medium-sized enterprises. Applied sciences, 10(23), p.8566. https://doi.org/10.3390/app10238566

[13] Costa, J. and Castro, R., 2021. SMEs must go online—E-commerce as an escape hatch for resilience and survivability. Journal of Theoretical and Applied Electronic Commerce Research, 16(7), pp.3043-3062.

[14] Cukier, W.E.N.D.Y., McCallum, K.E., Egbunonu, P. and Bates, K., 2021. The mother of invention: Skills for innovation in the post-pandemic world. Public Policy Forum.

[15] Das, M., Rangarajan, K. and Dutta, G., 2020. Corporate sustainability in SMEs: an Asian perspective. Journal of Asia Business Studies, 14(1), pp.109-138. https://doi.org/10.1108/JABS-10-2017-0176

[16] Doh, J.P., Tashman, P. and Benischke, M.H., 2019. Adapting to grand environmental challenges through collective entrepreneurship. Academy of management perspectives, 33(4), pp.450-468.

[17] Elhusseiny, H.M. and Crispim, J., 2022. SMEs, Barriers and Opportunities on adopting Industry 4.0: A Review. Procedia Computer Science, 196, pp.864-871. https://doi.org/10.1016/j.procs.2021.12.086

[18] Fernandes, K.J., Milewski, S., Chaudhuri, A. and Xiong, Y., 2022. Contextualising the role of external partnerships to innovate the core and enabling processes of an organisation: A resource and knowledge-based view. Journal of Business Research, 144, pp.146-162.

[19] Ferreira, J.J., Lopes, J.M., Gomes, S. and Rammal, H.G., 2023. Industry 4.0 implementation: Environmental and social sustainability in manufacturing multinational enterprises. Journal of Cleaner Production, 404, p.136841.

[20] Galli-Debicella, A., 2021. How SMEs compete against global giants through sustainable competitive advantages. Journal of Small Business Strategy, 31(5), pp.13-21. https://doi.org/10.53703/001c.29812

[21] Gardner, E. 2022. Here's How Amazon Is Strangling Small Businesses. Accessed from https://perfectunion.us/insider-describes-how-amazon-is-strangling-small-businesses/

[22] George, A.S., 2023. Evaluating India's economic growth: challenges and opportunities on the path to 5 trillion dollars. Partners Universal International Innovation Journal, 1(6), pp.85-109.

[23] Grand View Research, 2024. Cloud Computing Market Size & Trends. https://www.grandviewresearch.com/industry-analysis/cloud-computing-industry

[24] Grigorescu, A. and Ion, A., 2019. A content analysis on the small and medium-sized enterprises in the United States of America. Review of Applied Management Studies, 17(1), pp.39-52.

[25] He, P., 2023. Retail Supply Chain Systems Analysis: A Case of Walmart. Advances in Economics, Management and Political Sciences, 31(1), pp.96-101. https://doi.org/10.54254/2754-1169/31/20231513

[26] Hicks, M.J., 2009. Wal-Mart and small business: boon or bane?. Review of Regional Studies, 39(1), pp.73-83. http://dx.doi.org/10.52324/001c.8201

[27] Ingaldi, M. and Ulewicz, R., 2019. Problems with the Implementation of Industry 4.0 in Enterprises from the SME Sector. Sustainability, 12(1), p.217. https://doi.org/10.3390/su12010217

[28] Kersten, R., Harms, J., Liket, K. and Maas, K., 2017. Small Firms, large Impact? A systematic review of the SME Finance Literature. World development, 97, pp.330-348.

[29] Le, T.T., 2023. Corporate social responsibility and SMEs' performance: mediating role of corporate image, corporate reputation and customer loyalty. International Journal of Emerging Markets, 18(10), pp.4565-4590.

[30] Li, H., Yang, Z., Jin, C. and Wang, J., 2023. How an industrial internet platform empowers the digital transformation of SMEs: theoretical mechanism and business model. Journal of Knowledge Management, 27(1), pp.105-120.

[31] Liang, L., Alam, A., Sorwar, G., Yazdifar, H. and Eskandari, R., 2021. The combined network effect of sparse and interlocked connections in SMEs' innovation. Technological Forecasting and Social Change, 163, p.120488. https://doi.org/10.20944/preprints202305.1748.v1

[32] Matinaro, V., Liu, Y. and Poesche, J., 2019. Extracting key factors for sustainable development of enterprises: Case study of SMEs in Taiwan. Journal of cleaner production, 209, pp.1152-1169. https://doi.org/10.1108/JABS-10-2017-0176

[33] McQuaid, R. and Webb, A., 2020. The importance of SMEs as innovators of sustainable inclusive employment: some issues resulting from shocks to the economy imposed by the COVID-19 pandemic. In The Importance of SMEs as Innovators of Sustainable Inclusive Employment (pp. 33-46). Rainer Hampp Verlag.

[34] Makwara, T., 2022. Large firms as threats to small business survival in South Africa: An exploratory literature review. Journal of Management and Entrepreneurship Research, 3(1), pp.14-25. https://doi.org/10.34001/jmer.2022.6.03.1-25

[35] Matsakis, L. 2023. How Amazon turned small businesses into "day traders. Accessed from https://www.semafor.com/article/01/25/2023/how-amazon-turned-small-businesses-into-day-traders

[36] Mitchell, S. and Knox, R., 2021. Issue Brief: How Amazon Exploits and Undermines Small Businesses, and Why Breaking It Up Would Revive American Entrepreneurship. Accessed from https://ilsr.org/articles/fact-sheet-how-breaking-up-amazon-can-empower-small-business/

[37] Mohamed, N., Al-Jaroodi, J. and Lazarova-Molnar, S., 2019. Leveraging the capabilities of industry 4.0 for improving energy efficiency in smart factories. Ieee Access, 7, pp.18008-18020.

[38] Muller, P., Gagliardi, D., Caliandro, C., Bohn, N.U., Klitou, D., Zakai, H., Vidal, D., Probst, L., Schiersch, A. and Mattes, A., 2014. A partial and fragile recovery-Annual Report on European SMEs 2013/2014.

[39] Naudé, W., 2024. Destructive digital entrepreneurship. In Handbook of Research on Entrepreneurship and Conflict (pp. 292-328). Edward Elgar Publishing.

[40] Nuryyev, G., Wang, Y.P., Achyldurdyyeva, J., Jaw, B.S., Yeh, Y.S., Lin, H.T. and Wu, L.F., 2020. Blockchain technology adoption behavior and sustainability of the business in tourism and hospitality SMEs: An empirical study. Sustainability, 12(3), p.1256.

[41] Ojeleye, Y.C. and Ojeleye, C.I., 2024. Toxic supervision, dehumanisation and SMEs performance in Nigeria: Moderating role of resilience. *Oeconomica Jadertina*, *14*(1), pp.41-61.

[42] Okijie, S.R. and Effiong, U.E., 2024. Financing and successful micro, small and medium scale enterprise development in Nigeria. East African Finance Journal, 3(1), pp.1-26. https://doi.org/10.59413/eafj/v3.i1.1

[43] Prasad, V.K., Dansana, D., Bhavsar, M.D., Acharya, B., Gerogiannis, V.C. and Kanavos, A., 2023. Efficient Resource Utilization in IoT and Cloud Computing. Information, 14(11), p.619.

[44] Pylaeva, I.S., Podshivalova, M.V., Alola, A.A., Podshivalov, D.V. and Demin, A.A., 2022. A new approach to identifying high-tech manufacturing SMEs with sustainable technological development: Empirical evidence. Journal of Cleaner Production, 363, p.132322. https://doi.org/10.1016/j.jclepro.2022.132322

[45] Prasanna, R.P.I.R., Upulwehera, J.M.H.M., Senarath, B.D.T.N., Abeyrathne, G.A.K.N.J., Rajapakshe, P.S.K., Jayasundara, J.M.S.B., Ekanayake, E.M.S. and Gamage, S.K.N., 2021. Factors determining the competitive strategic positions of the SMEs in Asian developing nations: Case study of SMEs in the agricultural sector in Sri Lanka. Economies, 9(4), p.193. https://doi.org/10.3390/economies9040193

[46] Ramirez-Portilla, A. and Bermúdez, E.G.T., 2023. Competitive Analysis to Innovate the Business Model of Small and Medium-Sized Enterprises in the Dairy Industry: A Study from an Emerging Market. https://doi.org/10.5772/intechopen.113348

[47] Rizos, V., Behrens, A., Van der Gaast, W., Hofman, E., Ioannou, A., Kafyeke, T., Flamos, A., Rinaldi, R., Papadelis, S., Hirschnitz-Garbers, M. and Topi, C., 2016. Implementation of circular economy business models by small and medium-sized enterprises (SMEs): Barriers and enablers. Sustainability, 8(11), p.1212. https://doi.org/10.3390/su8111212

[48] Sidek, S., Rosli, M.M., Hasbolah, H. and Khadri, N.A.M., 2020. An overview on criteria of Small and Medium Enterprises (SMEs) across the economies: a random selection of countries. Journal of Critical Reviews, 7(4), pp.1312-1321.

[49] Szczepańska-Woszczyna, K. and Kurowska-Pysz, J., 2016. Sustainable business development through leadership in SMEs. Ekonomia i Zarządzanie, 8(3), pp.57-69. https://doi.org/10.1515/emj-2016-0024

[50] Teoh, M.F., Ahmad, N.H., Abdul-Halim, H. and Ramayah, T., 2022. Is digital business model innovation the silver bullet for SMEs competitiveness in digital era? Evidence from a developing nation. Vision, p.09722629221074771.

[51] Vailshery, L.S. 2024. Cloud computing in the United States - statistics & facts https://www.statista.com/topics/12431/cloud-computing-in-the-united-states/#topicOverview

[52] Vrontis, D., Chaudhuri, R. and Chatterjee, S., 2022. Adoption of digital technologies by SMEs for sustainability and value creation: Moderating role of entrepreneurial orientation. Sustainability, 14(13), p.7949.

[53] Xie, X., Han, Y., Anderson, A. and Ribeiro-Navarrete, S., 2022. Digital platforms and SMEs' business model innovation: Exploring the mediating mechanisms of capability reconfiguration. International Journal of Information Management, 65, p.102513.

[54] Yeo, H.Y. and Ong, C.H., 2024. Industry 4.0 competencies and sustainable manufacturing performance in the context of manufacturing SMEs: A systematic literature review. SAGE Open, 14(3), p.21582440241271263.

[55] Yong, R., 2023. The impact of digital technology on business operational performance: A study on Chinese SMEs. http://hdl.handle.net/10071/30560

[56] Yuen, T.M. and Baskaran, S., 2023. Going digital for SMES: Adapting business model and seizing opportunities to achieve sustainable business performance. International Journal of Academic Research in Business and Social Sciences, 13(11), pp.976-87. ttp://dx.doi.org/10.6007/IJARBSS/v13-i11/19401

[57] Yusoff, T., Wahab, S.A., Latiff, A.S., Osman, S.I., Zawawi, N.F. and Fazal, S.A., 2018. Sustainable growth in SMEs: A review from the Malaysian perspective. Journal Management. & Sustainability, 8, p.43.

[58] Zhani, N., Mouri, N. and Hamdi, A., 2021. Can a technology firm desire too much of a good thing? The double-edged sword effects of technology orientation on performance. *European Business Review*, *33*(5), pp.725-741.