AI Integrated Product Development: Building Sustainable Competitive Advantage

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***Abstract*—*Artificial intelligence (AI) has long influenced modern life, extending beyond well-known applications such as ChatGPT to essential roles in digital advertising,personalized recommendations, and autonomous vehicles. While the latest popularity of Generative AI is leading to superficial product enhancements, true competitive advantage arises from deeply embedding AI into products and core business functions. This article examines the evolution of AI-powered products, drawing parallels with the smartphone revolution. Just as smartphones transitioned from novelty items to indispensable tools, AI integration will likely progress through phases: enhancing existing experiences, creating AI-first novelty products, and developing AI-integrated value-added solutions. Successful AI integration starts with substantial investment in talent, data infrastructure, and strategic vision. By focusing on deep AI integration, businesses can create sustainable competitive moats and enduring value, transforming industries and enhancing user experiences. Through case examples and historical insights, this article provides a roadmap for leveraging AI to build innovative, impactful products, and build sustainable business.*

Key words: Artificial intelligence (AI), AI chatbots, AI integrated product, competitive moat, digital advertising, generative AI, product development, smartphone revolution, software engineering, sustainable business.

I. INTRODUCTION

EVEN before OpenAI's ChatGPT became mainstream, Artificial Intelligence (AI) pervaded modern life more than most realize. For instance, advertisers have been leveraging Automated Bidding [1] powered by AI models to maximize their return on investment (ROI) on digital advertising platforms. Similarly, AI algorithms underlie many of the daily digital interactions, from personalized ads [2] and product recommendations [3] to self-driving cars [4]. AI has long transformed and optimized how we build and consume products, both digital and nondigital [21] with limited knowledge of an everyday human. For instance, for over two decades, Advertising Platforms have (including our current employers) been enabling capabilities such as targeting, serving, and bidding through AI to deliver higher ROI to customers.

In 2022, the global total corporate investment in AI reached almost 92 billion U.S. dollars. AI investment has increased more than sixfold since 2016, given the importance of the development of AI around the world [24].

In recent years, generative AI products such as ChatGPT, Gemini, and Perplexity have made AI a mainstream discourse, sparking excitement and concern in common human conversations. Parallely, amidst the ChatGPT and Generative

AI popularity, companies across industries are integrating *"AI Capabilities"* into their products as AI's marketing appeal enhances brand image, product attractiveness, and brand equity [30]. Yet, many integrations are superficial. For instance, the rapid spread of "AI Chatbots" are mimicking ChatGPT without substantial value or innovation. A great example of this is TurboTax's AI Assistant (called Intuit Assist) that only makes their help center content available in an interactive manner through their AI Assistant. Prevailing opinion is that relying on Intuit Assist for even slightly challenging tax questions, one could end up confused or maybe even audited [25].

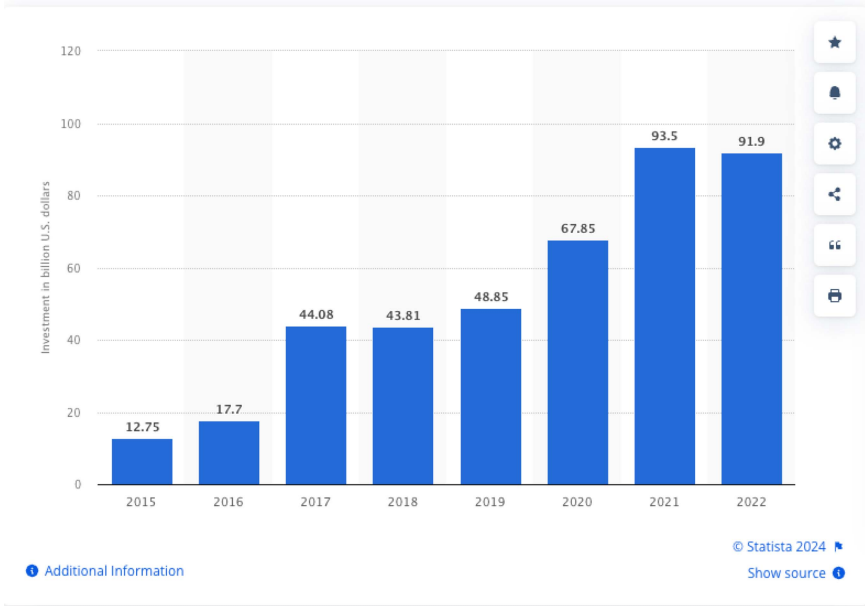

Figure 1. Mobile usage increased 4–5× from 2010 to 2013 [28].

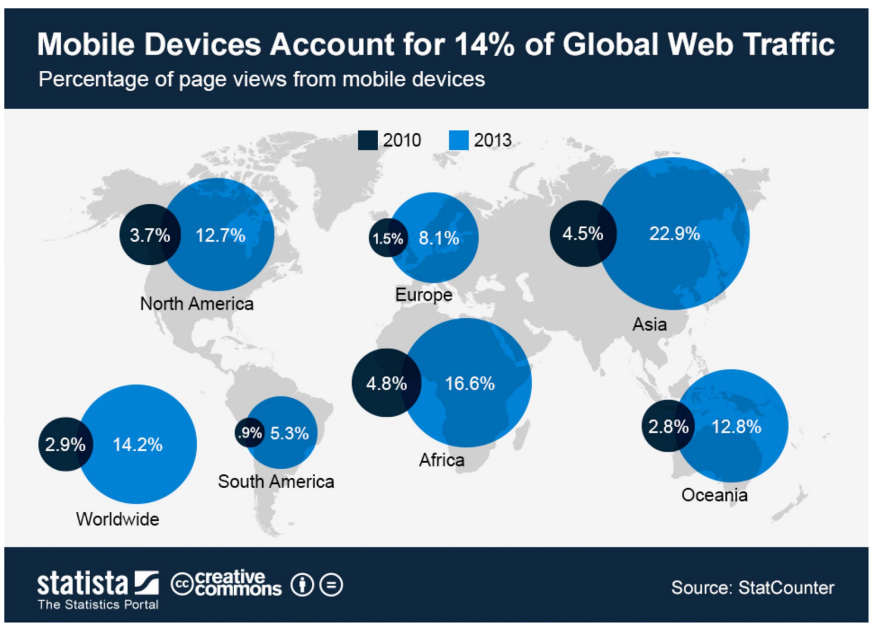

Figure 2. Mobile usage increased 4–5× from 2010 to 2013 [28].

Here are a few key stats to highlight this trend.

1) 88% of users had at least one conversation with a chatbot in 2022 [6].
2) 58% of companies in a B2B sector actively use chatbots, compared to 42% of B2C companies [7].
3) 59% of customers expect a chatbot to respond within 5 s [8].

Outside AI Chatbots, many organizations are using AI superficially, employing basic machine learning models to automate data tasks rather than adaptive systems. Harvard Business Review summarizes that while building AI-powered organizations only 8% of firms engage in core practices that support widespread adoption. Most firms have run only ad hoc pilots [26].

This approach may not provide a long-term competitive advantage. Based on our collective first-hand experience of working in Amazon, Google, Meta, and LinkedIn—true differentiation starts by embedding AI deeply, making it the core decision-maker to enable intelligent automation, personalization, and continuous learning throughout the entire product value chain. Such deep integration demands significant investment in talent, data infrastructure, and strategic vision. A 2024 survey published in Harvard Business Review [9] highlights that while generative AI is making companies more data oriented, 60% of them are still in the experimental stage with generative AI.

This article explores how such AI-integrated products create lasting value and differentiation enabling organizations to build sustainable moats.

II. Smartphone Revolution: A Blueprint for AI

In the past two decades,

organizations have gained valuable insights by evolving into smartphone-first companies. These lessons provide a blueprint for the AI revolution. By examining mobile strategy evolution, we can better navigate and leverage the upcoming AI era for enhanced efficiency and innovation. Having worked at Amazon, Google, Meta, and LinkedIn in Product Management, Engineering, and Product Marketing functions, we have been part of this evolution and our recommendations reflect our learnings and insights.

The iPhone's introduction [27] in 2007 revolutionized the technological landscape, marking a significant milestone that redefined how we all consume content, communicate with others, and became essential tools embedded in daily life.

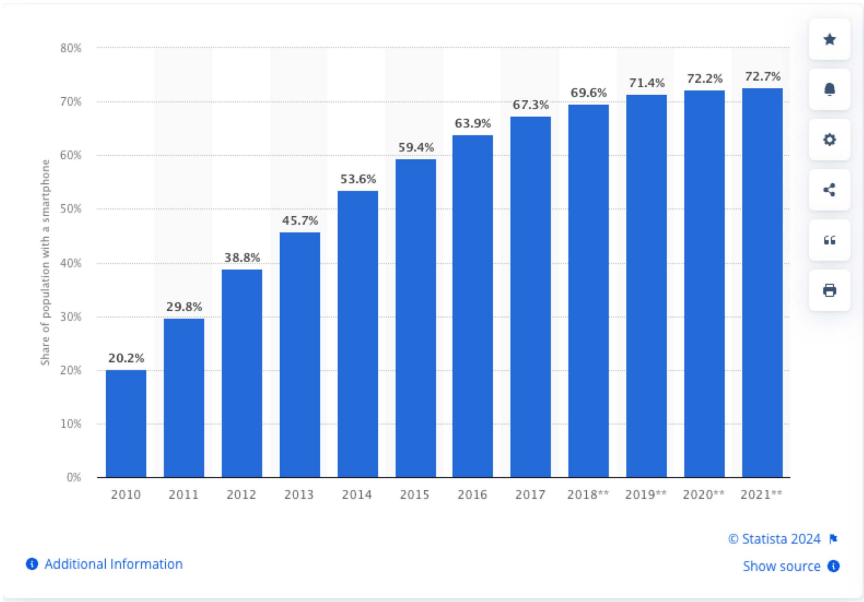

Figure 3. This statistic shows the smartphone penetration as a share of the population in the US from 2010 to 2021. In 2021, 72.7% of the U.S. population used a smartphone [29].

Figure 4. In 2023, consumer spending on smartphones grew to $171 billion (+3% YoY), while hours spent peaked at 5.1 trillion (+6% YoY). Meanwhile, downloads remained flat at 257 billion (+1% YoY) [31].

Smartphones true potential became apparent as they facilitated a wide array of activities—enabling cashless transactions for street vendors in India [10], supporting remote education in Africa [11], and providing real-time feedback for athletes worldwide [12]. Smartphones' omnipresence reshaped communication, work, learning, and interaction, demonstrating unprecedented sector-wide impact.

The smartphone evolution can be marked by three distinct phases.

1) *Fit to the Form-Factor:* Businesses, with an intention to catch up with the smartphone evolution, began adapting their digital solutions to fit the smartphone form-factor. They often shrank desktop versions of products to fit smaller screens. This approach led to suboptimal user experiences [13], missing features, and a failure to leverage native smartphone capabilities. After conducting research across hundreds of applications, for instance, Foursquare's initial app combined a social check-in feature with a local search function. This convoluted design confused users, who struggled to understand its primary purpose resulting in Foursquare splitting the app in two—Foursquare and Swarm [14]. Such examples highlighted the need for native mobile apps—Nielsen Norman Group published a report in 2012 [15] that summarized good mobile user experience requires a different design than what is needed to satisfy desktop users. Two designs, two sites, and cross-linking to make it all work.
2) *Build Novelty Products:* Businesses then transitioned

to showcasing the power and versatility of smartphones by building novelty products that often did not add much value to the user. For instance, Amazon launched the Fire Phone in 2014 [16], featuring a 3-D display and dynamic perspective technology. These impressive advancements, however, lacked substantial practical value for users as the products were not built to solve user problems or jobs to be done [42]. Consequently, the product failed to achieve widespread adoption. This situation mirrors the early days of mobile apps, where businesses showcased technological capabilities without optimizing user experience or addressing real needs. A classic example of early app store excess, numerous flashlight apps flooded the market, many with no differentiation or questionable value beyond demonstrating the device's LED capabilities [43]. Needless to say, many of those app providers are no longer in business.

3) *Smartphone-First Products:* Businesses started to leverage smartphone capabilities to build enduring products and services, transforming themselves into household names. Two examples stand out: Uber [17] utilized smartphones' GPS [18] and on-the-go features to launch a ride-sharing service, disrupting the traditional taxi industry. Similarly, in 2011 Starbucks introduced [19] digital payment options in their smartphone app, pioneering cashless payments now popularized by NFC technology.

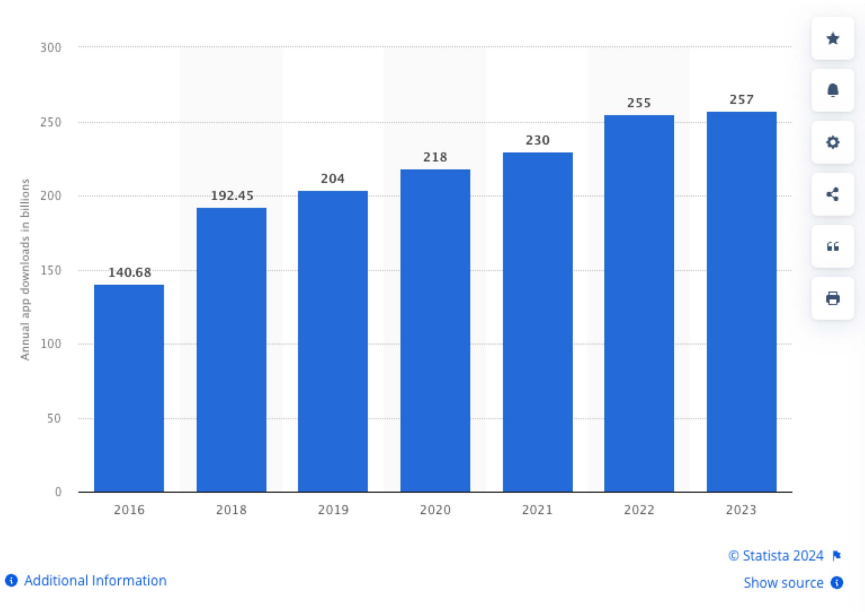

Figure 5. Mobile app downloads increased between 2016 and 2022. However, in 2023, the global app downloads stagnated, reaching 257 billion downloads [32].

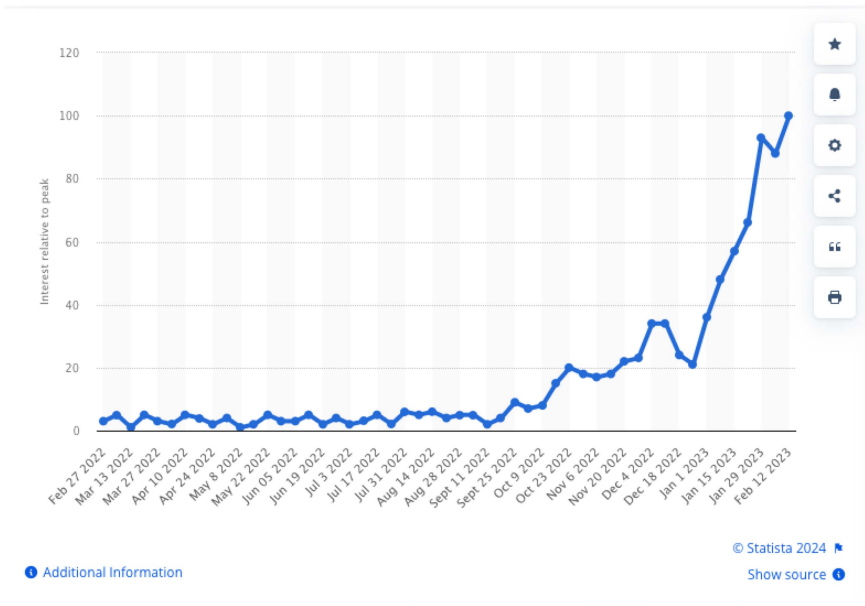

Figure 6. From late 2022, global searches for the keyword "generative AI" had experienced a significant increase [33].

Similarly, products such as Instagram and Snapchat, along with countless others, leveraged the ubiquitously available camera functionalities in smartphones to power what we now know as the Creator Economy [31], building multibillion dollar businesses.

We have started to observe similar patterns in the on-going AI revolution and let's talk about it in Section III.

III. Evolution of AI-Powered Products: A Three-Phase Model

Integrating AI into products and services undergoes an evolution reminiscent of the smartphone revolution, marked by three distinct phases: *enhancing existing experiences, creating AI-first novelty products, and emerging AI-integrated value-added products*.

Each phase reflects a maturation in understanding and implementing AI technologies that parallels earlier technological evolutions.

1) *Enhancing Existing Experiences:* In the initial phase, companies often rush to integrate AI into existing platforms, driven by fear of missing out. This eagerness typically results in superficial enhancements that fail to tap into AI's full potential. This scenario mirrors early smartphone days, where businesses adapted websites for mobile access without optimizing the mobile experience. On the heels of ChatGPT's ascent, many companies rushed to integrate AI chatbots superficially [20]—as seen with Chevy chatbot that offered a customer a 2024 Chevy Tahoe for the unrealistic price of one dollar [46]. This underscores how enhancing existing experiences with AI not only stops you from harnessing the power of AI but also how such experiences are susceptible to manipulation and its real-world utility.
2) *AI-First Novelty Products:* The second phase sees companies launching innovative products showcasing AI's capabilities but often lacking practical utility. These offerings tend to serve more as technological demonstrations than real-world solutions. A case in point are recently popular wearable AI pins—specialized AI-powered wearables [21] that, while technologically impressive, provide limited practical value outside what the current Smartphones offer. This phase echoes features such as 3-D displays in smartphones, which, despite their initial wow factor, failed to achieve widespread adoption due to limited practical applications. During this phase, the focus skews towards creating visually impressive products or showcasing technological advancements without a clear understanding of whether they fulfill a real need or solve an existing problem.
3) *AI-Integrated Value-Added Products:* The final phase represents a pivotal shift towards refining AI applications to deliver tangible benefits. In this mature phase, companies go beyond demonstrating AI's potential and focus on deeply integrating the technology to enhance efficiency, personalization, and user satisfaction. This integration is akin to how smartphone GPS became embedded features of many smartphone applications that disrupted the commute or transportation industry [34]. In this phase, AI transcends its role as a novelty to become crucial in enhancing existing products and services or creating new ones. Our own companies have built AI-integrated products such as LinkedIn Accelerate [35], and Meta Advantage [36] that offer AI-integrated ad tools that drive ROI and real business outcomes for customers.

A 2022 survey by Ipsos [38] for the World Economic Forum [38] surveyed the impact of AI on everyday humans

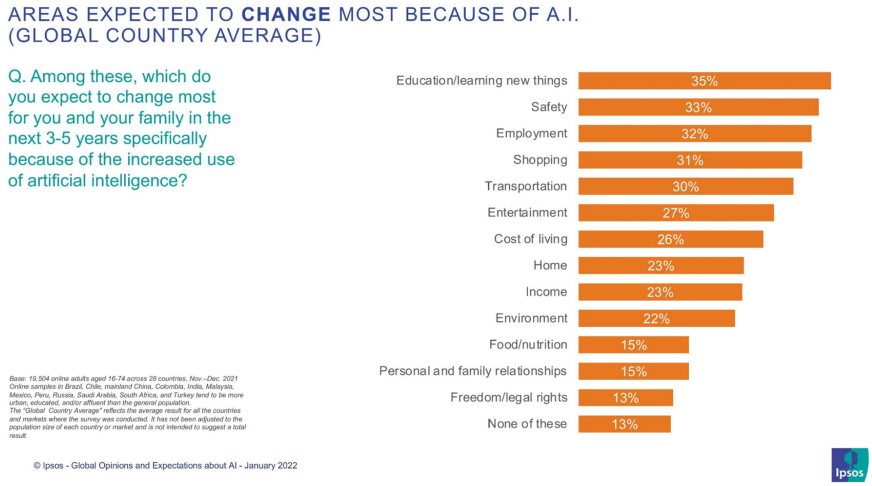

Figure 7. Among areas expected to change most because of AI, education is at the top and freedom/legal rights is at the bottom [37].

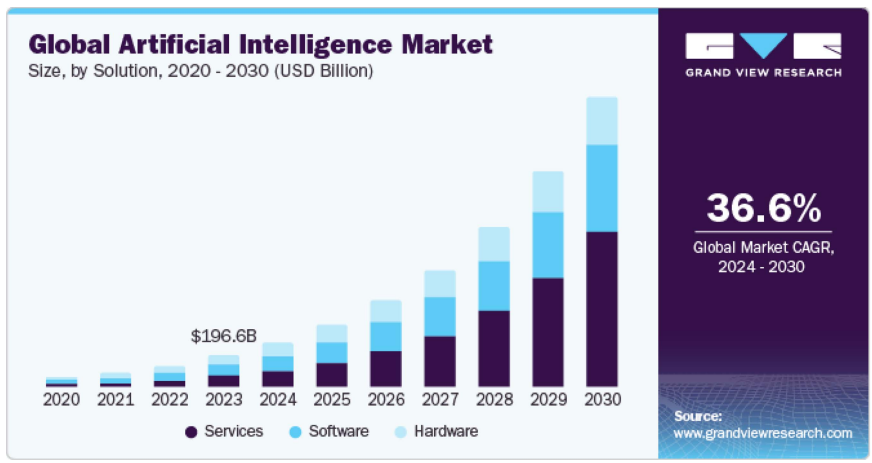

Figure 8. Global AI market size was estimated at USD 196.63 billion in 2023 and is projected to grow at a CAGR of 36.6% from 2024 to 2030 [38].

in 28 countries around the world. Among those surveyed, some 60% of people think that products and services using AI will make their lives easier, with 60% also expecting AI to profoundly change their daily life in the coming years.

The trajectory of AI in product integration shows clear progression from initial overenthusiasm and superficial application towards more thoughtful and impactful use. Understanding these phases helps businesses anticipate future AI development trends and strategically position themselves to leverage AI technology effectively, creating sustainable value for users and broader society.

IV. AI-Integrated Product Development for Sustainable Business

The global AI market size was estimated at USD 196.63 billion in 2023 and is projected to grow at a CAGR of 36.6% from 2024 to 2030 [38]. The continuous research and innovation directed by tech giants are driving adoption and integration of AI in industry verticals, such as automotive, healthcare, retail, finance, and manufacturing [45] leading to AI-integrated product development that paves the path for sustainable competitive advantage for the companies [44].

Unlike the relatively fixed trajectory of smartphone evolution, AI development's path is not predetermined. We can shape its course by adopting an AI-integrated product development approach leading to competitive moat and a sustainable business.

1) *Building AI-Integrated Products: A Foundation for Success:* To build AI-integrated products that create lasting value, companies must shift their focus from superficial enhancements of their products and services to deeper integration. This involves embedding AI as a core decision-maker, leveraging its capabilities to automate tasks, personalize experiences, and drive continuous learning. Start by identifying areas where AI can truly add value, focusing on solving real customer problems and enhancing existing workflows. Invest in robust data infrastructure to ensure AI models have access to high-quality, relevant data for training and optimization. Assemble a skilled team of data scientists, engineers, and domain experts who can collaborate effectively to build and refine AI solutions. Finally, embrace data anonymization, differential privacy, and secure multiparty computation to safeguard sensitive information and foster user trust leading to better brand trust. From our own expereince, LinkedIn (e.g., LinkedIn Learning AI-powered Coaching Experience) [39] and Meta [40] (e.g., Meta AI—Expand your knowledge and capabilities—get answers to your questions, get things done, create and connect with Meta AI) [41] are rolling out Generative AI integrated offerings.
2) *Creating a Competitive Moat With AI:* AI integration is key to building a competitive moat. By embedding AI into core business and operational processes in addition to product offerings, companies can create a barrier to entry for competitors [47]. AI-powered automation can streamline operations, reduce costs, and improve efficiency, giving companies a significant edge. Personalized experiences, driven by AI's ability to understand individual preferences and needs, foster customer loyalty and retention. Continuously learning AI models can adapt to changing market dynamics and customer behavior, ensuring products and services remain relevant and competitive over time.
3) *Building a Sustainable AI-Powered Business:* To build a sustainable AI-powered business, it is crucial to go beyond the initial hype and focus on creating products and services that deliver tangible value to users. Invest in research and development to explore new AI applications and stay ahead of the curve. Foster a culture of innovation within the organization, encouraging employees to experiment with AI and explore its potential in different areas powered by suitable organizational structure. By prioritizing user needs, investing in continuous improvement, and fostering a culture of innovation, companies can build a sustainable business that leverages AI to create lasting value for customers and stakeholders alike.

V. Conclusion

The integration of AI into products and services promises to reshape industries and enhance user experiences. However, companies must move beyond superficial AI applications to realize its full potential. By adopting an AI-first approach, focusing on user needs, and continuously innovating, companies can build sustainable competitive advantages. Learning from past technological revolutions such as smartphones, we can navigate AI's evolution thoughtfully, ensuring it becomes a central, enduring pillar of modern business.

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