

# Bridging the Digital Divide: Supporting Aging Small Business Owners in a Rapidly Modernizing Economy

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**ABSTRACT:** This paper evaluates the growing difficulty small business owners encounter as digital technologies and AI evolve faster than many can adapt. A combination of interviews with five small business owners and secondary market analysis was used to identify the main barriers keeping aging entrepreneurs away from digital transformation. The findings reveal substantial gaps in digital literacy, widespread skepticism toward available digital tools, and differences in needs by industry. They also show that although many business owners recognize the importance of adopting digital technologies, they often lack the resources, guidance, or confidence to take meaningful action. Based on these insights, this paper proposes principles for designing accessible digital transformation services for small businesses that are struggling to adapt to the fast-changing digital world. The research contributes to understanding technology adoption in small business contexts and provides practical guidance for narrowing the generational digital divide.

**KEYWORDS:** Economics, Entrepreneurship, Small Businesses, Digital Transformation, Technology Adoption.

## ■ Introduction

The modern landscape of small businesses has fundamentally transformed as digital technologies have evolved and become a competitive necessity for any business in the modern age. Recent findings show that small and medium-sized enterprises (SMEs) struggle to adopt digital tools at the pace required to keep up with the market.<sup>1</sup> This digital adoption gap has grown considerably in recent years. It is estimated that the COVID-19 pandemic accelerated digital transformation timelines by five to seven years across most industries.<sup>2</sup> This forces businesses that previously relied largely on word of mouth and referrals to adapt to the modern industry, which depends on search engine optimization, social media engagement, and online customer reviews.

This challenge disproportionately affects older business owners who started their businesses before the large-scale adoption of digital systems and social media marketing.<sup>3</sup> These entrepreneurs built successful businesses through traditional methods, emphasizing personal relationships, physical storefronts, advertising, and community reputation. However, consumer behavior has shifted fundamentally, with approximately 97% of consumers now searching online for local businesses,<sup>4</sup> and 88% of consumers claiming to trust online reviews as much as personal recommendations.<sup>5</sup> These changes in consumer behavior make it so that businesses without strong digital presences become invisible to large segments of potential customers, regardless of their product quality or service excellence.

Over 50 percent of U.S. small business owners are aged fifty-five or older,<sup>6</sup> representing a substantial demographic that is becoming vulnerable to displacement. This reality creates an urgent policy and economic concern. Baby Boomer entrepreneurs control an estimated \$10 trillion in business assets,<sup>7</sup>

and their businesses employ millions of workers in communities nationwide. If these enterprises fail to compete digitally, the consequences extend far beyond individual business losses. This will have a large effect on employment, tax revenues, and the economic strength of each community. This generation of business owners possesses decades of professional expertise, customer relationships, and valuable knowledge that risk being lost if their enterprises cannot successfully transition to digital business models.

### *The Technology Adoption Gap:*

Analyzing the adoption of e-commerce among SMEs outlines key barriers preventing the adoption of digital tools among business owners. These barriers include low technological literacy among business owners, resource constraints, and resistance to change.<sup>8</sup> All of which have the greatest impact on older business owners, thus driving a wedge between older and younger entrepreneurs. This is partly because individuals who did not grow up with digital technologies experience higher cognitive load when learning new digital systems, leading to increased frustration and lower adoption rates.<sup>9</sup>

To understand the current market, the development of AI software and its different uses must be analyzed. Current AI tools enable AI-powered marketing automation through the use of AI to create templates, designs, and content schedules. AI-powered website builders such as Lovable, Bolt, and Base 44 enable non-technical entrepreneurs to create fully functional and aesthetic websites. Customer relationship management systems use AI to keep track of clients and follow up to ensure all leads are pursued and targeted efficiently and optimally. AI-powered data analytics platforms specifically designed for small businesses help to keep track of performance and highlight areas to focus on for maximum results.<sup>10</sup> These tools are

becoming essential to the efficiency of every business in the current market. Additionally, the AI consulting services market was estimated at roughly \$22.27 billion in 2025 and is expected to explode, with a compound annual growth rate of 35.8%, to \$257.60 billion by 2033.<sup>11</sup> This growth will greatly benefit large companies that have sufficient technology budgets and a designated IT staff. However, the small businesses, especially those owned by aging entrepreneurs, are at a disadvantage in that they lack the necessary knowledge and budget to adopt these tools and therefore cannot benefit from the anticipated market growth. A particular concern is the unique complexity of AI adoption faced by small businesses. While these AI tools offer tremendous competitive advantages, such as allowing personalized customer experiences, automating marketing campaigns, predicting inventory levels, and basing decisions on data, they add incredible layers of complexity to a business. Many older business owners consider AI to be confusing, unpredictable, or even threatening to personal relationships, which are often the core of their business models.<sup>12</sup> Service providers who do not address these concerns cannot help these businesses and thus cannot succeed in selling their services.

#### ***Broader Economic and Social Consequences:***

Small businesses losing market share to digitally sophisticated competitors will have consequences that will be felt economically and socially. The loss of local small businesses will result in the loss of employment opportunities, community character, and alternatives to corporate retail chains.<sup>13</sup> Small businesses account for 44% of U.S. economic activity and employ 47.1% of the private workforce,<sup>14</sup> further proving the scope of the problem. The decline of small businesses would have a fundamental impact on the American economy and society and would bring undesired consequences. From a market competition perspective, the increase in consumer spending toward large enterprises may reduce price competition and consumer choice.<sup>15</sup> Large corporations possess advantages that enable them to implement sophisticated digital marketing operations, personalized customer experiences, and seamless integration, giving them an unfair edge over local businesses. Amazon, for example, employs thousands of engineers focused on its continual development and improvement in line with cutting-edge innovations. These investments are unreasonable and impossible for individual small businesses.

There are also social and cultural implications to this shift in market share as local businesses serve functions beyond simply selling items or providing services. They create gathering places, make community events possible, provide first jobs for young people, and contribute to neighborhood identity.<sup>16</sup> The replacement of locally-owned businesses with national chains reduces this community attachment and engagement. Research shows that communities with more local businesses demonstrate stronger community unity, friendship between neighbors, and increased political participation.<sup>17</sup> The displacement of local businesses threatens not only the economy, but also the social fabric that binds communities together.

#### ***The Affordability Paradox:***

The vast majority of small business owners understand the importance and necessity of adopting online methods. One major limiting factor keeping small businesses from adapting to digital methods is the cost. Approximately 66 percent of small business owners allocate less than \$1,000 annually towards marketing.<sup>18</sup> This reveals a critical market failure: business owners recognize the value of online marketing, but cannot access solutions at reasonable prices. For businesses with thin profit margins, spending thousands of dollars on unproven digital marketing services is an unreasonable financial risk. Every dollar must be spent strategically with priorities like inventory, payroll, and facilities, and other immediate costs. When positioned in a place where they are forced to allocate money towards business necessities or digital marketing, spending on marketing becomes difficult to justify. Many small business owners also lack financial analysis capabilities, leading them to default to minimal spending. This explains why so many small businesses fall victim to marketing services that make fake promises. The combination of limited marketing budgets, low digital literacy, and an urgent need for presence creates conditions of desperation, hence enabling exploitation. To treat small businesses ethically, producers must do more than offer products and services at an affordable cost; they must earn trust through transparency, demonstrate results, and enable business owners to make informed decisions.

#### ***Current Service Inadequacies:***

Current providers attempting to address this issue, primarily digital marketing agencies and freelancers, inadequately address the needs of small businesses. Major agencies typically charge \$5,000–\$30,000 for project-based work and \$1,000–\$10,000 monthly for ongoing services.<sup>19</sup> These prices reflect the agency's reliability; however, they are simply inaccessible to the average small business. These small businesses, which make \$50,000–\$250,000 in annual revenue, are the businesses most vulnerable to digital displacement. The agency business model optimizes for larger clients who generate substantial recurring revenue, making small business clients economically unattractive despite their numerical prevalence.

Freelancers, while more affordable at \$500–\$5,000 per project,<sup>20</sup> still exceed most small business marketing budgets. Also, they do not cover all the needs of small business owners, leaving various digital tasks still in their hands. Freelancer quality varies, and small business owners lack the expertise to evaluate technical competence before opting in to their services. They are also unaware of what skills are necessary for their specific task or project, making it difficult to choose a freelancer whose abilities align with the business's needs. Small business owners risk wasting limited budgets on ineffective services, reinforcing their reluctance to invest in digital transformation.

Furthermore, many existing providers have not fully integrated emerging AI capabilities or communicated their abilities in accessible terms for non-technical business owners. The service provider landscape is split between traditional agencies using established methods and technology-focused startups emphasizing cutting-edge tools. Neither model serves

aging small business owners optimally. Traditional agencies may lack expertise in new AI-powered tools. Tech-heavy startups, on the other hand, often communicate in jargon-heavy language that alienates non-technical clients. There is also a misalignment in the targets of these small businesses and existing service providers. Providers often focus on technical metrics such as website traffic, social media engagement, and click-through rates, while business owners care primarily about bottom-line outcomes: customer acquisition, revenue growth, and profitability.

### ***Research Objectives and Significance:***

This research addresses the following question: What barriers prevent aging small business owners from effectively adopting digital transformation tools, and what characteristics should accessible digital services possess to address these barriers? Through exploratory qualitative interviews supplemented by market analysis, this study examines the various obstacles facing older entrepreneurs. It then identifies the principles for effective intervention strategies.

The significance of this study spans several areas. It adds to existing research by documenting how generational differences in digital literacy affect small business competitiveness. It also offers practical guidance for service providers working with older entrepreneurs. In addition, the findings make the case that supporting small businesses contributes to community and economic development.

## **■ Methods**

### ***Research Design:***

This study used a variety of methods, combining semi-structured interviews with secondary market research and case studies. In the absence of prior research into specific barriers to digital transformation for aging small business owners, an open-ended approach was appropriate to uncover themes and inform areas of further investigation.<sup>21</sup> The study did not test one specific pre-defined hypothesis; it aimed to explore the experiences, perceptions, and needs of participants regarding digital business tools.

### ***Data Collection:***

Five small business owners were selected to represent a diverse range of experiences from diverse industries. Selection criteria included: business ownership for at least five years, relatively few employees (under 50), primary decision-making authority over business operations, and willingness to discuss technology use and personal challenges. The sample included owners from retail (international supply chain), real estate development, manufacturing (rug production, 40+ years of operation), professional services (licensed psychologist), and real estate investment. Ages ranged from 45 to 85 years, though exact ages were not formally recorded.

### ***Interview Protocol:***

Semi-structured interviews were conducted via telephone following proper protocols for educational research. Each interview lasted 10–20 minutes. Before the interview, par-

ticipants were informed about the study's purpose, provided verbal consent, and were assured of confidentiality. While the interview duration was shorter than ideal for deeper research, the format enabled a level of consistency across participants while allowing flexibility for follow-up questions based on individual responses.

**Table 1:** Interview questions organized by focus area.

Question	Focus Area
Do you currently use any online tools for your business? If so, which ones and how do you use them?	Current adoption
Have there been moments where using technology for your business has made you frustrated or overwhelmed? Example?	Pain points
What is the hardest part about keeping your business up to date with new technology?	Barriers
What specific things online do you believe you are missing out on?	Awareness gaps
What's something you saw other businesses doing that you considered but didn't try? Why not?	Observational learning
If someone offered help improving your online presence, what would you need to know in order to trust them?	Trust factors
What is your goal in improving your digital presence? What would success look like for you?	Desired outcomes
What are your views on the implementation of digital tools and AI in your industry?	Industry context

### ***Data Analysis:***

Interviews were analyzed thematically, following Braun and Clarke's six-phase framework.<sup>22</sup> This systematic process involves identifying areas of interest recurring between participants, organizing these into broader thematic groups, and refining those groups to reach clear, coherent, and distinguishable categories. Given the limited sample size ( $n = 5$ ) for this analysis, priority was placed on the most prominent and consistently observed patterns.

### ***Secondary Data Collection and Analysis:***

Secondary sources provided context to the interview findings and included industry reports on the size and growth of the digital transformation market, survey data regarding small business technology spending and attitudes, case studies published on digital transformation efforts, and price lists from providers of digital marketing services. Materials were selected for their recency, credibility, and relevance to this study's focus.

### ***Limitations:***

There are several limitations regarding the generalizability of the study. First, it is based on a small sample size ( $n=5$ ), which restricts the accuracy of the conclusions drawn. Second, convenience sampling may be a source of selection bias toward business owners who are already interested in digital issues or have faced digital problems. Finally, the geographic focus and industry distribution may or may not be representative nationally. Future research with larger and more demographically diverse samples and longer interview protocols would strengthen findings.

## **■ Results and Discussion**

Analysis of the interviews revealed three primary patterns regarding small business owners' relationships with digital

technology: (1) recognition of the importance of a strong digital presence, despite describing challenges with implementation, (2) skepticism toward existing service providers, and (3) variation in digital needs between industries based on the nature of the business. These findings are presented below with supporting evidence from the interviews and are compared with secondary market data.

**Theme 1: Acknowledged Importance with Implementation Barriers:**

All five participants expressed that, based on their own personal experiences, having a strong online presence is essential for growth. Many participants also expressed personal struggles with the implementation of online tools, some describing having to rely on younger family members or employees for assistance. This gap between recognition and implementation was particularly noticeable among older participants. Participants identified several obstacles keeping them from adopting new technology, including time constraints for learning new systems, information overload from various options, fear of implementing tools incorrectly, and a lack of technical skill. These findings align with existing data, which documents technology adoption barriers among older entrepreneurs, including limited digital literacy, resistance to change, and perceived lack of relevance.<sup>23</sup>

**Theme 2: Skepticism Toward Current Service Providers:**

When asked about experiences with or perceptions of marketing agencies and digital service providers, participants were often skeptical. Concerns largely involved cost, customization, and measurability of current solutions. Another deterring factor for many participants was price, with the majority of them categorizing current options as expensive. This perception aligns with the industry pricing: marketing agencies typically charge \$5,000–\$30,000 for project work and \$1,000–\$10,000 monthly for retainers.<sup>19</sup> Participants also felt existing services offered generic solutions rather than industry-specific strategies. This suggests higher demand for providers with a specific industry specialty rather than general approaches.

Several participants questioned how they would measure return on investment when spending money on online marketing. One owner described a negative experience with a marketing agency that was selling clicks, explaining how he did not see direct results based on these metrics. This indicates that service providers should emphasize outcome-focused metrics such as leads, conversions, and revenue, rather than internal metrics such as views and likes. Regarding trust, when asked what they would need to know to trust a service provider, many participants emphasized the importance of a strong track record, including viewing past work.

**Theme 3: Industry-Specific Variation in Digital Transformation Needs:**

Comparing results across industries revealed important distinctions in a business’s digital priorities based on its customer acquisition model. Businesses serving one-time or infrequent customers (retail, manufacturing, real estate development) ex-

pressed a greater need for a strong digital presence than those with recurring client relationships.

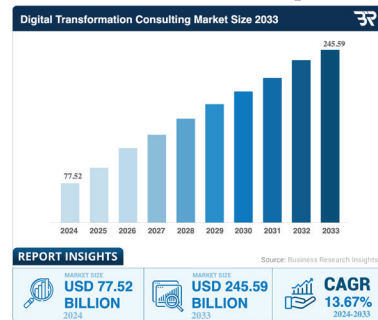
The psychologist, whose practice operates on long-term relationships and a referral system, expressed how most clients come through referrals from other therapists or other current or former clients. This contrasts with the retail owner who described the importance of a strong digital presence for attracting customers and business partners. This pattern suggests digital transformation services should prioritize businesses requiring continuous new customer generation, such as retail, services for new clients, and project-based work, and should emphasize reach over engagement when developing content marketing strategies. Established businesses with mature referral networks may have different needs than growth-stage enterprises.

**Table 2:** Summary of interview themes and supporting evidence.

Theme	Participant Evidence	Interpretation
Acknowledged importance with implementation barriers	All 5 participants expressed awareness of digital importance; 3 of 5 rely on younger employees/family for tech management	Recognition-implementation gap driven by time constraints, technical complexity, and information overload
Skepticism toward current providers	Consistent concerns about cost (4/5), customization (4/5), and measurability (3/5)	Demand for affordable, industry-specific, outcome-focused services
Industry-specific variation	Businesses with recurring clients (1/5) express lower urgency than those requiring continuous acquisition (4/5)	Digital transformation priorities vary by business model; the highest need among businesses is for ongoing new customer generation

**Secondary Market Findings:**

Market research data supports and provides more context for interview findings. The AI consulting services market demonstrates substantial growth, valued at approximately \$22.27 billion in 2025 and projected to reach \$257.60 billion by 2033, representing a compound annual growth rate (CAGR) of 35.8% (Figure 1).<sup>11</sup> This exceptional growth indicates expanding recognition of AI-driven digital transformation and potentially increasing service availability. However, market concentration among enterprise-focused providers suggests small businesses remain underserved despite this expansion.



**Figure 1:** Global AI consulting services market size overview showing historical data and forecast from 2023 to 2033, with a CAGR of 35.8% from 2025 to 2033. Source: Market Data Forecast Analysis.

Survey data confirms that 66% of small business owners spend under \$1,000 annually on marketing, yet 80% consider online presence important for success.<sup>18</sup> This contrast between budget constraints and perceived importance validates interview findings regarding affordability concerns.

Research documents persistent disparities in digital tool adoption between small businesses and larger enterprises. Only 64% of small businesses maintain websites compared to 94% of larger companies,<sup>24</sup> and small businesses lag in social media marketing, e-commerce integration, and data analytics adoption.<sup>25</sup>

Studies of older entrepreneurs confirm that digital literacy declines with age and that older business owners face unique challenges in technology adoption, including reduced exposure to emerging tools during formative career years.<sup>26</sup> However, research also indicates a high willingness among older entrepreneurs to adopt technology when appropriate support is available.<sup>27</sup>

### ***Case Study Insights:***

Analysis of various published case studies provides evidence for effective approaches to digital transformation and the related outcomes. An analysis of digital transformation initiatives for major brands illustrates the idea that personalized customer experiences are what drive engagement and loyalty.<sup>28</sup>

While these are large enterprises, the principle of customization rather than generic approaches applies across business sizes and aligns with interview findings regarding demand for tailored solutions.

Research into B2B content marketing trends found that 71% of B2B marketers consider content marketing increasingly important.<sup>29</sup> This would indicate that content creation through blogging, social media, and educational content is a good strategy regardless of industry, not just businesses that sell directly to consumers. Other research on effective digital platforms identifies specific strategies to retain customers. These include gamification, personalized recommendations, and the simplification of user experiences.<sup>30</sup> These are all potential ideas that could be utilized to further improve a business's digital presence.

### ***Interpretation of Findings:***

This exploratory study identified significant barriers preventing aging small business owners from effectively competing in digitally mediated markets. The findings reveal a recognition-implementation paradox: business owners understand digital presence's importance but lack resources, knowledge, or confidence to act on this understanding. This gap creates a market opportunity for accessible digital transformation services while simultaneously highlighting the limitations of existing provider models.

The skepticism toward current service providers documented in this research reflects misalignment between available services and small business needs. High-cost agency models designed for larger companies with substantial marketing budgets fail to attract businesses allocating less than \$1,000 annually to marketing. The emphasis on vanity metrics (clicks, impressions, followers) rather than business outcomes (leads, conversions, revenue) suggests many providers optimize for easily measurable indicators rather than client success. The perceived lack of industry-specific customization indicates providers may prioritize operational efficiency through

standardized offerings over effectiveness through tailored strategies.

Industry-specific variation in digital transformation needs represents an important distinction that must be taken into account when analyzing this industry. Businesses with recurring revenue structures and mature referral networks require fundamentally different digital strategies than those that depend on continuous new customer acquisition. This suggests successful digital transformation services must conduct thorough business model analysis before proposing solutions rather than using a broader approach for all clients.

The reliance on younger family members or employees for technology management among older business owners indicates both a barrier and a problem. While delegation may temporarily address immediate technological needs, it creates concerns if key personnel leave and business owners are left without help in situations they are not capable of managing.

### ***Implications for Practice:***

Based on these findings, effective digital transformation services for small businesses should incorporate the following design principles: affordability with pricing models aligning with small business marketing budgets (packages under \$1,000 for initial implementations, monthly retainers under \$500 for ongoing support); outcome orientation emphasizing business outcomes rather than technical metrics; industry customization demonstrating understanding of specific industry contexts; comprehensive support through "done-for-you" models including initial setup, ongoing management, and technical support; trust building through case studies, testimonials, and trial periods; and AI integration explaining concrete applications in accessible terms (AI-powered chatbots for customer service, automated social media scheduling, predictive analytics for inventory management, personalized email marketing campaigns).

### ***Theoretical Implications:***

This research contributes to technology adoption literature by documenting specific barriers facing aging entrepreneurs in contexts of rapid technological change. The findings extend diffusion of innovation theory<sup>31</sup> by illustrating how generational digital literacy gaps create adoption barriers even when relative advantage is acknowledged. The recognition-implementation paradox documented here suggests that awareness of innovation benefits is necessary but insufficient for adoption when complexity, cost, and implementation support are inadequate.

The industry-specific variation in digital transformation needs contributes to contingency perspectives on technology adoption, suggesting that business model characteristics (one-time versus recurring customers, referral-dependent versus marketing-dependent acquisition) moderate the value proposition of digital tools. This implies that technology adoption research should account for contextual business factors beyond individual or organizational characteristics typically examined.

### ***Limitations and Future Research:***

This study's limitations suggest several directions for future research. The small sample size (n=5), as well as bias, which may have influenced the selection of interview participants, limit the study's generalizability. Future studies with larger, more demographically representative samples across diverse geographic markets would strengthen the themes and patterns that would be found. The short length of the interviews (10-15 minutes) naturally limited how in-depth each interview could be. Any follow-up work would be improved by longer interviews, or even better, more activity-based interviews in which participants demonstrate their difficulties rather than simply describing them.

The absence of quantitative data makes it really hard to precisely identify the exact effectiveness of digital transformation efforts. Research studying businesses that received one or more of the intervention services in comparison to others that did not, and following them over time, might show which initiatives tend to be most successful and why certain attempts at digital transformations fail.

Further research might investigate differences in rates of technology adoption by age, determine best practices for particular industries, study the experiences and strategies of service providers, monitor the entire implementation process of digital tools, and find practical means of measuring success for small businesses.

### ***Policy Implications:***

The implications of the digital divide between small and large firms have potential consequences on policy, community development, and economic equity. Policymakers interested in supporting small business competitiveness may consider subsidized technical assistance programs that provide consulting to qualifying small businesses and digital literacy initiatives specifically designed for older entrepreneurs.

### **■ Conclusion**

This study examined barriers preventing aging small business owners from effectively adopting digital transformation tools necessary for competitive participation in modern markets. Through interviews and secondary analysis, the research identified a recognition-implementation gap where business owners acknowledge digital presence's importance but lack resources, knowledge, or confidence to act. Current service providers inadequately address small business needs through high costs, generic approaches, and emphasis on technical metrics rather than business outcomes.

The findings suggest that to be effective, digital transformation services must prioritize affordability, outcome orientation, industry customization, comprehensive support, and trust building. Variation across industries indicates that business model characteristics, particularly customer acquisition patterns, should inform service design rather than applying uniform approaches.

While this study's small sample size and open-ended nature limit its credibility, the findings provide a foundation for future

research and practical guidance for service providers, business owners, and policymakers. As digital technologies continue evolving and potentially widening gaps between digitally sophisticated and digitally disadvantaged enterprises, addressing small business adoption barriers becomes increasingly urgent for maintaining competitive markets, community strength, and economic opportunity.

The research question—what barriers prevent adoption, and what characteristics address these barriers—has been partly answered by specifying particular obstacles that include cost, complexity, and trust deficits, and corresponding principles of affordability, customization, and demonstration. However, many questions about the effectiveness of the implementation, scalability, and long-term outcomes of digital transformation interventions remain. Larger samples, experimental designs, and different approaches can extend these exploratory findings toward evidence-based model development that supports small business digital competitiveness.

Ultimately, the aim is not just the success of one or more businesses but to ensure that diverse and competitive markets will allow small enterprises to stand alongside large corporations. This necessitates an integrated response by the service providers, business owners, industry associations, and policymakers if the digital divide is not to go too far.

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