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A Study on Digital Transformation in Women-Owned Businesses

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ABSTRACT

Digital transformation is increasingly influencing how women-owned businesses access markets, engage with customers and manage their business operations. The adoption of digital technologies such as digital payments, social media, e-commerce platforms and online business tools has created opportunities for women entrepreneurs to improve business performance and expand their market presence. However, the extent of digital adoption remains influenced by factors such as digital literacy, financial access and personal constraints. In this context, the present study examines digital transformation among women-owned businesses in Bangalore, with a focus on technology adoption, business growth and challenges.

The study aims to identify the types and extent of digital technologies adopted by women entrepreneurs and examine the overall impact of digital transformation on business growth. It further analyses its influence on sales revenue, customer reach and operational efficiency, while examining the technical, financial and personal challenges faced by women entrepreneurs in adopting digital technologies. The study also suggests measures and support mechanisms to facilitate wider digital adoption. Primary data were collected from women entrepreneurs in Bangalore through a structured questionnaire.

The study provides empirical insights into digital technology adoption and its relationship with business growth among women-owned businesses. The findings have implications for policymakers, financial institutions and entrepreneurship-support organisations in strengthening digital skills, access to finance and mentoring support for women entrepreneurs.

Keywords: Digital Transformation, Women Entrepreneurs, Digital Adoption, Digital Literacy, Personal Constraints

INTRODUCTION

Digital tools have changed how very small businesses operate. A home-based baker can take orders on WhatsApp, a boutique can show new designs on Instagram, and a neighbourhood shop can accept payment through a QR code. These tools cost little and need no technical team, which is why they have spread so

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quickly among small enterprises. Whether they actually help a business, however, depends on which tools it uses, how well it can use them and how much time the owner has to learn them.

These questions matter for women-owned businesses. Bain & Company and Google (2019) estimated that India had 13.5 to 15.7 million women-owned enterprises, about one in five of all enterprises, and that most of them were single-person businesses. Owners of such businesses typically do most of the work themselves, and many also carry family responsibilities, which shape how much time they can give to new technology (Kaur et al., 2023). Digital platforms can help them reach customers beyond their immediate neighbourhood, but they also take time to learn and bring new risks such as online fraud.

Research on women entrepreneurs in Bengaluru has relied mainly on small samples and case studies (Salam & Pachava, 2020, 2021), and the OECD (2021) cautions that smaller firms often find it hard to turn digital tools into real gains because of skills gaps, limited resources and security concerns. What is still thin is a recent and broader picture of what women entrepreneurs in Bengaluru use, what results they say they see and what holds them back.

This paper addresses that gap using 104 responses to an online questionnaire collected in August to September 2026. It examines the digital tools respondents use, the business outcomes they report, the challenges they face and the support they would find useful. The findings are descriptive and rest on respondents' own accounts. The study relates to Theme 4 (digital payments, financial inclusion and women entrepreneurship) and Theme 2 (digital transformation) of CONFLUENCE-2026.

LITERATURE REVIEW

The OECD (2021), in The Digital Transformation of SMEs, describes digital technologies as a way for small firms to improve productivity, support innovation and reach new markets. It also notes that adoption is held back by implementation costs, skills gaps, cybersecurity concerns and limited organisational capacity. Digital transformation is therefore better seen as a set of tools and practices than as a single yes-or-no condition.

For women's enterprises in India, Bain & Company and Google (2019), in Powering the Economy with Her, estimated that women own about 20% of enterprises and stressed the need to address the barriers they face. Kaur et al. (2023) reviewed technology adoption by Indian women entrepreneurs and discussed social media, e-commerce and cloud computing as possible contributors to growth, efficiency and sustainability, while pointing out that the social and family environment shapes how far women can adopt them.

Studies set in Bengaluru are the closest to the present work. Salam (2018) examined the impact of digitisation on women entrepreneurs. Salam and Pachava (2020) studied motivation, digitalisation and firm performance using questionnaire data from 22 women entrepreneurs in Bangalore, and Salam and Pachava (2021) used a case-study approach to describe digital trends among women entrepreneurs in the city. More recently,

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Sowmya and Pai (2025) reviewed digital inclusion among women entrepreneurs in the unorganised sector, discussing its role in financial access, business sustainability and economic empowerment, together with the challenges women in the informal sector face.

Taken together, the literature suggests that digital tools can help women entrepreneurs with promotion, customer communication and market access, but that time, finance, skills and security concerns may limit the benefit. It also suggests that adoption should be studied together with the outcomes entrepreneurs report and the support they need.

RESEARCH GAP AND CONTRIBUTION

Earlier studies have looked at technology adoption, digitalisation and firm performance, and digital inclusion, but mostly through small samples, case studies or reviews. This study adds a recent descriptive account that looks at four things together: the specific digital tools women entrepreneurs use (social media, digital payments, e-commerce marketplaces, paid advertising and business software), the outcomes they report, the challenges they meet and the support they consider necessary. Rather than assuming that technology causes business growth, it describes what respondents say about their own experience.

STATEMENT OF THE PROBLEM AND OBJECTIVES

Digital tools offer opportunities for promotion, customer communication and daily operations, but their adoption and perceived usefulness may vary across women-owned businesses, and entrepreneurs may face difficulties with time, family responsibilities, cost, skills and online security. Knowing which tools are used, what outcomes are reported and what support is wanted can show where digital adoption could be better supported. The objectives of the study are:

1. To identify the digital technologies adopted by women entrepreneurs.
2. To examine respondents' perceived business outcomes associated with digital technology use, including sales changes, business growth, visibility, customer reach and operational efficiency.
3. To analyse the challenges women entrepreneurs face in adopting and using digital technologies.
4. To examine the external support respondents have received and the assistance they consider necessary for effective digital adoption.

CONCEPTUAL FRAMEWORK

The study treats digital technology adoption as its starting point and looks at three related areas: the perceived business outcomes respondents report, the challenges they face, and the support they have received or would like to receive (Figure 1). These areas are analysed descriptively, and the framework does not assume that adoption alone causes any improvement in business performance.

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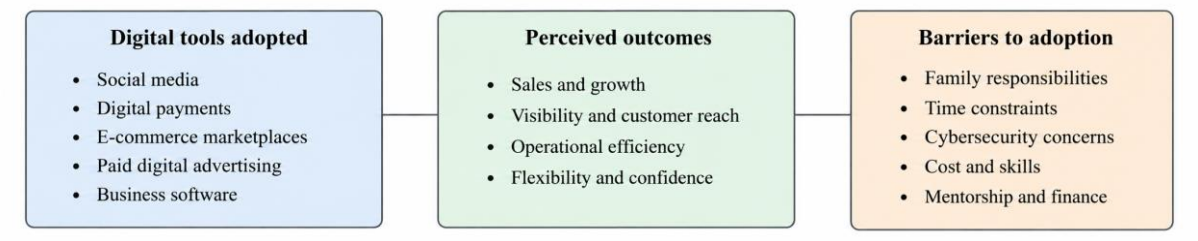


Figure 1. Conceptual framework of the study

RESEARCH METHODOLOGY

Research Design, Sample and Data Collection

The study follows a descriptive, questionnaire-based design. Primary data were collected through a structured Google Forms questionnaire shared online, which received 104 responses between 19 August to 24 September 2026. The intended respondents were women entrepreneurs with businesses in Bengaluru, Karnataka. No sampling frame or random selection was used, so the responses form a non-probability online sample. Of the 100 respondents who answered the question on their role, 93 identified as sole owners or founders, co-owners or partners, or managing directors, while seven selected other roles.

Questionnaire and Study Variables

The questionnaire covered respondents' age, education, business role, business age and sector. It also asked about the digital tools used, the main promotional platform, changes in sales, customer reach, visibility and operational efficiency, the challenges faced, and the support received or wanted. Some questions allowed more than one answer.

Data Analysis and Limitations

Responses were analysed using frequencies and percentages based on the valid answers to each question, which ranged from 99 to 104 for the main single-response questions. For multiple-response questions each option was counted separately, so percentages may exceed 100%. Pie charts present single-response questions and bar charts present multiple-response questions. Respondent names were not used in the analysis.

The study has several limitations. The questionnaire was distributed online without random sampling, some respondents left questions unanswered, and the form did not record business location, so the Bengaluru setting could not be checked. The eligibility of the seven respondents who gave other roles could not be confirmed. The findings rely on respondents' own accounts and not on verified business records, so they should not be generalised to all women-owned businesses in Bengaluru or elsewhere.

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DATA ANALYSIS AND INTERPRETATION

Respondent and Business Profile

Of the 104 respondents, 51 (49.0%) were below 25 years of age, and 50 of the 103 who answered the education question (48.5%) held an undergraduate qualification. Among the 100 who reported their role, 43.0% were sole owners or founders, 38.0% were co-owners or partners and 12.0% were managing directors, while seven gave other roles (Figure 2). Most businesses were young: 70 of 103 (68.0%) had operated for three years or less, and 34 (33.0%) were less than a year old. Professional services such as beauty, wellness and education formed the largest sector (26.7%), followed by food and hospitality (20.8%), retail (16.8%) and e-commerce or online businesses (15.8%).

The sample is therefore made up largely of young owners running recently started businesses. This is useful context for the results that follow, although the data cannot show whether age or business experience affected technology adoption.

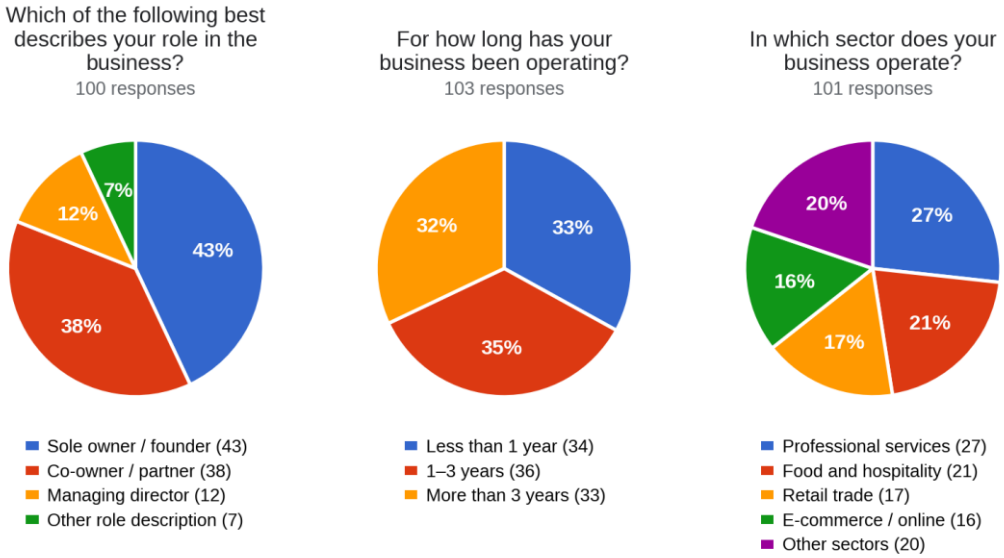


Figure 2. Profile of respondents and businesses

Digital Technologies Adopted

Social media platforms such as Instagram, Facebook and WhatsApp Business were the most commonly used digital tools, reported by 61 of 103 respondents (59.2%). Digital payment systems such as UPI, POS machines and net banking were used by 41.7%, and 32.0% used e-commerce marketplaces such as Amazon, Flipkart, Swiggy and Zomato. Paid digital advertising was used by 14.6%, and only 6.8% used accounting, invoicing or inventory software (Figure 3). Instagram was the main promotional platform for 41 of the 100 respondents who answered that question (41.0%), followed by WhatsApp Business (24.0%), a business website (17.0%), e-commerce marketplaces (10.0%) and Facebook (8.0%).

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Respondents therefore rely more on digital tools for promotion and customer communication than for managing the business behind the scenes. Instagram and WhatsApp Business together were the main platform for 65.0% of respondents, and only 17.0% relied mainly on their own website, so many businesses depend on platforms they do not control. The questionnaire does not show why respondents chose particular tools, and the figure for digital payments may not capture every form of digital banking used in these businesses.

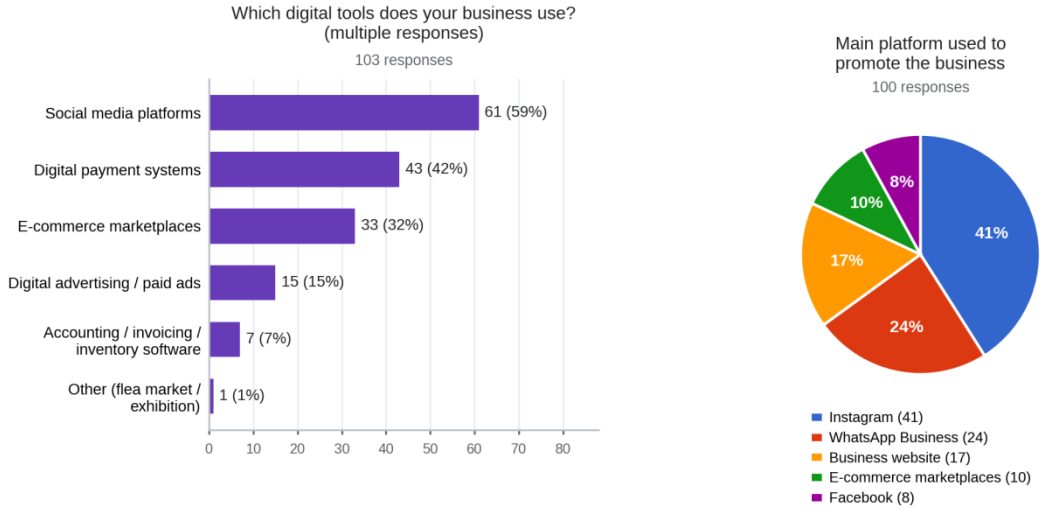


Figure 3. Digital tools used and main promotional platform

Perceived Business Outcomes

Of the 102 respondents who answered the sales question, 95 (93.1%) reported an increase after adopting digital technologies. The most common response was an increase of 10–25%, reported by 52 respondents (51.0%); 25 (24.5%) reported an increase below 10% and 18 (17.6%) an increase above 25%, while six reported no change and one reported a decrease (Figure 4). These figures are respondents' own assessments and not verified revenue records.

Sixty-seven of 102 respondents (65.7%) said digital technology had contributed moderately, significantly or very significantly to business growth, and the same number reported improved or greatly improved visibility. In addition, 70 of 101 (69.3%) said digital tools helped them reach customers beyond their local area, 71 of 101 (70.3%) reported greater flexibility in managing operations, and 61 of 102 (59.8%) reported a moderate or high improvement in operational efficiency. Digital tools helped 62 of 99 respondents (62.6%) manage their business alongside family or personal responsibilities, and 97 of 99 (98.0%) expected digital transformation to benefit their business at least moderately in future.

Respondents generally viewed digital tools positively, but the gains were usually modest: 77 of 102 (75.5%) reported a sales increase of no more than 25%. Flexibility (70.3%) and reach beyond the local area (69.3%) were reported more often than operational efficiency (59.8%), which is consistent with the heavier use of

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customer-facing tools described earlier. There is also a gap between experience and expectation, since 98.0% expect a future benefit while 65.7% report a contribution to growth so far. These are perceived outcomes, and the survey does not show that digital technology alone caused them.

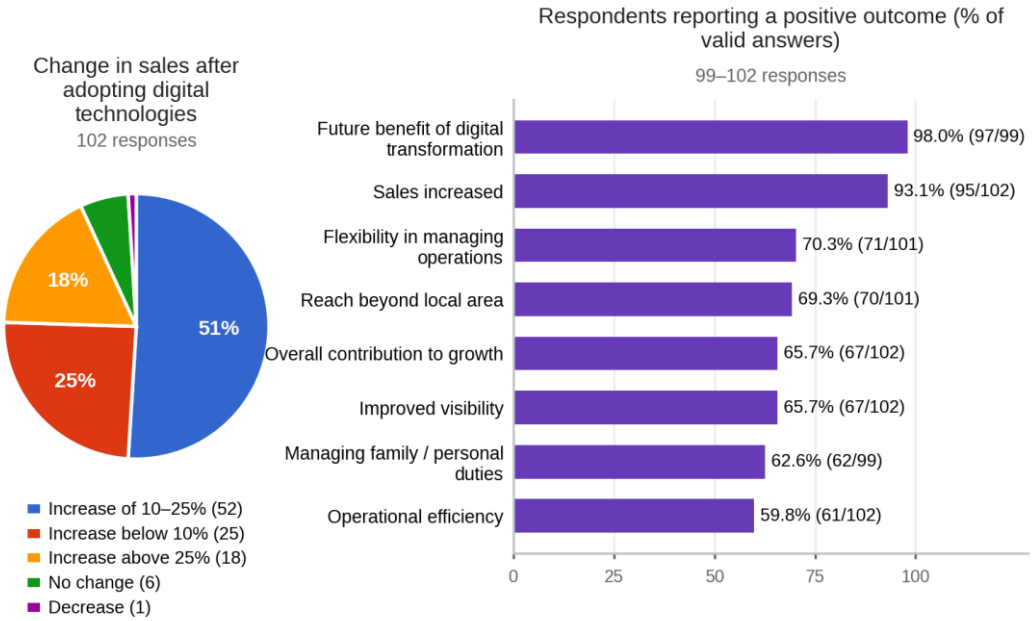


Figure 4. Change in sales and perceived business outcomes

Challenges in Adopting Digital Technologies

Balancing family responsibilities was the most frequently selected challenge (43 of 101; 42.6%), followed closely by lack of time to learn and use digital tools (41; 40.6%). Cybersecurity, privacy or online fraud concerns were selected by 28.7%, technology or subscription costs by 25.7% and limited technical skills or digital literacy by 18.8%. Poor internet connectivity was selected by only 12.9% (Figure 5). The leading barriers therefore concern time and family responsibilities more than technology itself, although the questionnaire did not test digital skills directly.

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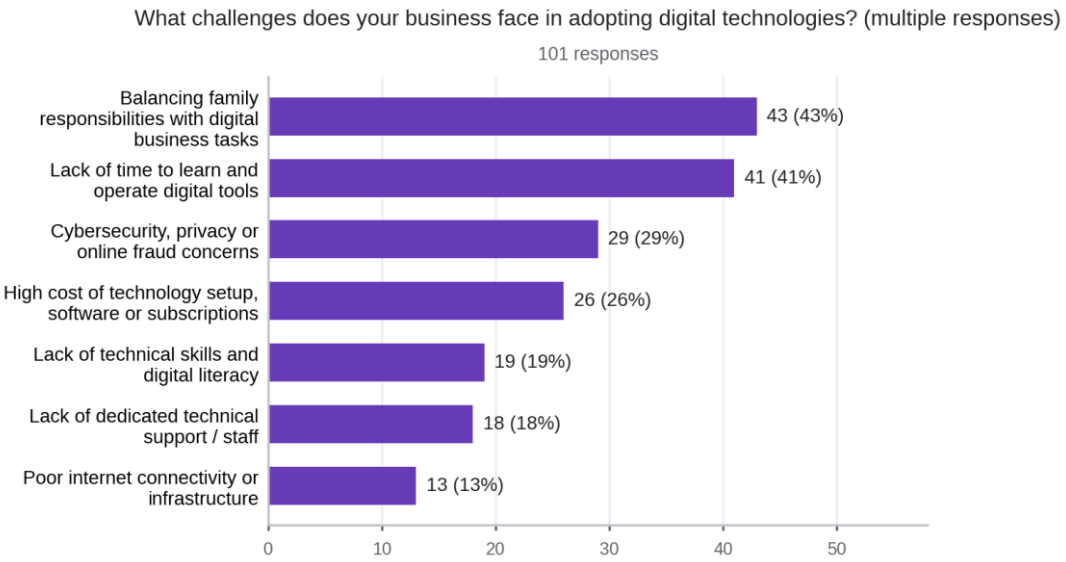


Figure 5. Challenges faced in adopting digital technologies

Existing Support and Future Needs

Of the 100 respondents who answered the external-support question, 54 (54.0%) had received formal support and 46 (46.0%) had not (Figure 6). The most frequently selected types of desired support were cybersecurity awareness programmes (41.0%), one-on-one technical guidance and mentorship (39.0%) and financial subsidies or low-interest loans (37.0%), followed by free or subsidised digital skills training (30.0%) and networking platforms for women entrepreneurs (29.0%). The follow-up question on the type of support already received was not used because its responses did not match the yes/no item. Each of the five options was chosen by 29% to 41% of respondents, so demand for further help remains high, and the preference for mentorship and security guidance points to a need for practical, personal support. The survey does not show whether earlier support shaped these preferences.



Figure 6. External support received and support desired

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DISCUSSION

Respondents mostly relied on accessible, customer-facing tools. Social media and messaging platforms carried most of the promotion, while tools for accounting and stock were rarely used. This matches the picture in the literature of small businesses adopting practical applications first, while limits on skills and resources slow the adoption of more advanced systems (Kaur et al., 2023; OECD, 2021).

Most respondents linked digital tools with better sales, visibility and reach, but the gains were usually modest, and the data are perceptions and not business records. The survey was taken at one point in time, so it cannot show that digital tools caused these changes. Business age, sector, pricing and demand may also play a part, and because most businesses were three years old or less, many may have used digital tools from the start.

The barriers respondents named were mostly about time and family responsibilities, followed by cybersecurity and cost. This is consistent with the point made by Kaur et al. (2023) about the family environment of women entrepreneurs and with the view that social factors, and not only infrastructure and skills, shape digital inclusion (Sowmya & Pai, 2025). The questionnaire did not measure the effect of family responsibilities on adoption, so this remains a reading of the results and not a tested finding. The support respondents asked for, including cybersecurity awareness, mentorship and affordable finance, suggests that flexible and practical help may be useful, although the study did not test whether any programme would work.

MAJOR FINDINGS

1. Social media was the most commonly used digital tool (59.2%), followed by digital payment systems (41.7%) and e-commerce marketplaces (32.0%).
2. Instagram was the leading promotional platform (41.0%), followed by WhatsApp Business (24.0%).
3. Most respondents (93.1%) reported higher sales after adopting digital technologies, and the most common increase was 10–25% (51.0%).
4. Of the respondents, 65.7% reported improved visibility and 69.3% said digital tools helped them reach customers beyond their local area.
5. Balancing family responsibilities (42.6%) and finding time to learn digital tools (40.6%) were the main challenges.
6. Respondents most wanted cybersecurity awareness, one-on-one mentorship and financial assistance.

SUGGESTIONS AND IMPLICATIONS

1. **Flexible skills training:** short, practical sessions on social media marketing, digital payments, customer service and basic analytics, held at times that suit women managing both business and family duties.
2. **One-on-one mentorship:** trained mentors who help entrepreneurs choose suitable tools, set up business profiles and solve common technical problems.

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3. **Cybersecurity awareness:** programmes on online fraud, secure payments, account protection and safe handling of customer information.
4. **Affordable digital tools:** low-cost or subsidised tools, with clear information on the costs of paid advertising, marketplaces and software subscriptions.
5. **Peer networks:** networks where women entrepreneurs can share advice and learn about reliable training, schemes, grants and finance.

CONCLUSION

This study examined digital technology adoption among women entrepreneurs, looking at the tools used, the outcomes reported, the challenges faced and the support wanted. Social media, digital payment systems and e-commerce marketplaces were the most common tools, with Instagram and WhatsApp Business leading promotion. Most respondents who answered the sales question reported an increase after adopting digital technologies, and many reported better visibility and reach, although the gains were usually modest. Family responsibilities, lack of time, cybersecurity concerns and cost were the main challenges, and the support respondents wanted points to flexible training, individual mentorship, cybersecurity awareness and affordable tools.

The results should be read in light of the non-random online sample, self-reported data, unanswered questions and the absence of a location check. They describe perceived associations and not proof that digital adoption caused business improvements. Future research could use a verified, systematically selected sample, compare businesses by sector and age, and follow business records over time to test these relationships more closely.

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