

DOI: https://doi.org/10.48009/4_iis_2024_109

Small business continuity and disaster recovery plans using AI and ChatGPT

Gwendolyn White, *Xavier University*, whiteg@xavier.edu

Sadie Liptak, *Xavier University*, liptaks@xavier.edu

Abstract

Small businesses are susceptible to failure at a higher rate, especially after a disaster. Disasters include the weather, fire, pandemics, power outages, network failures, legal issues, cyber-attacks, and technical problems. One way to potentially mitigate failure is to create a business continuity plan (BCP) or a disaster recovery plan (DRP). Contained in the plan is the ability to return to operations. However, most small businesses do not have the time or financial resources to create the plans. Enabling ChatGPT to guide the small business owner with directed prompts is an uncomplicated way to develop the plan, saving time and resources and generating a complete document.

Keywords: artificial intelligence, business continuity plan, disaster recovery, small business, micro business, artificial intelligence ethics, ChatGPT

Introduction

AI is integral to various applications like speech and image recognition. In the meantime, AI assists with numerous tasks, including developing business continuity plans (BCP) and disaster recovery plans (DRP) for businesses. Notably, leveraging AI-powered tools such as ChatGPT to orchestrate the development of these plans can engender considerable time savings and furnish much-needed guidance, particularly for enterprises embarking on their maiden foray into plan formulation. The historical evolution of chatbot technology underscores the transformative potential of AI, with contemporary iterations boasting enhanced capabilities vis-à-vis their rudimentary predecessors, thereby rendering them indispensable assets across a spectrum of operational domains (Sun G, 2023). This paper focuses on how small businesses can leverage AI to create BCPs and DRPs, ensuring they can quickly recover from disasters and maintain operations. Using AI tools such as ChatGPT allows small businesses to save time and receive essential guidance, enhancing their resilience against unexpected disruptions.

AI and business use

The incorporation of AI is transformative across a variety of businesses. AI can improve customer service, supply chain management, operational efficiency, and reliable product quality. Companies and government agencies use machine learning to help analyze and learn from data (Pallathadka, et al., 2023). Businesses use AI to improve decision-making and analyze data (Table 1). AI algorithms process substantial amounts of data, which saves time and improves accuracy. For example, customer service management (CRM) uses

AI to forecast customer purchasing and trends to mitigate customer issues. Cybersecurity uses AI to detect vulnerabilities and provide suggested security levels for protection. Human resource departments use AI to recruit, select, and interview candidates. Chatbots mimic human interaction with customers, answering questions and giving referrals for various goods and services. Finance departments use AI to analyze and forecast future trends (Kaggwa, Eleogu, Okonkwo, & Farayola, 2024).

Table 1: Samples of AI Business Use in Various Industries (PC Social 2024)

Retail	Predictive inventory management, personalized marketing, and recommend systems
Finance	Fraud detection, risk assessment, investment forecasting
Healthcare	Patient diagnosis, medicine development, predictive analytics for patient care
Manufacturing	Quality control, predictive maintenance, supply chain optimization

Table 2: Examples of AI Use for Processes (PC Social 2024)

Forecasting	Companies are using AI systems to predict market trends and customer needs accurately. Machine learning algorithms allow businesses to analyze consumer behavior patterns, leading to personalized interactions and improved customer satisfaction.
Automation	AI automation tools manage and execute tedious and time-consuming tasks, allowing the workforce to focus on decision-making and strategy development. This leads to increased productivity and enhanced business efficiency.
Risk Management	AI-powered systems assess potential risks by predicting possible outcomes based on historical data. This helps in taking preventive measures and reducing potential losses.

Small business failure

A small business is classified as any business that employs 100 to 1500 employees (Small Business Administration, 2024). Any small business is susceptible to failure, especially if a disaster occurs. The small business segment faces heightened vulnerability owing to its reliance on limited personnel for multifarious operational tasks, in contrast to the diversified departments prevalent in larger counterparts. Statistical evidence revealed that approximately 87% of businesses confronted with a disaster ultimately fail within five years and 65% within the first ten years of operation (Bureau of Labor Statistics, U.S. Department of Labor, 2024). Notably, 25% of small businesses persevere beyond the fifteen-year mark, as documented by the Bureau of Labor and Statistics (2023). 75% of businesses without a BCP will fail within three years after a disaster (Cook, 2015).

Startup businesses are especially vulnerable to failure. Factors contributing to such failures include cash flow constraints, deficient marketing strategies, incongruities in product-market alignment, human resource inadequacies, legal encumbrances such as partnership issues and licensing constraints, technical vulnerabilities including cybersecurity concerns, and inefficiencies in operational processes (Pacheco, 2022). Pacheco (2022) lists the following reasons for failure:

- 34% Poor Product Fit
- 22% Incorrect Marketing Strategy

- 18% Human Resource Issues
- 16% Cash Flow
- 6% Technical/Cybersecurity
- 2% Sub Optimal Operations
- 2% Legal (partnerships, licensing, etc.)

Business continuity plans/disaster recovery plans

A disaster is a failure that can exacerbate the problems above. Disruptions include natural disasters, power outages, hacking, legal problems, and pandemics. A business should have a business continuity plan and disaster recovery plan ready, but many do not, especially small businesses. While it is imperative for businesses to have robust contingency measures in place, such as business continuity plans (BCPs) and disaster recovery plans (DRPs), evidence suggests a lack of adoption, particularly among small businesses. The effectiveness of recovery plans depends on their efficacy (Data Foundry, 2020).

Disasters cannot be prevented but can be managed. Small businesses must mitigate risks and recover quickly (Childs, 2008). The ability to recover after a disaster is contained in the BCP/DRP plan. “During a security or downtime event, things need to move fast—surveys of more than 1,000 global organizations observe that in 2019, 86% of respondents reported a single hour of downtime costing them \$301,000 or more. 15% said one hour of downtime cost them more than \$5 million” (Data Foundry, 2020).

A business continuity plan (BCP) is a strategy for a business to sustain function if there is an untimely disaster/event. Strategies for the plan include how to recover from long- or short-term outages, including but not limited to weather-related phenomena, fires, legal entanglements, pandemics, power outages, network failures, loss of headquarters, and cyber-attacks. The BCP is the parent document which includes all departments and should include a plan for high availability (access to applications and processes during failure), continuous operations (how to keep the business operating during outages), and disaster recovery (how to recover data and information technology and communications operations during a disaster).

The components of a BCP include:

- **Strategy:** Objects that are related to the strategies used by the business to complete day-to-day activities while ensuring continuous operations
- **Organization:** Objects that are related to the structure, skills, communications, and responsibilities of its employees
- **Applications and data:** Objects that are related to the software necessary to enable business operations, as well as the method to provide high availability that is used to implement that software.
- **Processes:** Objects that are related to the critical business process necessary to run the business, as well as the IT processes used to ensure smooth operations
- **Technology:** Objects that are related to the systems, network, and industry-specific technology necessary to enable continuous operations and backups for applications and data
- **Facilities:** Objects that are related to providing a disaster recovery site if the primary site is destroyed (kyndryl, 2024)

Costs associated when a BCP/DRP is absent include financial cost, reputation cost, workforce cost, regulatory cost, safety cost, loss of data, and cost of not competing:

- Financial Costs: include loss of productivity and revenue.
- Reputation damage: can the customer use or depend on the services provided?

- Workforce Cost: job loss, burnout (worker shortages)
- Regulatory Cost: non-delivery of contractual obligations
- Safety Cost: injury, death, worker relocation
- Loss of Data: non-recovery of vital data for operations
- Non-Competing: competitor offers better solutions during downtime (Pacheco, 2022)

As the parent document, the BCP guides organizational response and recovery efforts. An important part of the BCP is the DRP, which details the elements of information technology infrastructure.

A disaster recovery plan (DRP) is a structured approach to responding to unplanned incidents. The DRP incorporates software, hardware, networks, processes, and people and is part of the BCP. The basic components of a DRP include risk assessment, recovery time objectives (RTO), recovery point objectives (RPO), backup and data recovery procedures, alternative site location, system recovery plans, communication notifications, and testing/training. A team of employees is assigned to the plan and if a disaster occurs, the disaster recovery team decides if the plan should be implemented.

Most small businesses do not have a BCP or DRP. If a BCP or DRP is developed, usually it is not updated or practiced (Data Foundry, 2020). There are several reasons why small businesses do not create a BCP or DRP:

- Limited Resources – financial and human resources can be limited for a small business. Development and maintenance of the plan are affected due to limited resources.
- Lack of Awareness – small businesses do not understand the importance of the plans nor the detriment a disaster can bring.
- Perceived Complexity - small businesses perceive the development of a BCP/DRP as a highly complex document that is beyond their understanding.
- Focus on Immediate Concerns – small businesses do not have time because the current operations are time-consuming.
- Complacency – small businesses do not believe a disaster would not happen to them (Data Foundry, 2020)

ChatGPT and BCP/DRP creation

Creating a BCP/DRP plan is time-consuming, and many small businesses fail to create or update them. Larger businesses have departments dedicated to creating the plan. Consequently, many businesses find themselves ill-equipped to manage post-disaster recovery without a robust plan for post-disaster continuity, exacerbating the likelihood of failure.

Most existing literature emphasizes AI's use for predicting and managing BCP/DRP plans. A few articles gave examples of the process using ChatGPT. The Zachary Department of Civil and Environmental Engineering at Texas A&M University developed models using big data and artificial intelligence, helping communities prepare for natural disasters, develop situational awareness, monitor recovery resources, and assess the impact of the disaster (Mostafavi, 2023). Many organizations use AI to predict disasters and distribute disaster aid before, during, and after (Bari, 2023). The prediction capabilities filter potential threats or determine future disruptions (Jayasundera, 2023). AI can monitor, filter, and classify social media posts and news articles related to a disaster (Mostafavi, 2023). A few applications monitor posts and create appropriate responses to questions regarding the existing disaster.

Many organizations must meet compliance requirements for business continuity and disaster recovery (FDIC, HIPAA, SSAE). Items included could be loss of revenue and productivity, damage repair, and reputation recovery. Some calculators can determine downtime costs. Large businesses have calculations for their downtime daily cost. If a daily downtime costs less than \$10,000, an organization should spend about \$10,000 on a BCP/DRP. However, businesses should generally spend about 6% of the Information Technology budget (Disaster Recovery Insights, 2019). Cloud Endure (2016) noted that most organizations spend less than \$10,000 annually on business continuity and disaster recovery planning. Conversely, downtime that exceeds \$10,000 will have a BCP/DRP budget greater than \$10,000 (Disaster Recovery Insights, 2019). Small businesses do not always have a budget line for information technology, and many do not have \$10,000 available.

Therefore, many businesses fail after a disaster because they do not have an appropriate plan for returning to business. Since small businesses have limited time availability, using AI to create a BCP/DRP is ideal. Incorporating ChatGPT to create a BCP/DRP is ideal for a small business. It can save time and provide direction, especially to those who create a plan for the first time.

ChatGPT is an AI Large Language Model (LLM) that uses written prompts that output text data. Open AI created ChatGPT. The current version (as of this date) is GPT-4. In short sentence input (prompt engineering) the end user can request a task, and ChatGPT will give output in text format. Simple to complicated tasks can be completed using ChatGPT, including summaries, outlines, paragraphs, and more. The use of ChatGPT can improve efficiency and enhance the accuracy of documents. ChatGPT can identify trends and problems in a small business, provided it is presented with appropriate data.

Why use ChatGPT to create a plan? A small business can use specific prompts to generate a BCP/DRP in hours instead of days. As mentioned earlier, small businesses have a variety of reasons for not creating the BCP/DRP plan, but ChatGPT is a helpful solution. The end user creates the BCP/DRP plan using specific prompts based on the plan's flow. After each input, the end user would copy and paste the response into that part of the BCP/DRP. This can save businesses money in the short and long term due to the inherent time-saving aspect. ChatGPT can format the output as needed, including formatted paragraphs, spreadsheets, and tables.

BCP/DRP case

This case concerns a small business in Greater Cincinnati. The company is an employment placement agency that focuses on the service industry. It was founded in 1987 with fifteen employees and a single location. The company has a variety of equipment, including computers, copiers, phones, printers, and more. It has been a successful, award-winning business but lacks the BCP/DRP.

There was an incident about two years ago, and the business realized it needed to create a BCP/DRP. The company researched the potential of a consultant to develop a plan, but it was too expensive. Therefore, the business was a perfect candidate to assess the use of ChatGPT to create a BCP/DRP, which would save time and money.

A basic BCP/DRP template was used to develop the plan. The user was given a set of pre-determined prompts that followed the BCP/DRP template. A partial listing is displayed in (Table 3). It is up to the business to use the prompts and identify information to complete the plan.

The owner provided basic information about the business, including employees and titles, hardware, software, assets, network information, alternate location, and insurance. This information was compiled and used in the prompts based on various sections of the BCP/DRP.

Issues in Information Systems

Volume 25, Issue 4, pp. 118-126, 2024

For example, the first prompt: “Who should be part of the BCP/DRP team?.” Chat GPT returned a table that listed the various officers/employees' titles that should be included. Next, the owner requested ChatGPT to create a table of all staff included in the BCP/DRP. The prompt for this part: “Create a table based on the previous table using the following employee and their titles.” ChatGPT outputs a table that includes each employee, their title, and their role in the BCP/DRP (Table 4). This format was repeated in each section of the BCP/DRP, resulting in a complete plan for the business.

Table 3: ChatGPT Prompts for BCP/DRP

Role	Name	Responsibilities
Disaster Recovery Coordinator		The overall leader of the DRP team, coordinating recovery efforts, overseeing DRP development, implementation, and testing, and communicating with senior management.
IT and Systems Recovery Lead		Managing data backup and recovery processes, restoring critical systems and applications, and ensuring network security and integrity.
Communications Lead		Developing and executing the communication plan, informing employees, clients, and candidates, and serving as the main point of contact for media inquiries.
Human Resources (HR) Lead		Ensuring employee safety and well-being, managing payroll and benefits continuity, maintaining access to employee records, providing support to affected employees.
Client Account Manager		Communicating with clients about the disaster's impact, ensuring continuity of staffing services, and addressing client concerns and needs.
Operations Lead		Ensuring staffing and recruitment processes continue, managing office facilities and alternative workspaces, and coordinating the resumption of normal business activities.
Finance and Accounting Lead		Ensuring continuity of payroll and financial transactions, managing accounts receivable and payable, handling insurance claims, and financial reporting.
Facilities and Logistics Lead		Assessing and managing the physical office space, arranging alternative work locations, ensuring the availability of necessary equipment and supplies.
Legal and Compliance Officer		Advising on legal implications of the disaster, ensuring compliance with labor laws and regulations, and handling legal claims and documentation.
Security and Risk Management Lead		Assessing and mitigating risks, ensuring the security of physical and digital assets, and coordinating with law enforcement and emergency services if necessary.
Vendor and Third-Party Coordinator		Ensuring continuity of services from third-party vendors, coordinating with vendors on recovery efforts, managing contracts and service level agreements (SLAs).

(ChatGPT, 2024)

Prompt 1: Who should be part of the disaster recovery plan.

Prompt 2: Create a table using the titles to create the disaster recovery plan management team (enter names and titles)

Table 4: ChatGPT Prompt for Office Location

Office Location	Address	City	State	Zip Code	Phone Number
Head Office	*****	Cincinnati	Ohio	45202	513-*****

(ChatGPT, 2024)

Prompt 3: Create a table for all office locations (enter address)

Table 5: ChatGPT Prompt for Software Ownership

Software Name	Version	Purpose	License Type	Expiration Date	Notes
Software 1	1.0	Payroll Management	Subscription	12/31/2024	Used for processing payroll
Software 2	2.3	Recruitment and Staffing	Perpetual	N/A	Used for candidate tracking
Software 3	3.1	Customer Relationship Management	Subscription	11/30/2024	CRM for managing client accounts
Software 4	4.5	Email and Communication Platform	Subscription	10/31/2024	Internal and external communication

(ChatGPT, 2024)

Prompt 4: Create a table of all software owned by the organization.

ChatGPT limitations and disadvantages

ChatGPT has a few limitations for this purpose. First, the quality of the input should be accurate and updated if changes occur. Try to avoid biased data, incomplete data, or inaccurate data. Second, ChatGPT's knowledge of the industry might be limited, which might affect the data output. Once the plan is created, it should be returned to a human to develop and/or implement. Third, ChatGPT can output data unrelated to the requested industry. "Chat GPT is incredibly limited but good enough at some things to create a misleading impression of greatness. It is a mistake to rely on it for anything important but a progress preview. We have lots of work to do on robustness and truthfulness." (Time_Magazine_2022). Fourth, sensitive business information will be inputted into a repository that anyone could potentially access. Fifth, ChatGPT misses an essential feature of human interaction (Robert, 2023). Human input and review are necessary to ensure its practicality. It is a good starting point, but steps are missing to execute a plan or work between departments.

Conclusion

In conclusion, integrating AI technologies such as ChatGPT holds profound implications for enhancing small businesses' resilience and efficacy, particularly in continuity planning. By harnessing the transformative potential of AI, businesses can overcome the difficulties of resource constraints and limitations, fortifying their capacity to weather adversities and thrive amidst uncertainty. Liptak (2024) states there are commonalities within AI areas, including how revolutionary the implementation of AI is in the business world, the importance of understanding the bias and integrity of the AI used for professional work, and the amount of work needed for the future of AI. Small businesses that use AI and ChatGPT for BCP and DRP development are ahead of the curve. This simple act is important and can help save small businesses from failure.

In this instance, ChatGPT provides a comprehensive overview based on the prompts provided. The ability to imitate a BCP/DRP consultant is beneficial and financially savvy. Time-saving options and mitigation of procrastination are additional benefits. The small business owner should not solely rely on ChatGPT without review. The lack of human interaction, especially if the plan must be implemented, must be

included as part of the plan. The combined strengths of ChatGPT, AI, and human input are essential to developing a comprehensive implementable BCP/DRP plan for business survival.

References

- Abid, S., Sulaiman, N., Chan, S., Nazir, U., Abid, M., Han, Sulaiman, N. (2021, November 13). Toward an integrated disaster management approach: How artificial intelligence can boost disaster management. *Sustainability*.
- AI Insights. (2023, December 10). *How AI revolutionizes disaster recovery planning*. Retrieved from LinkedIn.com: <https://www.linkedin.com/pulse/how-ai-revolutionizes-disaster-recovery-planning-ai-news-ebdee/?trackingId=frRMuMUoTAywAqANBvnAiQ%3D%3D>.
- AI Insights. (2023, November 1). *How does AI assist in disaster preparedness?* Retrieved from LinkedIn: <https://www.linkedin.com/pulse/how-does-ai-assist-disaster-preparedness-ai-news-iffie/?trackingId=imloKv33TtacF%2BkwpQRsuv%3D%3D>.
- Bari, L. F. (2023, December 10). Potential use of artificial intelligence in disaster risk and emergency health management: A critical appraisal on environmental health. *Environmental Health Insights*, 17, 1-5. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10712270/>
- Bostrom, N., & Yudkowsky, E. (2014). *The Cambridge handbook of artificial intelligence*. Cambridge: Cambridge University Press.
- Bureau of Labor Statistics, U.S. Department of Labor. (2024, January 12). *34.7 percent of business establishments born in 2013 were still operating in 2023*. Retrieved from The Economics Daily: <https://www.bls.gov/opub/ted/2024/34-7-percent-of-business-establishments-born-in-2013-were-still-operating-in-2023.htm>
- Childs, D. (2008). *Prepare for the worst, plan for the best: disaster preparedness and recovery for small businesses*. Hoboken, New Jersey: Wiley.
- Cook, J. (2015). A six-stage business continuity and disaster recovery planning cycle. *SAM Advanced Management Journal*, 1–13.
- Cotton, D. R. (2024). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228-239.
- Data Foundry. (2020, May 19). *What is disaster recovery? Preparing for the unexpected*. Retrieved from Data Foundry: <https://www.datafoundry.com/what-is-disaster-recovery-preparing-for-the-unexpected-data-center/>
- Disaster Recovery Insights. (2019, December 21). *Data Foundry*. How much should you spend on business continuity and disaster recovery?: <https://www.datafoundry.com/much-spend-business-continuity-disaster-recovery/>
- Hagendorff, T. (2020). The ethics of AI ethics: An evaluation of guidelines. *Minds and Machines*, 30, 99-120.

- Jarrah, A. M. (2023). Using ChatGPT in academic writing is (not) a form of plagiarism: What does the literature say? *Online Journal of Communication and Media Technologies*, 13(4).
- Jayasundera, S. (2023, May 24). *Business continuity management and artificial intelligence*. Retrieved from Disaster Recovery Journal: https://drj.com/journal_main/business-continuity-management-and-artificial-intelligence/
- Jobin, A. I. (2019, September 2). The global landscape of AI ethics guidelines. *Nat Mach Intell*, 389–399 .
- Joseph, E. (2024). *Pixel Crayons*. Retrieved from AI-assisted decision making: Transforming decision making: <https://www.pixelcrayons.com/blog/digital-transformation/ai-in-data-analytics-transforming-decision-making/>
- Kaggwa, S., Eleogu, T. F., Okonkwo, F., & Farayola, O. (2024). AI in decision making: Transforming business strategies. *International Journal of Research and Scientific Innovation*, 423-444.
- Kazim, E., & Koshiyama, A. S. (2021, September 10). A high-level overview of AI ethics. *Patterns: Science Direct*, 2(9), 1-12.
- kyndryl. (2024). *What is a business continuity plan (BCP)?* Retrieved from kyndryl.com: <https://www.kyndryl.com/us/en/learn/plan>
- Mance, S. M. (2021, April). Estimating state and local employment in recent disasters—from Hurricane Harvey to the COVID-19 pandemic. *Monthly Labor Review*, 1-15. Retrieved from Monthly Labor Review.
- Mostafavi, A. (2023, June 5). *Leveraging big data and AI for disaster resilience and recovery*. Retrieved from Texas A&M University Engineering: <https://engineering.tamu.edu/news/2023/06/leveraging-big-data-and-ai-for-disaster-resilience-and-recovery.html>
- Pacheco, M. (2022, April 6). *7 costs of not having a business continuity plan*. Retrieved from Tier Point: <https://www.tierpoint.com/blog/7-costs-of-not-having-a-business-continuity-plan/>
- Pallathadka, H., Ramirez-Asis, E. H., Loli-Poma, T. P., Kaliyaperumal, K., Ventayen, R. J., & Naved, M. (2023). Applications of artificial intelligence in business management, e-commerce and finance. *Materials Today: Proceedings*, 2610-2613.
- PC Social. (2024, March 8). Retrieved from The small business revolution: How AI automation is shaping the future: <https://pcsocial.medium.com/the-small-business-revolution-how-ai-automation-is-shaping-the-future-c26546332004>
- Robert, L. (2023, May 4). *ChatGPT comes to business continuity*. Retrieved from The Disaster Recovery Journal: https://drj.com/journal_main/chatgpt-comes-to-business-continuity/
- Sun G, Z. Y. (2023, December 19). AI in healthcare: navigating opportunities and challenges in digital communication. *Front Digit Health*.
- Sun, W., Bocchini, P., & Davison, B. D. (2020, July 3). Applications of artificial intelligence for disaster management. *Natural Hazards*, 2631-2689.