Designing An Artificial Intelligence Adoption Assistance Platform for Small and Medium-sized Enterprises: Identifying Opportunities and Concerns

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Abstract

Small and medium-sized enterprises (SMEs) often face significant barriers when adopting artificial intelligence (AI), including concerns related to cost, ease of use, and accessibility. This project introduces a web-based prototype designed to overcome these concerns by providing a secure, low-cost, and user-friendly platform for deploying AI tools such as sales forecasting and customizable chatbots. Following design science research methodology, the platform's initial features, layout, and included tools were informed by potential users, which identified the most desired AI functionalities and common adoption concerns among SMEs. To evaluate the AI adoption assistance platform, a demonstration and testing iteration was conducted with owners and employees of SMEs and university students in North Carolina, which led to insights on several design meta-requirements. The SME participants expressed strong interest in using the platform regularly and emphasized the importance of data privacy, intuitive design, and flexible pricing; the student evaluators provided additional insight into navigation and interface clarity, identifying areas for refinement such as clearer user feedback, improved discoverability of tools, and consistent formatting. Future work includes expanding the chatbot functionality, refining the onboarding experience, and improving design consistency, followed by gathering additional user feedback.

Keywords: Artificial Intelligence, Adoption, SME, Design Science Research, Chatbot, Sales Forecasting

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1. INTRODUCTION

Artificial Intelligence (AI) has swiftly impacted the business landscape, presenting an unprecedented opportunity to transform operations, improve decision-making, and drive efficiency in all sectors. While AI tools assist large corporations to gain an edge, numerous small and medium-sized enterprises (SMEs) encounter various obstacles when implementing these solutions. These barriers often prevent such smaller actors from accessing the full benefits of AI and thus limit their ability to compete in an increasingly data-driven marketplace.

To address these barriers, this study follows a two-fold approach: (1) Through a narrative literature review and surveys, we investigate the challenges of AI adoption by SMEs and identify key obstacles such as lack of technical knowledge or financial resources, concerns about AI bias, complexity in setup, privacy, fairness, and trust issues, particularly in relation to data access and management, and the need to comply with regulatory requirements, such as the European Union's General Data Protection Regulation (GDPR) (Bhalerao et al., 2022; Jackson et al., 2022; OECD, 2021; Steven & Blake, 2024; Soudi & Bauters, 2024); (2) We conceptualize and instantiate a prototypical design artifact to address the challenges. Guided by the principles of Design Science Research (DSR), we thereby approach AI adoption as a complex problem that requires iterative development, grounded in both practical needs and established theoretical knowledge. The artifact, an AI adoption assistance platform, is conceptualized, prototypically built, and evaluated through a feedback loop that bridges the practical environment of SMEs and the prevalent knowledge base around AI solutions and best practices (Hevner et al., 2004).

In line with elicited user requirements and with the intent to provide a broad foundation for feedback and further evaluation, our prototype consists of two SME-oriented use cases for AI adoption assistance: (1) an AI-driven predictive sales forecasting tool to help businesses anticipate demand and manage inventory more effectively (Crenshaw, 2024); (2) an AI-driven tool to create custom AI chatbots that may be embedded in SME websites and enable automated customer support.

Altogether, this design-based and application-oriented study responds to the need for an SME-tailored AI adoption assistance solution. We combine research on the barriers to AI adoption with the development of a user-friendly AI platform to empower smaller businesses to harness the benefits of AI technology and to enhance our understanding of SME needs around AI adoption from a research perspective. The goal is to create a solution that not only supports the integration of AI but also builds trust and confidence in AI among SME stakeholders, which might help pave the way for wider AI adoption in the SME community.

2. BACKGROUND

The adoption of AI technologies by SMEs is an evolving area of research, driven by the potential benefits and challenges these businesses face. Understanding these factors is crucial for developing effective solutions tailored to the needs and constraints of smaller organizations.

Importance of AI in SMEs

Integrating AI into SMEs provides substantial benefits, promoting business growth, enhancing decision-making, and improving operational efficiency across various regions. According to the U.S. Chamber of Commerce (2023), SMEs leveraging advanced technology report higher growth rates in their sales, employment, and profits, with 87% of small business owners noting improved operational efficiency. Additionally, businesses using AI have a 12-point higher likelihood of profit growth than those without, with positive effects particularly evident in marketing and communications (U.S. Chamber of Commerce, 2023). Bhalerao et al. (2022) underscore the role of AI in improving SMEs' core functions, such as decision-making and customer engagement. AI allows SMEs to analyze data more effectively, aiding in customer behavior insights, inventory management, risk mitigation, and cybersecurity protections. It also streamlines human resource functions, simplifying talent acquisition, employee development, and performance management (Bhalerao, 2022). In summary, AI adoption in SMEs drives growth and

efficiency while offering smaller businesses the tools to remain competitive in a globalized economy, maximizing the benefits of advanced technology.

Current Uses of AI in SMEs

Businesses in North Carolina (this study's focal region) and across the U.S. that currently use or plan to use AI in the next six months demonstrate varying levels of adoption. 28% of businesses in North Carolina and 30% of U.S. businesses plan to use AI for data analytics. In terms of specific AI applications, 25% of North Carolina businesses use AI for text analytics, compared to 23% nationally, while 20% of North Carolina businesses utilize machine learning, versus 22% at the national level (Smith, 2024a). However, only 5.1% of North Carolina and 5% of U.S. enterprises currently employ AI in their operations. This data reveals a significant divide between current and planned usage, with data analytics being a major area of interest for AI adoption in these businesses (Smith, 2024b).

Additionally, 28% of both North Carolina and U.S. national businesses are interested in adopting virtual chatbots for customer interactions (Smith, 2024a). Marketing automation will be particularly impactful in sectors, such as real estate, retail, accommodation, food services, construction, education, and agriculture (Smith, 2024b). Artificial intelligence in customer engagement extends beyond marketing, with tools like chatbots and virtual assistants playing an increasing role in enhancing operational efficiency and customer satisfaction (Crenshaw, 2024).

In addition to enhancing customer service, AI automation can help SMEs improve productivity, reduce costs, and enhance workplace safety and conditions. By automating routine functions, businesses can minimize human errors, reduce administrative bottlenecks, and operate more efficiently, even offering 24/7 customer interaction at a lower cost (OECD, 2023). AI-driven solutions are particularly impactful in streamlining marketing, customer relationship management, and sales processes, as noted by Watney and Auer (2021), who highlight how third-party AI systems can transform operational workflows for SMEs.

Notably, based on a thorough literature review and empirical framework, Schwaeke et al. (2025) conclude that when "AI aligns with the specific needs and innovation objectives of SMEs, the likelihood of their enthusiastic adoption increases" (p. 1319).

Barriers to AI Adoption in SMEs

Regulatory burdens add complexity, particularly for SMEs. Firms in Europe, for instance, must comply with multiple data protection laws such as the General Data Protection Regulation (GDPR) and the Digital Services Act. Watney and Auer (2021) found that European businesses often struggle with legal uncertainty, citing liability for potential damages (33%), data standardization requirements (33%), and regulatory obstacles (29%) as major external challenges to AI adoption. For SMEs, maintaining compliance with overlapping and complex regulations can be a significant barrier to innovation, often reducing investment in new technologies due to the perceived risks.

Cost and resource limitations represent significant barriers for SMEs in adopting AI technologies, as these businesses often lack the financial capacity to invest in and maintain complex AI systems. The cost-related concerns are further intensified by the high perceived risk associated with adopting advanced AI solutions. Smaller firms are often cautious about experimenting with cutting-edge technology that could lead to financial losses if implementation does not deliver expected efficiencies or strategic benefits, according to Schwaeke et al. (2025). Compared to larger corporations, SMEs may not have the resilience to absorb short-term setbacks from costly technological initiatives, making them more reluctant to adopt innovations that might be unprofitable in the short run (Bhalerao et al., 2022).

AI solutions are often perceived as too complex, with user interfaces and operational requirements that are unintuitive for those without specialized knowledge (Bettoni et al., 2021). A study of Danish SMEs showed that a "shortage of workforce skilled in AI" was rated a significant obstacle, with respondents scoring this barrier an average of 9 out of 10 (Iftikhar & Nordbjerg, 2021). The intricate demands of AI, combined with a critical lack of expertise within SMEs, create a challenging landscape for AI adoption. SMEs face not only a shortage of skilled personnel but also a need for accessible, simplified AI systems to bridge the complexity gap (Bhalerao, 2022).

With SMEs using AI-driven tools for their customers, they may inadvertently promote biased recommendations or pricing practices, potentially eroding customer trust and damaging brand reputation (Steven & Blake, 2024). A key contributor to this issue is the lack of explainability in AI systems, especially those powered by machine learning. Unlike traditional

software, which operates according to clearly defined rules, many AI models make decisions based on complex statistical correlations that are difficult to interpret (Hitchings, 2024). Unlike larger firms that may have teams to interpret, monitor, and adjust AI systems, SMEs typically lack the resources to oversee these models (Roa Baez & Igbekele, 2021). This gap creates an additional vulnerability for SMEs, as they may unknowingly deploy biased or opaque AI systems that inadvertently harm their business operations (Bettoni et al., 2021).

Design Science for Applied Information Systems Research

Design science research (DSR) is a foundational paradigm in Information Systems research that emphasizes the creation of innovative artifacts aimed at solving real-world problems. Unlike behavioral science, which seeks to understand and predict phenomena, design science is inherently constructive. It advances knowledge through the conceptualization and/or instantiation and evaluation of design artifacts such as models, methods, constructs, and IT systems (Hevner et al., 2004). DSR thus enables research through tangible prototypes that address identified problems in between practical environment and knowledge base. Through iterative design activities, DSR may explore not only what works, but why and how it works in a specific context (Johannesson & Perjons, 2014).

DSR operates under a set of guiding principles that stress relevance, rigor, and utility. The process begins with identifying a relevant problem, followed by designing an effective artifact that addresses it, and then rigorously evaluating the artifact's performance (Hevner et al., 2004). This paradigm values both theoretical grounding and practical applicability: each artifact should be informed by existing knowledge and simultaneously offer contributions that are actionable. The cyclic interaction between design and behavioral research fosters both utility (here: in the form of functioning systems) and truth (here: in the form of both actionable and generalizable knowledge), forming a research approach well-suited for addressing complex socio-technical challenges within information systems (Hevner et al., 2004).

3. METHODOLOGY

The theoretical aspects identified in above literatures collectively contribute to the understanding of hampered AI adoption within SMEs, highlighting the need for tailored solutions that address these specific challenges.

Requirements Collection

From a preliminary survey, we gathered insights into the current uses of AI within SMEs, identified potentially sought-for new applications, and understood the concerns and barriers faced by these businesses. We administered the preliminary survey with a structured questionnaire via Qualtrics (Appendix A), targeting SMEs owners, managers, and employees in North Carolina, USA. The questionnaire focuses on three primary areas: the current application areas of AI, the perceived benefits of AI tools, and the challenges and concerns that SMEs encounter in adopting AI.

Artifact Conceptualization

The conceptual design phase establishes a foundational blueprint for the AI adoption assistance platform, presenting a mock website that showcases the proposed features and functionality. In alignment with DSR guidelines, this phase serves as the design and development stage, where theoretical knowledge is transformed into a practical blueprint through iterative modeling and visualization. Therefore, we crafted user stories to capture the needs and actions of various user types, such as SME owners and general staff. These user stories guide design decisions by highlighting specific user goals and tasks, ensuring the platform functionality aligns with users' real-world needs and workflows (Möller et al., 2020).

Artifact Instantiation

The instantiating development phase brings the design to life by building the AI adoption assistance platform using Python, Django, and SQLite, with a strong focus on security, usability, and performance. The development process embodies the building activity within DSR, where the conceptual design is transformed into a functional platform prototype that addresses the identified SMEs needs of integrating robust security measures, user-friendly functionalities, and scalable design to create a secure environment for SMEs using the platform.

LLM and Machine Learning Integration. The AI and machine learning functionalities leverage Python libraries such as Pandas and NumPy to develop custom AI models tailored to meet SMEs needs. For the sales forecasting function, the system utilizes the Catboost, Statsmodels, scikit-learn, and Pmdarima libraries, which supports widely used forecasting models, including

RandomForestRegressor, Exponential Smoothing, AutoArima, and RNNs/LSTMs (Zhao et al., 2024). These models analyze historical sales data to identify seasonal trends, recurring patterns, and future sales projections.

Additionally, a custom AI chatbot creator is integrated to assist businesses in automating customer support and operations. The chatbot is deployed using the Hugging Face platform with serverless architecture, ensuring scalability and ease of maintenance. For optimal performance, the Hugging Face Spaces chatbot, powered by the ChatGPT-3 API, is utilized, offering a fast, high-performing large language model (LLM) with a generous free-tier and compliance with EU privacy regulations (Zhao et al., 2024). Furthermore, the system generates insights into frequent customer concerns and enables intelligent support routing, escalating unresolved issues to human agents when necessary. To ensure data privacy and build user trust, the chatbot is trained with strict protocols to prevent the disclosure of personal identifiable information (PII), maintaining full compliance with data protection standards.

Web Application Security Enhancements. Hosted on an AWS EC2 Instance (Iaas), the application benefits from built-in Distributed Denial of Service (DDoS) protection and a Web Application Firewall (WAF), helping mitigate common threats and unauthorized access attempts. All data transmitted between users and the platform is encrypted using TLS/SSL, enabled through Cloudflare, which enforces HTTPS connections to safeguard information in transit (Vallabhaneni et al., 2024).

On the backend, Django's security framework provides strong safeguards by default. Sensitive information, such as passwords, is automatically hashed, ensuring that even in the event of a data breach, exposed data remains protected. The platform uses SQLite as its database solution, which is lightweight and well-suited for development and low- to moderate-traffic production environments. The access to sensitive data is tightly controlled through Django's adherence to the principles of least privilege and zero-trust security, ensuring that users and processes only have access to the resources necessary for their role. These security measures aim to ease concerns that SMEs may have when adopting AI applications, ensuring data privacy, compliance, and operational safety.

API Management. Effective API management is essential for integrating AI functionalities across the platform. Instead of FastAPI, the platform utilizes Gradio and Gradio_Client to manage interactions between the user interface and AI models, particularly Hugging Face Spaces. Gradio provides secure, rate-limited connections by default, simplifying deployment while ensuring that APIs remain protected from abuse and unauthorized access. (Vallabhaneni et al., 2024).

User Authentication and Authorization. The platform implements secure user authentication and role-based access control using Django's built-in authentication system. Django provides robust session management, password hashing, and protection against common web threats such as cross-site request forgery (CSRF) using CSRF tokens.

While multi-factor authentication (MFA) is not currently implemented, Django's authentication framework supports user login, registration, and permissions management, allowing for the definition of distinct user roles such as admin, SME employee, and guest. Each role is granted access only to the features and data relevant to their level of authorization, ensuring secure and appropriate access throughout the application.

Backend Optimization. To ensure a responsive and efficient user experience, the platform offloads heavy processing tasks—such as chatbot interactions—to external infrastructure. By deploying the chatbot on Hugging Face Spaces, the computational load is shifted away from the core server and handled by Hugging Face's high-performance infrastructure. This approach reduces strain on the backend, improves response times, and ensures the platform remains lightweight and scalable without requiring complex task queues or caching systems (Abdali et al., 2024).

Monitoring and Logging. The platform leverages AWS EC2's built-in logging and monitoring tools to track performance and maintain system health. AWS provides real-time activity logs, error reporting, and performance metrics, allowing for efficient issue detection and resolution (Casola et al., 2024). This streamlined approach simplifies infrastructure management while ensuring that the platform remains reliable and responsive.

User Experience Enhancements. To support usability and adoption among SMEs, the platform prioritizes clear, step-by-step instructional guidance designed with an "explain like I'm five" (ELI5) mindset. Comprehensive documentation will be created to walk users through each feature, helping those with little to no technical background navigate and effectively use the

platform.

To build transparency and foster user trust, the documentation will include plain-language descriptions of the AI models powering the platform. These explanations will highlight each model's strengths and limitations, allowing users to better understand how outputs are generated and make informed decisions based on the results. The aim is to bridge the technical skills gap by offering simple, approachable resources, including video demonstrations, that show exactly how to interact with the platform's tools. This user-centered approach is designed to reduce uncertainty, increase confidence, resources, and empower SMEs to adopt AI solutions with clarity and purpose.

Deployment and Scaling Strategy. The platform utilizes a Continuous Integration/Continuous Deployment (CI/CD) pipeline through GitHub, automating testing and deployment to ensure smooth and efficient updates. The platform was developed on a secure web server hosted by an EC2 instance, due to its free tier, as one of the main goals of the project is to deliver a low-cost solution. AWS EC2 also offers auto-scaling capabilities to handle traffic surges and intensive computation tasks, ensuring reliable and scalable performance as user demand grows.

Demonstration and Testing

The final design phase of this study involves testing to evaluate the platform's effectiveness, user-friendliness, and overall suitability for SMEs with the goal of obtaining potential design meta-requirements. The testing was conducted with a sample of participants based in North Carolina, including both practitioners and non-technical students. After using the platform, participants will complete a questionnaire on Qualtrics to gather qualitative and quantitative feedback on their experience, including their trust in its security and whether they would consider implementing it in their business (Appendix C). We conducted interviews to gather additional information and feedback.

4. RESULTS OF REQUIREMENTS COLLECTION

The preliminary survey results collected from twelve owners or employees of SMEs (Appendix A) not only provide insights into AI adoption and interest among SMEs of various sizes (7 micro-businesses, 2 small and 3 medium-sized) and industries but also reinforce the key barriers, particularly cost, lack of expertise, and data security concerns, which continue to hinder AI adoption among SMEs. Despite the small sample size, the ex-ante outcome informs our solution design with input from the practical SME environment bordering our targeted design space.

Although none of the preliminary surveyed SMEs currently use AI solutions, a majority expressed interest in a no-code/low-code AI platform to support their business functions. Among them, especially micro-businesses (1-10 employees) see machine learning sales forecasting as the most valuable AI application, with additional interest in automated customer support/chatbots and voice-to-text automation. SMEs with 11-50 employees prioritized document summarization, data dashboard automation, and fraud detection tools, while SMEs with 51-500 employees favored support chatbots and data dashboard automation. These findings highlight a strong potential demand for tailored AI tools for SMEs.

The preliminary survey also reveals several barriers and concerns regarding AI adoption. In fact, 36.4% of respondents expressed concern about AI model bias and lack of in-house expertise, while complexity of setup (54.5% of respondents) and cost of implementation (72.7% of respondents) are also commonly considered obstacles (**Figure 1**). Micro-business respondents, on the other hand, all mentioned the cost of implementation as a main barrier. Data privacy and security stand out as universally critical concerns, with all respondents marking data privacy as essential to any potential AI adoption.
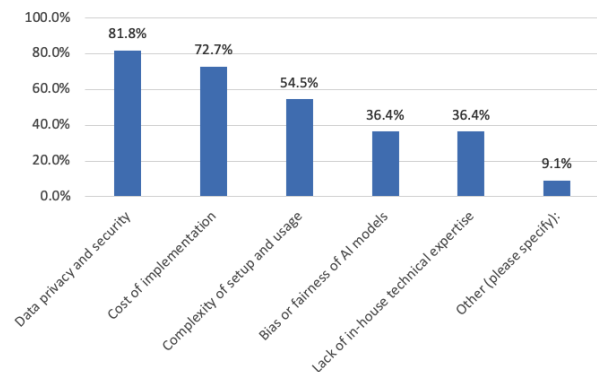

Figure 1: Distribution of main concerns about AI adoption among preliminary survey respondents

5. DESIGN ARTIFACT

Landing Page

The landing page of the website (**Figure 2**) establishes the first point of contact for users and reflects the core values of accessibility, trust, and

functionality. A clean and intuitive navigation bar is placed just below the header, featuring links to Home, Testimonials, Services, FAQs, About, Contact, Login, and Register.
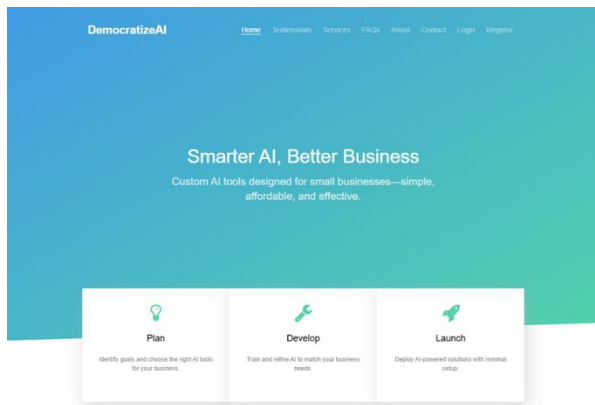

Figure 2 Landing Page

User Authentication
The Register and Login functionalities are essential components of the platform's secure access model and are presented as distinct pages accessible through the navigation bar (Appendix B). The Register form collects basic information such as first name, last name, phone number, email address, username, and password, while the Login form allows existing users to securely access their accounts with only their username and password. Both forms were built using responsive front-end design, with server-side validation and hashing for password storage to ensure secure data storage from the start. Once authenticated, users are redirected to a private, user-specific interface where they can begin utilizing the features of the platform. This gated structure not only supports secure access but also lays groundwork for future features.

Custom AI Chatbot Creator
This feature allows users to quickly configure and deploy a customer-facing chatbot capable of responding to frequently asked questions, providing service updates, or directing inquirie, all through a simple, form-based interface. Users are not required to write or understand any code; instead, they follow a guided setup process that walks them step-by-step through customizing their chatbot's responses and deployment settings.

After the initial setups, users are directed to the Manage Chatbot page, a centralized hub for controlling all aspects of their to-be-created chatbot (**Figure 3**). This page includes clearly written instructions on how to use and update the tool, ensuring that even first-time users can navigate the process confidently. Users can

upload or modify an individual reference document that powers the chatbot's knowledge base, test the chatbot's behavior in real time, and delete it at any time. Allowing users to upload documents rather than filling out a structured form offers greater flexibility and mirrors existing business workflows, reducing friction for SMEs who may already have relevant materials prepared in their own formats.
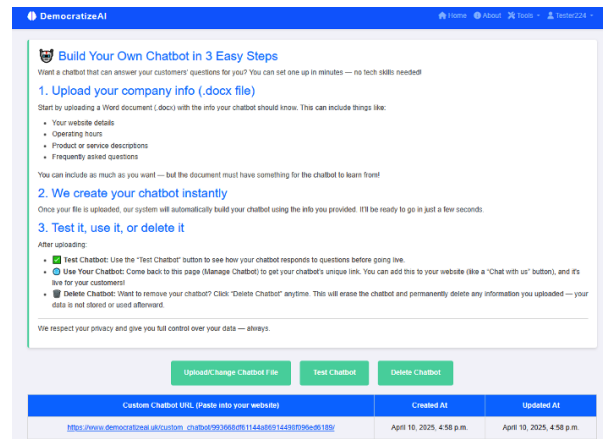

Figure 3 Manage Chatbot Page

After uploading their file, the Manage Chatbot page provides users with a unique, embeddable link that can be easily integrated into their own business website. This link enables their customers to interact directly with the AI chatbot, offering a seamless extension of their customer service capabilities without requiring complex installation or technical setup. When accessed through the embeddable link, the Chatbot Page (**Figure 4**) provides a clean, user-friendly interface where end users can interact with the AI in real time, receiving accurate, context-aware responses based on the SME's uploaded documentation.

In addition, the delete functionality reinforces the platform's commitment to user privacy and aligns with the principle of data ownership and the right to be forgotten. When a user deletes their chatbot, all associated data, including uploaded documents and stored interactions, is permanently removed from the system.

Sales Forecasting
The Sales Forecasting tool enables SMEs to upload sales data in a spreadsheet format, CSV or XLSX, and receive 30-days forward-looking predictions based on trends identified by models trained with custom SME data (**Figure 5**). The tool presents results in easy-to-understand visualizations, helping business owners identify sales patterns and potentially use the results to make informed decisions around staffing,
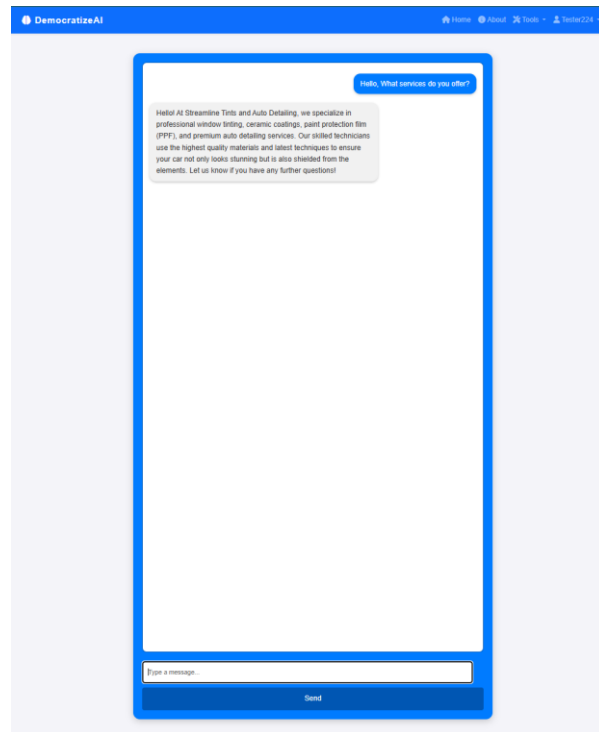
inventory, or marketing strategy.

Figure 4 Chatbot Page

Figure 5 Sales Forecasting Page

Users are guided through a clear, step-by-step process that outlines how to format their data and

interpret the results. The platform includes brief explanations to ensure users can get started even if they have no prior experience with forecasting or data science. Once data is processed from the uploaded file, the tool displays a graph and chart comparing historical sales to projected future values: Last 30 Days and Future 30 Days (**Figure 5**). Users can hover over data points to view exact figures and trends to find key takeaways, such as predicted high-volume months or declining trends. This output is tailored for non-technical users and avoids jargon, providing real insights without requiring background knowledge in analytics or AI.

All sales data is processed securely at runtime and is never stored on the server or saved after the forecast is generated. This design ensures full data privacy by default, aligning with the principle that users retain complete control over their information without needing to manually delete it.

Manage User
The Manage User page allows authenticated users to update basic account information, specifically their first name, last name, or email address (**Figure 10** in Appendix B). All changes are made through a simple form-based interface, designed for ease of use and clarity. Users also have the option to delete their account entirely, which triggers the permanent removal of all associated data across the platform (**Figure 10** in Appendix B). This functionality upholds the "right to be forgotten" and reinforces the platform's commitment to user data privacy and control.

6. RESULTS OF DEMO AND TESTING

To evaluate the effectiveness, clarity, and user-friendliness of the web-based AI platform, usability testing was conducted with owners or employees of SMEs and non-technical university students. Participants were asked to complete common tasks based on a predefined scenario description within the platform and provide feedback on their experience, including areas of confusion, interface design, and overall satisfaction (Appendix C). A total of 28 valid responses were obtained and merged in a way that preserves proportional contributions, with greater analytical emphasis on SME insights to align with the research objective of addressing AI adoption challenges specific to that context.

A recurring theme across both groups was the need for improved discoverability of key tools, particularly when users were not logged in. This issue was most evident in the Data Security and Privacy FAQs, which were only visible to unauthenticated users, a design oversight that

will be corrected by making the FAQ content accessible regardless of authentication status. This change supports both transparency and ease of navigation, especially for new users evaluating the platform.

A key priority emerging from the SME participants' feedback is the expansion of AI tool functionality, particularly the development of a conversational chatbot tailored for internal business queries. While the current chatbot supports basic customization, future iterations will introduce a more dynamic interface that allows users to build and refine their chatbot directly within the platform, removing the need for external document uploads. In addition, options for updating chatbot content in response to evolving business needs, such as product offerings or internal FAQs, were requested.

Participants from both groups highlighted the importance of clearer tool guidance, especially around the AI Sales Forecasting feature. Several users either missed the output entirely or were unsure where to view the results after uploading a dataset. To address this, the interface will be redesigned to include an automated success message, clearer upload confirmation, ability to export results, and auto-scroll functionality that brings users directly to the forecast results. Additional tooltip guidance and a revised CSV upload prompt will ensure users understand file format requirements upfront.

Feedback also emphasized the need for onboarding support, particularly for less technical users. As such, guided video tutorials will be developed and embedded into the site to demonstrate tool usage, dataset preparation, and chatbot creation. These tutorials will be optional but easily accessible, aligning with DSR's goal of maximizing artifact adoption without imposing unnecessary friction for more confident users.

7. FUTURE WORK

The artifact testing revealed a range of valuable insights that guide the future development of AI adoption assistance solutions for SMEs.

From an infrastructure standpoint, the AI adoption assistance platform is currently hosted using a free-tier EC2 architecture on AWS. While this setup has enabled rapid prototyping, long-term hosting solutions will need to be evaluated. AWS can present unpredictability in terms of scaling and cost, especially after the one-year free tier expires. Future considerations include continued use of cloud services or transitioning to a self-hosted local server to maintain affordability and control as user traffic increases.

Potential business model development opportunities remain an ongoing consideration. Feedback around pricing model preferences was notably diverse, with participants expressing interest in freemium, ad-supported, and subscription-based models. A tiered pricing structure is being explored to accommodate a wide range of user preferences and financial capacities, though the final monetization strategy will depend on further user research. Ensuring accessibility for smaller businesses will remain a guiding principle, while premium tiers may offer added value for advanced users. In this light, future work might explore viable and desirable ways of deploying an AI adoption assistance platform for SMEs across various sectors.

Advanced features under consideration for premium services include greater flexibility in chatbot customization, enhanced forecasting options, and the introduction of a business intelligence dashboard that automates data visualization based on uploaded sales data. This would allow business owners to "talk to their business data," bridging both the forecasting and conversational AI features into a cohesive, user-guided analytics experience.

8. CONCLUSION

This article has reported on a project that targets the design of an AI adoption assistance solution for SMEs. Following a DSR project cycle framework, relevant aspects and requirements from the application domain were gathered in a stakeholder-centric manner, alongside an unstructured review of related literature, to inform a first design iteration implementation. Moreover, this article has argued and described the conceptualization and technical development of an early artifact instantiation: a platform showcasing custom AI chatbot creation and AI-assisted sales forecasting. Tentative insights from demos and tests with experience-based inquiries were collected from both SMEs and non-technical student users. Towards design knowledge obtained so far, key insights on meta-requirements address the need to strengthen AI adoption assistance capabilities by enhancing the chatbot's functionality for internal business use, enabling in-platform customization without external uploads, and ensuring users can easily access and interpret AI-generated outputs through clearer guidance, improved feedback mechanisms, and contextual tooltips.

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APPENDIX A
Requirement Collection: Preliminary Survey of AI Platform

Section	Question	Answer Options
Company Size and Industry	What is the size of your company?	(A) 1-10 employees (B) 11-50 employees (C) 51-200 employees (D) 201-500 employees (E) 500+ employees
	What industry does your company operate in?	(A) Retail (B) Manufacturing (C) Financial Services (D) Healthcare (E) Technology (F) Hospitality (G) Other (please specify): _____
	How familiar are you with AI tools and technologies?	(A) Not familiar at all (B) Slightly familiar (C) Moderately Familiar (D) Very Familiar (E) Extremely Familiar
Platform Feature Interest	Would your company benefit from a no-code/low-code platform to create AI models for tasks like sales forecasting or customer segmentation?	(A) Yes, definitely (B) Maybe (C) No, we already have AI solutions in place (D) No, we don't have a need for AI right now
	Which of the following AI tools would you find most valuable? (Select all that apply)	(A) Automated customer support/chatbots (B) Sales forecasting tools (C) Image generation for marketing (D) Document summarization (E) Data Dashboard automation (F) Fraud detection tools (G) Voice-to-text automation (H) Sentiment Analysis (I) Recruitment & Resume Screening (J) "Talk to your data" chatbot
Concerns and Barriers	What is your main concern about using AI tools? (Select all that apply)	(A) Data privacy and security (B) Cost of implementation (C) Complexity of setup and usage (D) Bias or fairness of AI models (E) Lack of in-house technical expertise (F) Other (please specify): _____
	How important is data privacy and security in deciding whether to use AI tools?	(A) Extremely important (B) Important (C) Neutral (D) Not important
	Would your company be more likely to adopt AI solutions if they complied with privacy laws like GDPR and offered encryption and data protection features?	(A) Yes, definitely (B) Maybe (C) No, privacy compliance is not a major concern
	What would make you hesitate to use AI tools provided by a third-party service? (Select all that apply)	(A) Uncertainty over who owns the data (B) Concerns about hidden costs (C) Lack of confidence in the accuracy of AI (D) Poor support or training for the tools (E) Other (please specify): _____

Open-Ended Questions	Are there any specific AI tools or features not listed that you believe would benefit your business?	(A) Please Specify: _____
	What concerns or barriers do you think would prevent your company from adopting an AI-powered platform like this one?	(A) Please Specify: _____

Table 1 Preliminary Survey of AI Platform
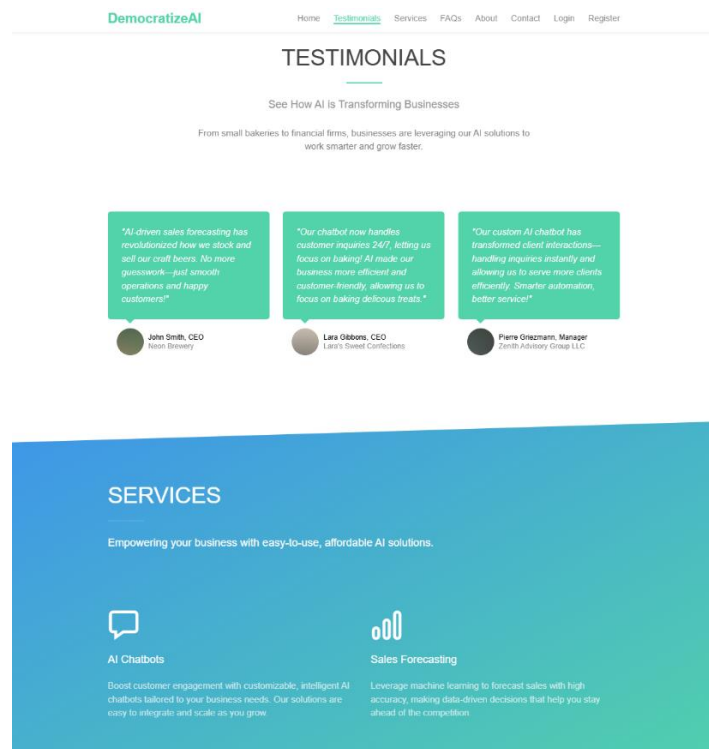
APPENDIX B
Prototype of the AI Platform for SMEs

Figure 6 Testimonials and Services

Figure 7 Frequently Asked Questions (FAQs)

Figure 8 Contact Form

Figure 9 Register & Login Form

Manage Your Account

Update Information Delete Account

Update Your Information

First Name:

Tester

Last Name:

kotlin

Email:

Tester@gmail.com

Update

Figure 10 Manage & Update User Page

APPENDIX C
Usability and Feedback Survey

Questions	Answer Options
Pre-Test Questionnaire	
Q1: What industry does your business operate in?	Open-ended
Q2: How familiar are you with AI tools?	(A) Not familiar at all (B) Slightly familiar (C) Moderately familiar (D) Very familiar (E) Extremely familiar
Q3: How much of a concern are the following factors in preventing you from adopting or using more AI tools in your business?	0–5 scale (Affordability, Accessibility, Ease-of-use)
Q4: What AI-powered tools (if any) do you currently use in your business?	Open-ended
Task 1: Explore the website. Create an Account.	
Q1: How would you rate the landing page and navigation?	0–5 scale (Landing Page, Navigation)
Task 2: Navigate to the Data Security and Privacy FAQs section and read the FAQs.	
Q1: Did you easily find the information you were looking for?	(A) Yes; (B) No
Q2: Which security/privacy feature stood out to you the most?	(A) The ability to delete my account and permanently erase all personal data (Right to Be Forgotten). (B) The use of industry-standard encryption and secure access controls to protect personal information. (C) Strict policy of not sharing or selling my data to third parties without consent. (D) Data isolation between businesses to ensure one customer can't access another's information. (E) Secure, real-time sales forecasting that doesn't store any business data.
Q3: How confident do you feel about the platform's data privacy measures?	(A) Not confident at all (B) Slightly confident (C) Moderately confident (D) Very confident (E) Extremely confident
Q4: After reading the FAQs, do you feel more inclined to utilize these tools?	(A) Yes; (B) No

Task 3: Navigate to the AI Sales Forecasting Tool and forecast the sales for the next month. (Use example CSV in the folder, look over CSV if you'd like)	
Q1: How easy was this task?	(A) Not easy at all (B) Slightly easy (C) Moderately easy (D) Very easy (E) Extremely easy
Q2: How likely would you use this tool in your business?	(A) Not at all (B) Slightly likely (C) Somewhat likely (D) Very likely (E) Extremely likely
Q3: What, if anything, was unclear about the process?	Open-ended
Task 4: Navigate to the Custom Chatbot Feature create your personalized chatbot and utilize the personalized chatbot link to test your chatbot.	
Q1: How easy was this task?	(A) Not easy at all (B) Slightly easy (C) Moderately easy (D) Very easy (E) Extremely easy
Q2: How likely would you use this tool in your business?	(A) Not at all (B) Slightly likely (C) Somewhat likely (D) Very likely (E) Extremely likely
Q3: What, if anything, was unclear about the process?	Open-ended
Post-Test Questionnaire	
Q1: Overall, how easy was it to navigate and use the site?	(A) Not easy at all (B) Slightly easy (C) Moderately easy (D) Very easy (E) Extremely easy
Q2A: How likely are you to use this platform regularly?	(A) Not at all (B) Slightly likely (C) Somewhat likely (D) Very likely (E) Extremely likely
Q2B: What would encourage you to use this platform regularly?	Open-ended
Q3A: Are there any AI features you expected but didn't find?	(A) Yes; (B) No

Q3B: What additional AI tools would be valuable for your business?	Open-ended
Q4: Would guide video tutorials enhance your experience with the site?	(A) Yes; (B) Maybe; (C) No; (D) I'm not sure
Q5: Which pricing model would you find most reasonable for this service?	(A) Free with limited features (B) Free with ads (C) Monthly subscription (D) Only if free

Table 2 Usability and Feedback Survey