Discovering Applications of AI to Support Business Operations in Stanford

July 2024

Improvement, Analytics, and Innovation Services

Improvement, Analytics, and Innovation Services (IAIS)

We are an in-house consulting group in Business Affairs serving Stanford University organizations and departments. Our teams provide expertise in process improvement, service design, business analytics, and project management.

Director of Business Analytics

Yogesh Vazirani

Senior Process Improvement Manager

Jay Mak

Learn more about our team at https://improvement.stanford.edu/

Agenda

- Project overview
- The discovery approach
  - Classify AI and application categories
  - Conduct peer institution benchmarking
  - Identify use cases
  - AI tools research and evaluation
- Managing expectations vs. reality
- Recommendations

Project overview

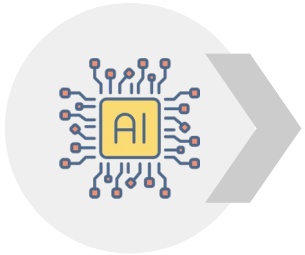
Project purpose and objectives

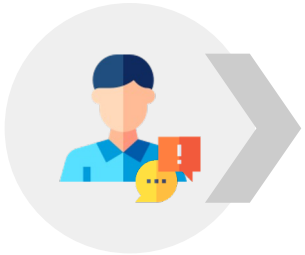
Purpose:
To bridge the knowledge gap at Stanford University by conducting a comprehensive study on the effective application of AI technology to its business operations.

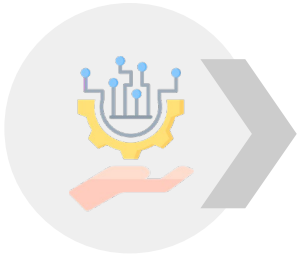
Objectives:

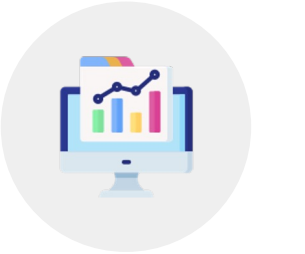
- **Assess Applicable AI Technologies:** Gain a comprehensive understanding of AI technologies that are relevant to our environment and how they can be effectively applied
- **Analyze Current Practices:** Study AI efforts in schools and industries to gain insights and find adaptable best practices
- **Catalog Existing Technologies In Use:** Conduct an inventory of the AI technologies currently utilized within Business Affairs
- **Identify Opportunities:** Identify specific operational use cases within Business Affairs that have potential for piloting and evaluation of AI technologies

Discovery approach









Step 1	Step 2	Step 3	Step 4	**Step 5**	**Step 6**
Identify and classify AI and application categories	**Perform faculty outreach**	**Conduct peer university outreach**	**Collect and gather information from stakeholders**	**Generate a prioritized list of use cases** for future pilot/evaluation	**Comprehensive market research** on specific AI tools
• Identify AI technology of impact aimed at supporting business operations	• Interview selected faculty members to document insights and solicit guidance on most likely business applications	• Interview selected peer university contacts to document best practices and challenges on AI implementation	• Identify potential use cases • Determine product roadmap for existing tools	• Assess priority of each use case based on predetermined factors such as number of staff impacted, hours saved, etc.	• Determine specific AI tools and conduct research to evaluate capabilities, benefits, limitations, concerns

Classify AI and application categories

How does AI work?

AI uses complex algorithms to acquire and analyze vast volume of data, learn from those data, and then perform human-like tasks. The process continuously enhances speed, prevision, and effectiveness of human efforts

Acquire data **Learn from data** **Perform complex tasks**

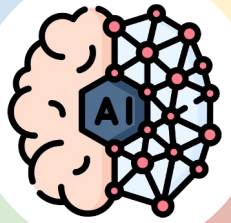
We focused on understanding 4 categories of AI applications for business operations

Generative AI

Focuses on creating new content or generating new data based on patterns and rules obtained from current data

Predictive AI

Uses statistical algorithms to generate predictions or projections based on previous data and trends



Robotic Process Automation

Uses automation technologies to mimic human tasks such as extracting data, filling in forms, etc

Prescriptive AI

Takes a step further of Predictive AI to determine best course of action based on current resources/requirements

Conduct peer institution benchmarking

Overall, there is variation in AI adoption among peers

Maturity Level	Description
High	• Enabled AI features in enterprise tools • Established focused task force • Tested multiple LLMs in sandbox environment • Deployed custom chatbots/virtual assistants • Formalized partnership with vendors
Medium	• Engaged major vendors for testing • Evaluating AI features in existing tools • Early development of private instances • Localized adoption of specific tools
Low	• Not implemented any AI solutions • Issued AI related policies and guidelines • Identified potential use cases

Note: Assessment based on information provided by 16 higher education institutions (including Stanford) from October 2023 through January 2024

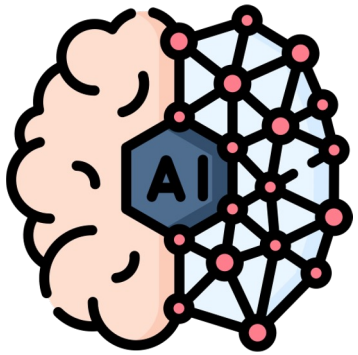
Handling data privacy and security concerns related to AI implementations is a top priority

- Develop **clear policies and guidelines** addressing the use of AI in business processes, including data handling and access controls
- Conduct **security assessment**
- Perform data clean up and implement **data governance** measures
- Choose vendors who are **aligned with the institution's security requirements**
- Research and **benchmark** other institutions, identify best practices and lessons learned
- Consider establishing a **dedicated task force / committee / advisory councils** with expertise in data privacy and legal compliance to overseeing implementation of AI
- Develop **trainings** specifically focus on data privacy, threat response, and handling of AI generated information

Note: Assessment based on information provided by 15 higher education institutions from October 2023 through January 2024

Identify use cases

Our documented use cases fall in 1 of 8 categories



130

total use cases documented for our project

1. Content generation and management (34 use cases)
2. Workflow automation (31 use cases)
3. Automate data collection and analytics (15 use cases)
4. Assist with day-to-day administrative tasks (14 use cases)
5. Assist in providing customer service (14 use cases)
6. Non-compliance and fraud detection (12 use cases)
7. Prediction, projection, and forecast (6 use cases)
8. Assist coding, debugging, and other DevOps functions (4 use cases)

Prioritization led to 40% of use cases assessed with “high impact” - By use case category

Use Case Category	High impact	Medium impact	Low impact	Total
1. Content generation and management	21	10	3	34
2. Workflow automation	10	11	10	31
3. Automate data collection and analytics	5	6	4	15
4. Assist with day-to-day administrative tasks	7	5	2	14
5. Assist in providing customer service	4	7	3	14
6. Non-compliance and fraud detection	2	8	2	12
7. Prediction, projection, and forecast	1	3	2	6
8. Assist coding, debugging, and other DevOps functions	3	1	-	4
Grand Total	**53**	**51**	**26**	**130**

Example high impact use cases for content generation

Content generation use cases
Assist with drafting email messages, or suggesting tone changes
Assist with drafting messages such as service alerts or articles related to outage
Assist with various project activities (writing reports, conducting research, comparison of documents, etc.)
Auto generate notes, summaries, and action items from meetings
Creating case studies materials
Generate ad hoc/summary reports on helpline activities (categorize financial fraud, summarize incident)
Generate content for project charters, status reports, and presentation slides
Generate executive summaries after reviewing large complex documents
Generate images for training materials
Generate recommendations based on current findings and past similar projects
Generate visualization based on structured data input
Research information and provide summary on regulation changes
Use Gen AI to help design interactive and engaging exercise for Financial Management Academy contents

AI tools research and evaluation

Project team researched a number of AI tools that can offer solutions for high impact use cases

High impact use case categories

1. Content generation and management
2. Workflow automation
3. Automate data collection and analytics
4. Assist with day-to-day administrative tasks
5. Assist in providing customer service
6. Non-compliance and fraud detection
7. Prediction, projection, and forecast
8. Coding, debugging, and other DevOps functions

AI tools researched

snapLogic, OpenAI, Copilot, Gemini, zoom, zapier, Microsoft Azure, servicenow, smartsheet, Airtable, tableau, Vertex.ai, slack, Amazon Bedrock, Amazon Q, Amazon SageMaker

A generative AI solution could assist with our high impact content generation use cases

High impact use cases

- Draft emails
- Generate reports and summaries
- Generate meeting notes / status reports
- Create case studies
- Build visualizations
- Develop training scenarios
- Produce presentation slides
- Generate images
- Perform qualitative/ quantitative data analysis
- Assist with coding and other DevOps functions

AI tools researched

OpenAI

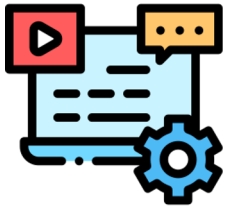
Gemini

Copilot

zoom*

* Zoom researched only for meeting related use case

Research on AI tools focused on understanding capability, limitation/concern, and cost



Capability

- Functions/ tasks it can address
- Ability to automate tasks
- Ability to learn and improve accuracy

Limitation / Concern

- Boundaries or constraints
- Ethical, legal, and privacy
- Risk of biases in decision-making
- Risks of misuse/malicious use

Cost

- High level assessment (high, medium, or low)
- Lacking information on cost related to implementation, maintenance

Recommendation for testing/adoption

Managing expectation vs. reality

It’s critical to manage expectation vs. reality when adopting AI solutions

Expectation

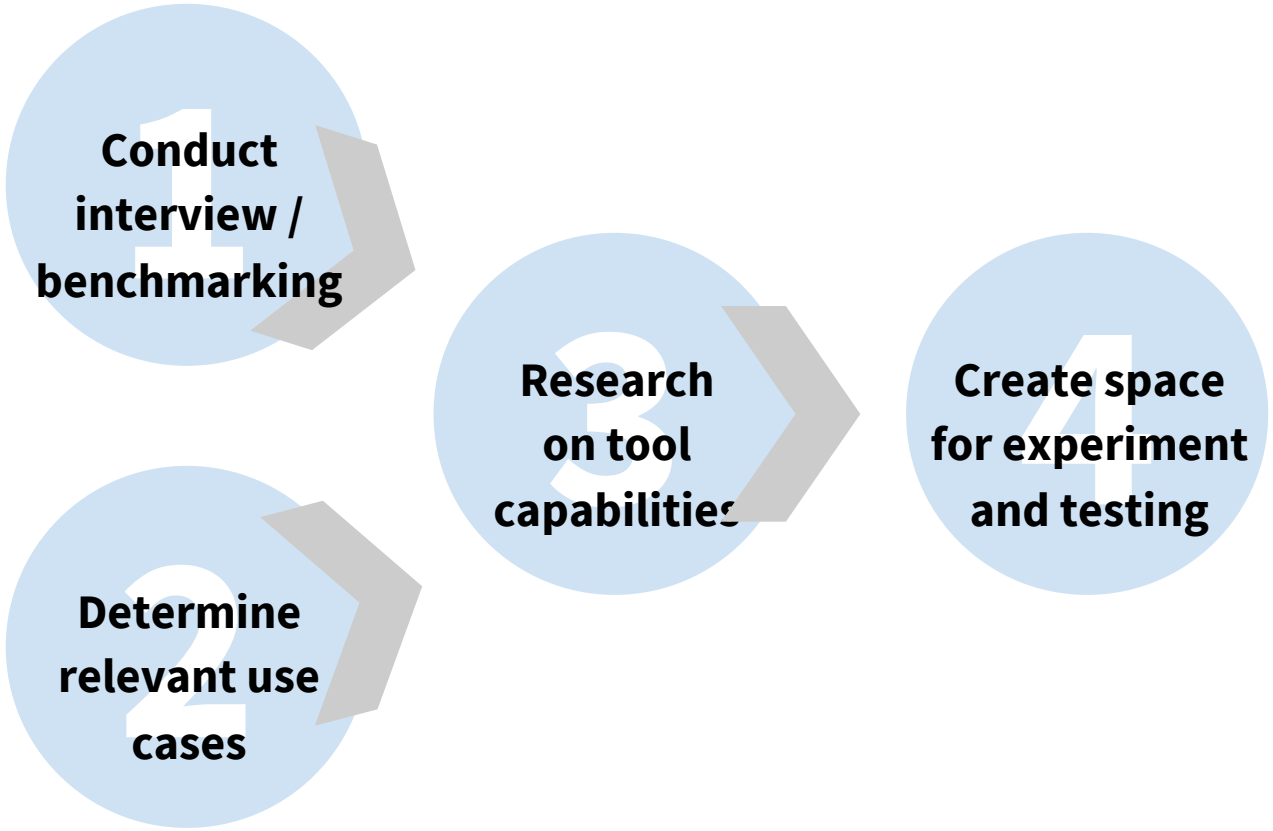
- Fully automate workplace operations and processes
- Universal and applicable across teams and functions within the organization
- Deliver accurate results right from the start
- Makes perfect, unbiased and logical decisions
- Immediately lower or minimize costs across the organization

Reality

- Increase efficiency but not complete automation
- Effectiveness can vary across different teams and functions due to uniqueness of use cases
- Limited by quality and volume of training data
- Risk of potential biases and hallucinations
- Involves significant investment in technology, training, and change management

Recommendations

Recommended approach on discovering applications of AI to support business operations



Other considerations

- Keep in mind it is an evolving technology
- Don’t delay it, jump in and test different tools
- Encourage ideas
- Document best practices
- Develop awareness trainings
- Consider the different options of buy vs build

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Thank you!