P.F. CHANG'S
CHINA BISTRO

HOSPITALITY AND TOURISM OPERATIONS RESEARCH EVENT

APRIL 26TH, 2025

LAWRENCE HIGH SCHOOL,
2525 PRINCETON PIKE,
LAWRENCE TOWNSHIP, NJ 08648

ROSHNI ANARKAT

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

BUSINESS OVERVIEW

P.F. Chang's Princeton is a refined restaurant founded that serves deliciome Asian cuisine located in Princeton, New Jersey. This location of P.F Chang's opened in late 2006 in the Marketfair Mall complex. The **general manager** is **Hadeeth Zaidi**, who manages a total of 57 employees among the waiters, kitchen staff, and bartenders. The operating partner is Karan Madan and the executive chef is Brian Benckert. The yearly **revenue** of the establishment is **17.5 million** dollars.

Figure I: P.F. Chang's Princeton Exterior

Their philosophy is "Made with heart, served with honor"

OVERVIEW OF CURRENT AI USAGE

Workday

Workday is a cloud-based software program designed to simplify workspace management. Workday is used to help management forecast sales and create schedules.

Wisely

Wisely is a system which uses customer intelligence to predict how many reservations will be placed and tracks online traffic surrounding the company.

RESEARCH METHODS

Primary Research

- **Manager Interview:** In-person meeting with Manager Hadeeth Zaidi
- **Employee Survey:** Anonymome survey sent to all employees
- **Restaurant Visit:** Visited employee workspaces and dining area

Secondary Research

- **Customer Reviews:** Viewed reviews through Yelp and TripAdvisor
- **Current AI Analysis:** Looked into current AI companies Wisely and Workday
- **Future AI Analysis:** Researched prospect AI companies
- **Web Search:** General search of P.F. Chang's
- **Competitor Analysis:** Analyzed surrounding competitors on their AI usage

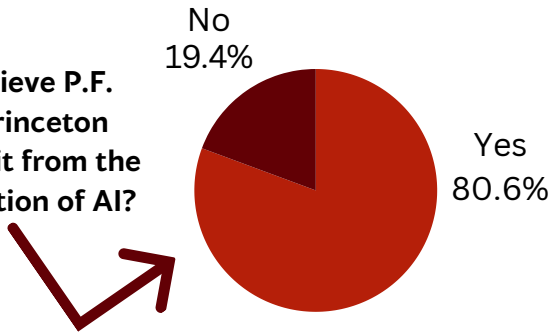
FINDINGS AND CONCLUSIONS

Results from Employee Survey

Are there any tools or systems you feel could be improved to make ymy work easier?

- **Inventory Management**
- **Schedule Management**
- **Reservation Process**

Do you believe P.F. Chang's Princeton would benefit from the implementation of AI?



Findings

- **Problem #1** - Current **forecasting** system is **ineffective** and results in customer dissatisfaction and employee stress
- **Problem #2** - Lack of uniform quality control and inventory management within P.F. Chang's locations leads to **inaccuracy in recipes**, as well as an increased workload for employees
- **Problem #3** - Inadequate technology within the restaurant creates **time waste**, taking employees away from more pressing problems
- **Problem #4** - Due to **little online presence** and an unclear customer base, P.F. Chang's fails to attract more possible customers

Conclusion #1

P.F. Chang's should add a more accurate and simple system that into account employees and important days

Conclusion #2

Starting to use reliable AI tech for quality control and inventory ensures recipes are constant and inventory unbiased

Conclusion #3

Implementing more technology within the company will help utilize labor effectively and value employee enrichment

Conclusion #4

Applying AI to marketing methods and loyalty programs will increase the amount of potential customers for the restaurant

SWOT ANALYSIS

Strengths

- Already uses AI in their company
- Has a good work culture
- Manages employees and customers well
- Has **loyalty programs** to incentivize returning customers to dine at P.F. Chang's frequently

Weaknesses

- AI is inefficient
- Employee schedules are inaccurate
- Improper uniform quality control between surrounding P.F. Chang's locations
- **Weak marketing** results in less possible customers

Opportunities

- **Replace** and **renovate** current AI implementation
- Use AI to train chefs to make the same food each time
- Train AI to manage marketing to attract customers

Threats

- Newly implemented AI may not work
- Employees may not like the new scheduling process
- AI could worsen marketing, dissuading customers from dining at P.F Changs

PROPOSED STRATEGIC PLAN

Forecasting Insights

- Weekly **sales** forecasting
- **Employee shift** forecasting
- Adequate **schedule creation**

Ingredient Analysis

- **Ingredient and recipe quality control** within differing locations
- Accurate **inventory analysis**

Restaurant Efficiency

- AI controlled **reservations**
- Direct **table-to-kitchen service** via kiosks
- **AI voice assistant** for phone ordering

Engaging Customers

- Increased **online presence**
- AI analysis of **customer reviews**
- **Loyalty program** managed by AI

BUDGET

Activity	Expenses	Annual Cost	One Time
Forecasting Insights	Lineup.ai	$1,788	-
Ingredient Analysis	Deep Vision AI	$25,000	$20,000
	Camera Installment	-	$4,000
	Sensor Installment	-	$22,125
Restaurant Efficiency	Tableo AI	$1,908	-
	Ziosks	$6,240	-
	AI Maintenance	$8,500	-
Engage Customers	Synthesia	$48,000	-
	Anicca.bot	$78,000	-
	Web Developer	-	$8,500
Total Cost		**$169,436**	**$54,625**

First Year Cost: $215,061	ROI = 61.18%
Annual Cost: $169,436	3 Year Cost: $553,933

II. INTRODUCTION

a. Description of business or organization

P.F. Chang's is a **refined restaurant chain** founded by Paul Fleming and Peter Chiang; their names combining to create the renowned restaurant. The chain, owned by Tri-Artisan Capital Advisors, has over **300 restaurants in more than 20 countries**. Their brand works to produce deliciome dishes with origins all across Asia. Their philosophy is "Made with heart, served with honor", representing how every recipe from P.F. Chang's is made with honor and purpose to celebrate Asian culture.

P.F. Chang's Princeton is a popular P.F. Chang's location at Marketfair Mall in Princeton, New Jersey. This location of P.F Chang's opened in late 2006 in the **Marketfair Mall complex**. When it opened, P.F. Chang's Princeton was one of the first large restaurant chains in the area. It was incredibly popular and was also one of the **first gluten-free advocating restaurants** to open in Princeton, NJ. Now, P.F. Chang's Princeton is a popular hang out spot for students and caters to a wide audience of people.

Figure II: Entrance of P.F. Chang's Princeton

Location and Competitors

P.F. Chang's is located next to MarketFair Mall in Princeton, New Jersey. The restaurant is walking-distance from it's biggest competitors: Tommy's Tavern + Tap and Seasons 21, and a 5-minute drive from restaurants such as Cheesecake Factory and Bonefish Grill. The restaurant's close proximity to US-1 gives customers **easy access** to an interstate highway, making it an **optimal location** due to its means of entry and exits. This gives P.F. Chang's a **competitive advantage** against other restaurants.

Popularity

Due to the fact that P.F. Chang's offers well-priced and tasty meals, it is a popular dining option for families on holidays. As a result, P.F. Chang's peak seasons are typically from **October-December and May-June**, including holidays like graduation and Mother's and Father's day. During these seasons, P.F. Chang's reports that they are usually **80-90% full**, with their peak days being on **weekends from 5-10 PM**. P.F. Chang's slow seasons are mainly in the summer months and after the holiday season.

Facilities:

P.F. Chang's Princeton offers an amazing experience to customers through the cuisine, ambiance, and service of the establishment. The restaurant offers dine-in, takeout and catering services for personal or corporate events. It also caters to larger parties or families, as there is a separate menu for larger groups. There are a total of **27 tables** in the restaurant and includes a large kitchen and bar as well. The exterior of the restaurant also features two large golden horses, a famome motif of P.F. Chang's representing strength.

Operations:

The general manager at Princeton P.F. Chang's is Hadeeth Zaidi, who manages a total of **57 employees** among the "front house", including waiters, front desk, and management, and "back house", including chefs and bartenders. The wages for employees depend on their position and department, however, the average hourly pay is 23 dollars. The yearly revenue of the the establishment is 17.5 million dollars. The operating partner is Karan Madan and the executive chef is Brian Benckert.

b. Description of the target market

Demographics/Psychographics of Employees

- P.F. Chang's is **very diverse** in its employee demographic
- Men and women split
- Most workers are white, but there are many minorities as well
- Most common minority is Hispanic and African Americans
- Most workers between 20-30
- Hardworking and fast-paced
- "Treat guests like family"

Demographics/Psychographics of Customers

- P.F. Chang's has an extremely diverse customer base
- Looking for:
  - **High quality** Asian cuisine
  - Modern and ambient upscale atmosphere
  - A versatile and flexible menu
- Age demographic is mixed; includes **high schoolers and older generation**
- All genders
- Middle to upper class

By the Numbers: Target Market of Customers and Employees

54% of P.F. Chang's Princeton workers are **men**

59% of P.F. Chang's Princeton customers are **middle class**

46% of P.F. Chang's Princeton workers are **minorities**

31% of P.F. Chang's Princeton customers are **high schoolers**

60% of P.F. Chang's Princeton workers are **between 20-30**

50% of P.F. Chang's Princeton customers are **South Asian**

Statistics derived from interview with P.F Chang's manager

Meet Reshma. She is a representation of the average customer at P.F. Chang's Princeton.

Reshma is a loyal customer at P.F. Chang's. She is South Asian, in high school, and a part of the middle class. Reshma values moderately priced, authentic food and a casual atmosphere to enjoy her meal.

c. Overview of the business or organization's current artificial strategies and usage

Currently, P.F. Changs uses **Workday**, a cloud-based software program from Human Resources designed to **simplify workspace management**. They implementation of Workday into management was in the form of **forecasting and scheduling**. Zaidi will first input an estimation of their weekly profit for that certain week, the availability of the employees, and the minimum amount of hours each employees has to work into the system. Once inputted the system, based off of previome data, will create a schedule for all employees as well a forecast of the week, including their busiest day and hours. Although this system is fairly accurate, it can still miscalculate, causing the restaurant to **not be adequately staffed** on those weeks.

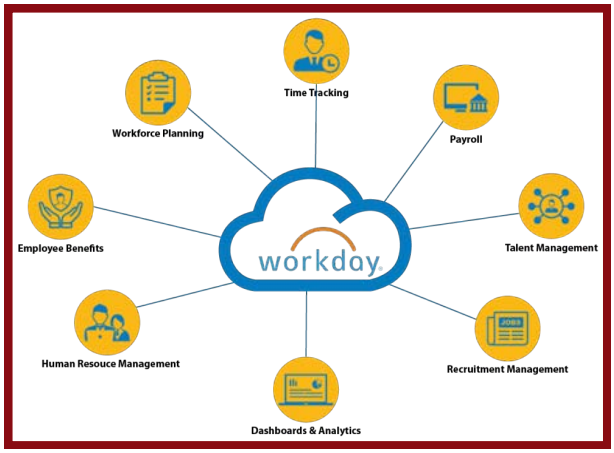


Figure III: Services provided by Workday

Another AI based system that P.F. Chang's utilizes is called **Wisely**. Wisely is a system which uses **customer intelligence** to predict how many reservations will be placed in the restaurant per hour, therefore determining how many reservations can be made with the staff at hand. Wisely is also used to **track online traffic**, such as take out. Wisely organizes the wait staff by hmy as well as organizing seating in the restaurant. The system can be edited as well according to use. Wisely is an incredibly useful system as it makes it easier for the staff to be more organized and prepared for rush hours and slow periods.

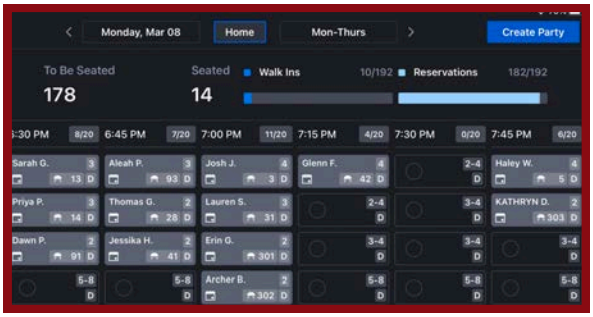


Figure IV: Wisely powered by Olo

Workday

Advantages

- Able to do many tasks in one system
- Good tool for managers
- Predicts mostly accurate forecast

Disadvantages

- Difficult to maneuver
- Complicated to use
- Expensive
- AI used is not very functional
- Lack of online support

Wisely

Advantages

- Organizes online and reservation traffic
- Makes scheduling easier
- Organizes waitstaff

Disadvantages

- Not very secure
- Can be inaccurate
- Expensive
- Lacks customer service
- Difficulty using the interface

Analysis:

Other than Wisely and Workday, P.F. Chang's does not use any other AI in their processes. As well as this, the scope of these two systems only goes to reservations and forecasting. As seen above, there are many flaws in these two systems as well that restrict P.F. Chang's from maximising their potential with AI. Additionally, Wisely and Workday are very limited and new, showing the need for P.F. Chang's artificial intelligence use to expand in order to become more efficient.

III. RESEARCH METHODS USED IN STUDY

a. Description and rationale of research methodologies selected to conduct the research study

Objective:

In order to come to conclusions about the current AI usage and my future plans for the AI usage for P.F. Chang's, I needed to do extensive research and use multiple methods. This included primary and secondary research in order to complete my study and come to my final conclusions about P.F. Chang's. All of my research needed to have a purpose in order to directly correlate to my conclusions and ultimately, my plan.

I. Manager Interview	I met with Haadeth Zaidi, Manager at P.F. Chang's Princeton, to discuss their current AI usage and future implementations.
II. Restaurant Visit	I visited P.F. Chang's Princeton, allowing me to view and understand their facilities and operations.

III. Employee Survey	I created a form which employees from the front house and back house responded to regarding questions on AI processes.
IV. Customer Reviews	I analyzed customer reviews to gain a sense on what customers enjoyed and what they believe could be improved.
V. Current AI Analysis	I researched the current AI mechanisms implemented at P.F. Chang's to better understand them.
VI. Future AI Analysis	I understood the capabilities of AI in a restaurant through extensive online research.
VII. Online Search	I conducted a general online search hoping to gain entry-level information of P.F. Chang's.
VIII. Competitor Analysis	I identified and researched P.F. Chang's competitors, gaining information on P.F. Chang's advantages and disadvantages.

Primary Sources:

The primary sources helped me find direct information first hand from those who experienced the lack of technology in P.F. Chang's. By using the primary sources, I was able to directly understand what needed to improve and the goals P.F. Chang's has for AI usage. The manager interview gave not only general information about the company, but also how P.F. Chang's processes worked, including the waiting, kitchen, and management systems. my employee survey helped me get feedback from those who know the AI usage best; the workers themselves. Lastly, a restaurant visit gave me a feel for the ambience, and I got to see how the staff worked. All this information was crucial to create my plan by understanding P.F. Chang's AI strategies.

Secondary Sources:

The secondary sources helped me find general information about the company as well as overall reviews to figure out the strengths and weaknesses of P.F. Chang's from an outsider's perspective. Using these secondary methods, such as thr online research including customer reviews, Google search, and competitor analysis, I was able to see outsiders' perspectives on the restaurant's AI usage. The current and future A.I. analysis I did gave me specific information on what needed to be changed and how within the company.

b. Process used to conduct the selected research methods

Objective:

My primary sources helped to familiarize me with the company, its processes, as well as gain internal knowledge on the workings of the restaurant from both the employees and manager. My secondary research consisted of easily accessible, online, methods that helped me acquire shallow data that I then confirmed or delved deeper into through the primary research such as the manager interview and employee survey. My sequential research, which went from broad to narrow, helped me acquire a wide-scope of knowledge while making it accurate and detailed.

Research Timeline:

Online Research	Hotel Visit + Manager Interview	Second Interview	Employee Survey
Oct - Nov 2024	*Dec 02 2024*	*Dec 12 2024*	*Dec 12 - 27 2024*
Understand restaurant's publicity and online presence	Understand basic information and in depth processes	Acquire internal feedback and suggestions from general public	

Primary Sources

I. Manager Interview:

After reaching out to Hadeeth Zaidi, Manager at P.F. Changs Princeton, and communicating my research plan in November 2024, I conducted an in-person interview on December 2nd. I discussed P.F. Chang's current AI usage along with the restaurant as a whole. A few weeks later, I rekindled with Ms. Zaidi to conduct a secondary interview with any additional questions I may have developed while further researching P.F. Chang's. I then recorded the interviews to use it while creating my plan.

Figure V: Interview with Ms. Zaidi, Manager at P.F. Chang's

II. Restaurant Visit:

Along with interviewing Ms. Zaidi, I received a tour of P.F. Chang's Princeton. This allowed me to view how the employees interacted with customers along with the organizational methods implemented to make sure each customer is accounted for. After viewing this, I developed an understanding about the inner workings of P.F. Changs and how I could implement AI to improve them.

III. Employee Survey:

In order to understand the processes in the restaurant, I also asked the employees. I sent out a **brief, anonymome survey** to back house and front house employees within the P.F. Chang's location and asked them questions about their satisfaction with the current A.I. usage as well as any problems they face within their day in order to find some common issues that could be improved upon.

Secondary Sources

IV. Customer Reviews:

To discover areas of improvement in Princeton P.F. Chang's in the eyes of the customers, I looked for online reviews of the establishment. I used reviews on platforms such as **Yelp, Google Reviews, and TripAdvisor**. This research helped me obtain accurate and public information about different customer experiences at Princeton P.F. Chang's. Furthermore, I could even use the lacking parts of the establishment as areas of improvement within my plan.

V. Current AI Analysis:

In order to understand the weaknesses and strengths of P.F. Chang's AI usage, I needed to research the current systems themselves. Through conversations with P.F. Chang's Princeton's managers as well as online research, I was able to look at processes like **Wisely** and **Workday**, which are essential for P.F. Chang's workers.

VI. Future AI Analysis:

In order to create a plan to implement AI into P.F. Chang's Princeton, I had to conduct research on Artificial Intelligence itself and how it works. For this, I used online articles and videos to collect data on the different uses of Artificial Intelligence and how it could potentially be used in the hospitality industry, specifically, restaurants.

VII. Online Search:

To find surface-level information on Princeton P.F. Chang's after initially committing to the company in late October, I conducted a simple online search which allowed me to gain insight into Princeton P.F. Chang's' online presence and reputation. This search helped to initiate my further research on the establishment as I were able to obtain basic background information.

VIII. Competitor Analysis:

To put Princeton P.F. Chang's in perspective of its location and surroundings, I did research on the surrounding competitors. In specific, I searched for middle to upscale restaurants that were culturally inclined with a similar ambiance to that of P.F. Chang's Princeton.

IV. FINDINGS AND CONCLUSIONS OF THE STUDY

a. Findings of the research study

Manager Interview:

- P.F. Chang's currently utilizes Workday and Wisely to schedule and forecast for the employees
  - **Workday** is confusing and has a **lack of online support**
  - **Wisely** experiences the same problems; also is **not very secure**
- Management often struggles with ingredient and drink inventory as it is a tediome and subjective task
- Similarly, management spends **excessive time on scheduling**
  - **I**t takes hours just to schedule all of the staff
  - This can lead to problems when workers are scheduled to work but end up not being needed
- Lack of online presence as their **social media is inactive**
- P.F. Chang's has a loyalty program but it is not heavily advertised

Restaurant Visit:

- Not much technology is used in the "front house" of the restaurant
  - No kiosks, P.F. Chang's used to have them at each table but they were removed after COVID-19 pandemic
  - Someone stands in the front at all times to answer the phone
- Busy kitchen with **little to no AI or technology is used**
- Since I visited at a quiet hour, there were some waitstaff employees without work to complete

Figure VI: Interior of P.F. Chang's Princeton

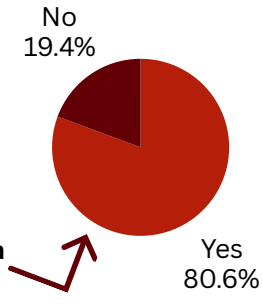
Employee Survey:

- Many employees from different departments **see a need for AI** in their workspace
- Several employees stated that they would like kiosks to be **re-integrated** into the restaurant
- Some responses stated the need for a more advanced scheduling system
- See a need for an enhanced online presence

Are there any tools or systems you feel could be improved to make your work easier?

- Inventory Management
- Reservation Process
- Schedule Management

Do you believe P.F. Chang's Princeton would benefit from the implementation of AI?



Customer Reviews & Complaints:

- Customers feel that the wait staff seem **overwhelmed and too busy**
  - Especially during rush hours when the restaurant is short staffed
- Customers also felt online support was unresponsive
- Food was also a concern for customers who felt that it wasn't up to their standards
  - **Many customers complained that the food taste wasn't consistent throughout P.F. Chang's locations**

"Service was **TERRIBLE**"

Google Reviews

"Food was **disgusting**. I once loved eating here"

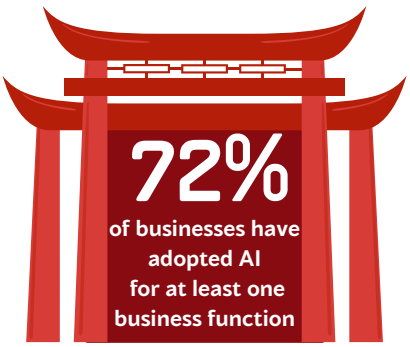
"I made a reservation in advance. Arrived on time. Yet they had **no table ready**"

Current AI Analysis:

- Although P.F. Chang's Princeton has AI integrated into their restaurant, it's work is **very unreliable**
- Workday and Wisely are the two most prevalent AI systems at P.F. Chang's, although they are not very accurate and tend to make a lot of errors
- Many time-consuming tasks have been taken over by Workday and Wisely
  - Such as scheduling and inventory
- P.F. Chang's Princeton needs more technology in their scheduling, forecasting, and inventory departments
- P.F. Chang's wants to implementing stronger AI into their system but are unable to due to the new nature of AI

Future AI Analysis:

- Artificial Intelligence allows computers to mimic human abilities such as learning, understanding, problem-solving, and creativity
- Many modern AI systems can be implemented in modern day businesses, such as restaurants
- AI in business doesn't replace employees, it instead **enhances the business** in ways that employees either cannot
- AI is being used in many other major restaurants such as Starbucks, KFC, Taco Bell and Chipotle



McKinsey & Company

Web Search:

- P.F. Chang's Princeton puts an emphasis on serving with honor and strength
- They have a relatively good rating at a 4.5/5 star rating on Google Reviews (which is the rating system the P.F. Chang's workers value the most)
- Known for their consideration towards customer complaints, especially online
- The corporation plans to add more artificial intelligence in the future, but there are no immediate plans for new specific systems at the moment
- Workers enjoy benefits and chances to advance, but sometimes find they are too busy when there are rush hours
  - **Mishaps in scheduling cause workers to have no work or too much work**

b. Conclusions based on the findings

After concluding my research, I identified inconsistencies within P.F. Chang's current AI implementation. I were able to conduct a SWOT Analysis, providing me with the basis of my plan. I developed 4 main problems P.F. Chang's faces as well as conclusions to each problem. This allowed me to view my data from an analytical perspective, deepening my understanding of P.F. Chang's AI usage and goals.

SWOT ANALYSIS

Strengths

- Already uses AI in their company
- Has a good work culture
- Manages employees and customers well
- Has loyalty programs to incentivize returning customers to dine at P.F. Chang's frequently

Weaknesses

- AI is inefficient
- Employee schedules are inaccurate
- Improper uniform quality control between surrounding P.F. Chang's locations
- Ineffective marketing resulting in a loss of potential customers

Opportunities

- Replace and renovate current AI implementation
- Use AI to train chefs to make the same food each time
- Train AI to manage marketing to attract more customers

Threats

- Newly implemented AI may not work
- Employees may not like the new scheduling process
- AI could worsen marketing, dissuading customers from dining at P.F Changs

Problem #1 - Current forecasting system is ineffective and results in customer dissatisfaction and employee stress

82% of companies reported that using AI in their business strategies is a top priority

National University

Conclusion #1 - P.F. Chang's needs to implement a more accurate and easy to use system which takes into account employees and important dates

In P.F. Chang's Princeton, the current forecasting system is extremely ineffective. **Workday** and **Wisely** are **not developed enough to properly forecast the amount of servers** that will be needed for that day's rush. As seen in the customer review below, as well as many others, due to this ineffective forecasting systems, customers are **often neglected or don't have a good experience** at P.F. Chang's because the workers are so stressed out from being short-staffed. As well as this, workers have noted that the current forecasting system, Workday, can be extremely complicated to use and the interface is not very practical as it is so hard to navigate. Many workers have expressed that there is also a lack of online support so it is even more difficult to use Workday. There are similar problems with Wisely, **emphasizing the need for a new, updated forecasting and scheduling system**.

41% of restaurants plan to invest in AI sales forecasting in 2024

Restaurant365

Problem #2 - Lack of uniform quality control and inventory management within P.F. Chang's locations leads to inaccuracy in recipes, as well as an increased workload for employees

Conclusion #2 - P.F. Chang's should begin using reliable AI technology for quality control and inventory to ensure recipes are constant and stock is unbiased

P.F. Chang's Princeton struggles with food control, such as inventory and quality. Inventory is time consuming for the management. It takes hours to conduct inventory on even the drinks within P.F. Chang's. As well as this, **inventory can be subjective**. One person can do inventory and conclude that it needs to be restocked in a week, while another might conclude it needs to be restocked tomorrow. By using a reliable, unbiased AI, inventory will be much easier and accurate. Similarly, quality control is not ensured in P.F. Chang's. Many customers have stated that they find that the dishes at P.F. Chang's are **either different each time**, or **different depending on the location**. The restaurant should use better quality control in order to make customers happy, and reduce time spent on training.

Problem #3 - Inadequate technology within the restaurant creates time waste, taking employees away from more pressing problems

63% of employees believe AI can help them complete tasks faster

Automation.com

Conclusion #3 - Implementing more technology within the company will help utilize labor effectively and value employee enrichment

If more technology was implemented into P.F. Chang's Princeton's processes, it would reduce the time that is spent on less important problems. For example, a big part of the restaurant industry is taking reservations. However, taking reservations can **take time away from an employee** to interact with customers face to face. All in all, booking a reservation should be quick and impersonal. I believe this process can be reconditioned and improved using AI as the focal point through **phone calls and kiosk enhancement**. Additionally, during the pandemic, the restaurant used on-table kiosks to help out employees. I believe technology like those interactive kiosks is imperative in order to create efficiency and utilize employees effectively.

90% of consumers look up a restaurant online before visting

WebFX

Problem #4 - Due to little online presence and an unclear customer base, P.F. Chang's fails to attract more possible customers

Conclusion #4 - Applying AI into marketing methods and loyalty programs will increase the amount of potential customers for the restaurant

The marketing methods in P.F. Chang's are not fully utilized. The loyalty program is rarely used by customers, and a lack of online marketing for it does not help. If P.F. Chang's began to use this loyalty program more often, then they would build a stronger customer base and would be able to bring more loyalty to P.F. Chang's, therefore increasing it's revenue and returning customers. As well as this, P.F. Chang's has **little to no online presence** other than a website. Their social media is only active on Facebook, and although they have an Instagram, it is very unknown with only 30 followers. If P.F. Chang's were to optimize their social media, they would be attracting more customers by reaching a greater audience, therefore creating more profit and a stronger image of the restaurant.

Conclusion #1

P.F. Chang's needs to implement a more accurate and easy to use system which takes into account employees and important dates

Conclusion #2

P.F. Chang's should begin using reliable AI technology for quality control and inventory to ensure recipes are constant and stock is unbiased

Conclusion #3

Implementing more technology within the company will help utilize labor effectively and value employee enrichment

Conclusion #4

Applying AI into marketing methods and loyalty programs will increase the amount of potential customers for the restaurant

V. PROPOSED STRATEGIC PLAN

a. Objectives and rationale of the proposed strategic plan

Once I conducted all my research and organized my thoughts into findings, creating conclusions, I came up with a four step plan which will increase the productivity and implementation of AI into P.F. Chang's. Resolving all of the needs in the company mentioned above as well as modernizing the location, my proposed strategic plan aims to rehabilitate pressing issues within the location and improve it by using Artificial Intelligence as the driving factor. This will improve efficiency and improve profits, creating a better name for P.F. Chang's Princeton.

1. Predicting Work Intensity

a. Use artificial intelligence in forecasting and scheduling processes in order to predict work flow and appoint correct amount to workers

→ Predicting the work intensity in P.F. Chang's Princeton is not as accurate as it should be in order to create strong anticipation for rushes or slow periods. By using AI in forecasting and scheduling, P.F. Chang's guarantees happier workers and a more organized staff.

2. Analyzing Ingredient Usage

a. Partnering with reliable AI companies in order to make inventory and quality control more constant and unbiased

→ The current P.F. Chang's AI usage does not extend to inventory and quality control, two problems which management struggles with within the location. Partnering with reliable AI companies would make these systems easy to follow, creating less stress for management.

3. Ensuring Efficient Systems

a. Applying more technology in P.F. Chang's systems to ensure efficiency and reduce time waste in the location

→ The technology that is in P.F. Chang's systems is very limited, therefore making employees complete devaluing tasks. If more technology was implemented, employees could spend more time tending to customer needs than focusing on reservations and calls.

4. Creating Loyal Customers

a. Connecting with customers through online presence and loyalty programs to create a strong, recurring customer base.

→ P.F. Chang's customer base is very hit or miss. Some customers show loyalty, and some do not. In order to create a stronger customer base, P.F. Chang's should emphasize a bigger online presence to and advertise their loyalty program for loyal support and customers.

b. Proposed activities and timeline

F	I	R	E
Forecasting Insights	**Ingredient Analysis**	**Restaurant Efficiency**	**Engaging Customers**
• Sales Forecasting • Employee Forecasting • Scheduling	• Quality Control • Inventory	• Reservations • Kiosks • AI Phone Ordering	• Online Presence • AI Customer Reviews • Loyalty Program




Forecasting Insights

The first part of my plan FIRE is F, standing for Forecasting Insights. In this step of my plan, I intend to improve the already established processes that use AI within P.F. Changś. These are the forecasting and scheduling measures which work to predict customer and reservation flow in order to appoint the proper amount of employees. Because the systems are insufficient to the development of artificial intelligence in P.F. Chang's, I plan to change the AI companies that are in use.

Lineup.ai

An emerging AI company known as **Lineup.ai** is the perfect candidate as an alternative for **Workday** *and* **Wisely**. Lineup.ai is a great replacement for Workday and Wisely because it includes forecasting and scheduling into one **easy-to-use, cheap system**. Within Lineup.ai, management can easily use drag and drop scheduling after analyzing intuitive sales and reservations forecasting. It also takes in account usual **peak hours and holidays** in order to create the most accurate forecasts. As well as this, managers can also view analytics like metrics and reports in order to break down the effectiveness of their scheduling. Lineup.ai is also reasonably less expensive than Workday and Wisely, and has better ratings, proving its worth.

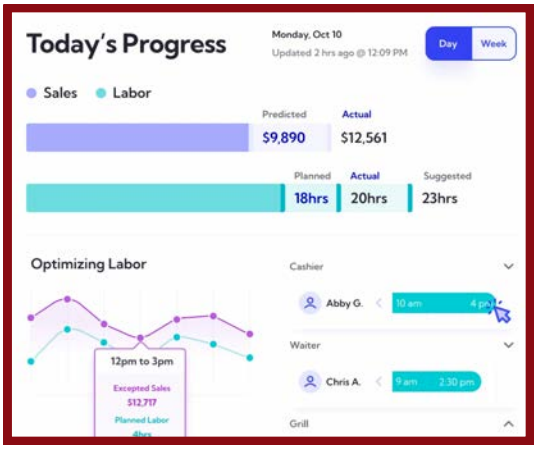


Figure VII: Interface of Lineup.Ai's Labor and Sales Breakdown

Profit Breakdown

Workday
$34-$42 per employee per month

+

Wisely
$240 per employee per month

=

Both
≈ $278 per employee per month

→ **$191,520** for all employees yearly

Lineup.ai
$149 per location per month

→ **$1,788** for all employees yearly

← **$189,732** expenses saved

This profit breakdown helps visualize the investment of using Lineup.ai over Workday and Wisely. The added bundle of two services into one system is much more helpful as well.

Lineup.ai has a much better reputation than Workday and Wisely. It is known for it's better efforts at customer service and bundled processes. As well as this, Lineup.ai's studies show only a **3% error rate** when it comes to forecasting. Lineup.ai helps with forecasting as it has "dynamic forecasting": a mix of past records (meaning that the system only gets better as it's used longer) and user input which takes in holidays, important dates, and peak hours/weeks. This forecasting can also predict profit. Therefore, scheduling is easily created with this forecasting system. Managers can drag and drop workers to schedule working hours.

Wisely has an average 3.6 rating

Workday has an average 3.9 rating

Lineup.ai has an average 4.9 rating

Lineup.ai will **increase worker efficiency** and **reduce confusion over scheduling**. Many times workers from P.F. Chang's are stressed from a lack of proper forecasting, or don't have anything to do due to a manager over-forecast the amount of customers. With Lineup.ai, forecasting will be far more accurate and increase worker happiness.

Ingredient Analysis

The second part of my plan FIRE is I, standing for Ingredient Analysis. In this step of my plan, I aim to utilize AI to maximize quality control and inventory.

When conducting my primary research, especially the manager interview, Ms. Zaidi told me about some of the current issues in the restaurant, specifically, in the "back house". The "back house" refers to the portion of the establishment not open to employees such as the kitchen, storage rooms, dishwashing area, and staff break rooms. The issues she mentioned were regarding inventory of ingredients and drinks as well as ensuring quality consistency across different chefs, locations, and times.

Computer Vision:

A groundbreaking change in the use of Artificial Intelligence is the origin of computer vision. Also known as **DeepVision AI**, this technology introduces the concepts of image and visual analysis as a capability of AI. It uses learning and neural networks to allow systems to derive information from photos and videos. Using this data, AI can have the ability to make suggestions or recommendations regarding the picture. While it may seem far-fetched, this attainable and extremely beneficial technology can completely transform the "back house" processes and environment at P.F. Chang's Princeton.

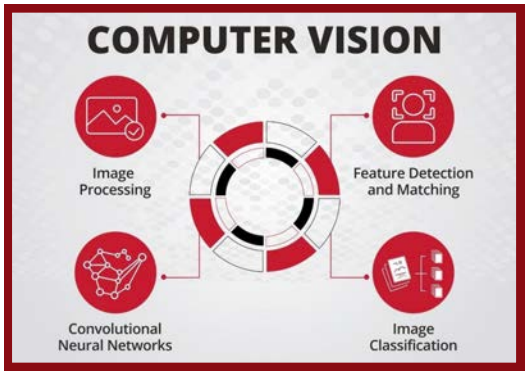


Figure IX: Computer Vision

"Broccoli was soggy, no tofu at all, sugar snap peas were bitter as if they were spoiled."

"Since the chicken was not completely cooked thoroughly, I am giving this place one star."

Quality Control System:

One issue that was seen constantly throughout my research on customer reviews was about the actual food. Many customers stated that they found **problems with their meat not being cooked properly** or with **ingredients not being fresh**. Above are two excerpts from real customer reviews left on Yelp, representing many others that also articulate the same point. Using DeepVision AI, a company which utilizes computer vision and AI to provide feedback, P.F. Chang's can **classify ingredients based on image recognition**.

Freshness:

One use of DeepVision AI's technology is to **determine and maximize ingredient freshness**. For example, I may input multiple pictures of lettuce in different forms, both spoiled and fresh. AI will then recognize characteristics in both groups and internalize them. Next, on a day to day basis, the visual sensors will monitor the lettuce and send real time pictures to the computer, which will then use computer vision to determine if the lettuce is rotten or fresh based on its similarity to the previously inputted images. If the produce is fresh, AI will be able to determine how long it will last before it begins to rot. This process will be applied to all of the produce used within P.F. Chang's recipes.

Cooking Quality Control:

Another way to utilize DeepVision AI to **maximize restaurant sanity and safety**, as well as **address negative complaints** the restaurant has received is to create a way to ensure that meat is properly cooked at the establishment. Similarly to produce, the meat "cooking control" systems will be inputted with images of under and overcooked meat, as well as well-done. Then a similar image classification process will occur when a live image is sent from the sensors located above the stovetops.

deepvision

Figure X: DeepVision Logo

> **"I wish there was a system that was a little more exact, because a 0.3 to my eye could be a 0.4 to someone else"**
>
> *Hadeeth Zaidi, Manager at P.F. Chang's Princeton*

Above is a direct quote from my interview with Ms. Zaidi showing how tediome and subjective the process of current "drinkventory" is.

Drinkventory Efficiency:

A big hassle for the employees that Ms. Zaidi informed me of during the interview was taking inventory of drinks. She mentioned how their current system includes **"eyeball estimations"** when measuring how much is left in a drink bottle. She also warned me about the **inaccuracy in their current methods** and how the amount written that was left in a bottle does differ from employee to employee. Since P.F. Chang's has over 60 different drink bottles that need to all be measured weekly, there needs to be a system that streamlines that process of drinkventory (drink inventory). This can also be done using DeepVision AI.

This process will include creating intake photos of each type of drink bottle and inputting photos of each measurement level. After this, any time inventory needs to be taken, the employee can hold the bottle up to a sensor. The sensor will figure out what drink brand it is and specifically what bottle, then it will use the level in the bottle to give an exact measurement. Now inventory time is **drastically shortened** and is way less of a hassle for employees. This shortens employee workloads and instead allows them to spend time on more pressing issues.

Restaurant Efficiency

The third part of my plan FIRE is R, standing for Restaurant Efficiency. In this step of my plan, I intend to focme on easing the workload on employees through AI systems that take over managing reservations and kiosks.

Tableo AI:

In restaurants around the country, employees struggle with managing a bustling environment within the restaurant. They tend to fall behind on reservations and making sure each process is being conducted efficiently. In order to alleviate the innate chaos, P.F. Chang's should implement **Tableo AI** into their tablets and Point of Service (POS) system . Tableo AI is an AI company dedicated to providing a **fully digital booking system** featuring an interactive floor map, integrated crown control, and a voice assistant for customers to make reservations through the phone. Currently, Tableo AI is partnered with renowned companies such as Michelin, Google, TripAdvisor, Facebook, and Instagram.

Figure XI: Tableo AI reservation screen

At P.F. Chang's, the employee who works the front desk is usually the one to answer the phone, often taking away time from customers. P.F. Chang's should implement **Tableo AI Voice Assistant (AVIA)** to help with managing client calls, reservations, cancellations, medifications, and general inquiries about the restaurant, saving employees' valuable time that could be used to helping customers. Once seating a customer, the waiter will input data in the Tableo AI app on their tablet indicating which table the customer is sat at, how many people were seated, what they ordered, and at what time they were seated and served. Once a reservation comes through, AVIA will sort through this data and determine the approximate wait time for customers as well as which tables to reserve. This will not only **reduce error** in making reservations, but it will also **increase the efficiency** of the restaurant, as less employees are needed to manage the front desk and any phone calls that come through.

Ziosk:

When interviewing Ms. Zaidi, I learned that during the COVID-19 Pandemic, P.F. Chang's implemented a system of kiosks. While they were immense help for increase restaurant efficiency, P.F. Chang's decided to remove the kiosks once the COVID-19 Pandemic ended, opting for a more traditional, face-to-face way of ordering food. Since these kiosks were such big help, P.F. Chang's should reinstall the kiosks through the brand **Ziosk**. Ziosk uses customer intelligence to allow **direct table-to-kitchen interactions** as customers will be able to reorder drinks, call their server, and even split bills when it comes time to pay. The implementation of Ziosk tablets will improve restaurant efficiency by reducing the time a server spends at a customer's table and allowing servers to bypass the tediome task of splitting bills and remembering checks, letting them focme on more pressing tasks. Each table will be given there own mini Ziosk in which they can reorder drinks and food, complete transactions, and call waiters over to their table. Each kiosk will also be **connected to the pre-established POS tablets** at P.F. Chang's, so the bar staff and servers can see exactly what a table has reordered, allowing them to serve the drinks accordingly.

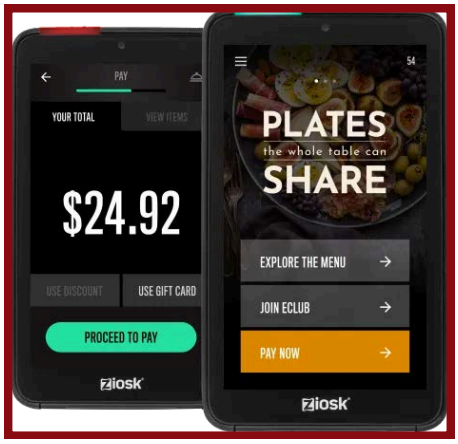


Figure XII: Mini Ziosks

Engage Customers

The last part of my plan FIRE is E, standing for Engage Customers. In this step of my plan, I aim to utilize AI to enhance customer experience and loyalty.

AI Promotion Recommendations:

Through my research, I learned that P.F. Chang's Princeton needs a more loyal customer base. The restaurant franchise does have a loyalty program called **Chang's Cash** but it doesn't have that many members. To incentivise more people to join, I will use **Anicca.bot** to create custom promotions geared to restaurant location that are only available to loyalty program members. For P.F. Chang's Princeton, those promotions will be **catered to the environment** of Princeton, NJ. For example, the chatbot could create promotions specifically for Chang's Cash members who go to either Princeton or Rider University to attract local students. On top of this, Ms. Zaidi mentioned that graduation season is a peak season for the restaurant. Using Anicca.bot, the surrounding high school and college graduation dates can be identified and then used to create a promotion, for example, a free appetizer or dessert.

Figure XIII: Sample Promotion Flyer

Chang's Bot:

To better help customers ask questions about the restaurant and engage them through a **completely remote way of getting their concerns heard**, I are implementing an **AI Chatbot** into the website of P.F. Chang's Princeton. This chatbot will be created by Anicca.bot and is being used with the feature of unlimited messages, making sure customers don't have to go through the hassle of it reaching a limit and breaking down. To install this software into the website, I will hire a remote web developer.

Synthesia:

Synthesia is an AI powered company that can create **custom videos and images**. P.F. Chang's Princeton should employ Synthesia to create content for the restaurant. On the already mentioned kiosks, there will be an interface that allows customers to watch **short and appealing videos** while waiting for their meals. These videos could be anything from the history of P.F. Chang's, cultural chinese topics, chopstick tutorials, or enriching cartoons for kids. These videos will be **regenerate monthly**, giving customers a unique experience each time they visit. P.F. Chang's will post all of the videos made by Synthesia on YouTube to gain an audience on that platform. Next, P.F. Chang's will use Synthesia to create trendy posts and reels for the Instagram account, which is currently not active at all. This will help gain a following and therefore gain customer interest to visit the restaurant.

Timeline 2025-2028:

Dec. 2025	Jan. 2026	Feb. 2026	Mar. 2026	Dec. 2028
• Remove Workday and Wisely • Replace with Lineup.ai • Purchase cameras and sensors • Purchase mini Ziosks	• Install cameras and sensors • Integrate DeepVision AI to computer system • Add mini Ziosks to each table • Connect mini Ziosks to POS system	• Start using Synthesia to create content • Begin using Tableo AI and educate staff • Train back-house employees on DeepVision AI • Hire web developer	• Implement Chang's Bot into the website • Use Anicca.bot to create loyalty promotions • Add Synthesia content onto social media platforms and mini Ziosks	• Yearly maintenance on systems • 25% increase in customers using loyalty program • 45% decrease in negative reviews

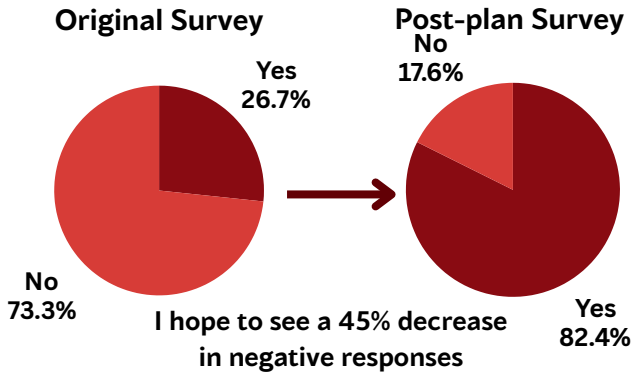
c. Proposed metrics or key performance indicators to measure plan effectiveness

Objective: After the implementation of my plan, I intend to conduct metrics in order to see if the plan is actually effective. If this plan is to be effective to P.F. Chang's and improve its processes, I need to use data to ensure it. I have proposed five performance indicators in order to measure my plan's effectiveness. Each one of these indicators measure how effective my plan is through different ways, ensuring it is working in all aspects.

P.F. Chang's Manager Interview: After the implementation and observation period of my plan, I plan to **meet with Hadeeth Zaidi** again to discuss the effectiveness of the plan. I will ask about the restaurant's revenue, to see if the plan has overall helped profits. Next I will see how the newly implemented AI systems are working. I will ask Ms. Zaidi about how management feels about these systems, and if they feel it is an upgrade to the AI usage before this implementation. This manager interview will show me how the leadership directly feels about my updates and I can hear from the ones who know best about the restaurant.

Employee Survey: I hope to conduct a **more specific survey** to track the impact of the project in 3 years. I will ask the employees **how they feel about the integration of AI into their workspace**. I hope to see that the inventory and quality control methods have been working, the "back house" staff feels more confident in their cooking and drinkventory roles because of the computer vision AI integration. Additionally, I will ask them if the implementation of Tableo AI on their tablets has been successful and if it makes taking reservations and orders easier for them. I hope to see a **45% decrease** in negative workplace experiences in reservations, inventory, quality control, and scheduling conflicts.

Results for the question: "Do you think that the reservation system at P.F. Chang's is easy to navigate and efficient?



Customer Survey: To ensure that customers are appreciating and actively using the on-table kiosks, I will conduct an **anonymome and optional customer survey** where they will express their kiosk usage and any feedback they may have. I hope to receive an **85% satisfaction rate or higher** regarding kiosk usage. I will also ask them about how they find the quality of food after the new quality control measures are implemented.

Efficiency Analysis: I plan to do an efficiency analysis by tracking the **amount of time spent on time-consuming tasks**, such as taking reservations or management's time spent on taking inventory. I will do this through multiple ways, like surveying management and employees and doing data analysis. This performance indicator will show me how efficient my new plan is and if it is actually reducing wasted time within the restaurant.

Social Media: I hope to receive more social media presence with the new installation of a stronger online presence, and updates to P.F. Chang's Princeton's website, social media, and loyalty program. In order to see if these new implementations are working, I wish to see multiple performance indicators. The first is **5 hours of watch time for Synthesia videos** on social media sites like Instagram, TikTok, and Facebook. As well as this, I wish to see **25% increase in customers using the loyalty program**. Lastly, I wish to **decrease complaints on the website using the new AI system by 40%**. These metrics will show me if the online efforts are working to improve the company.

VI. PROPOSED BUDGET

a. Cost associated with proposed strategies

Cost of Activity Breakdown

Forecasting Insights:

- ***Lineup.ai*:** The cost of implementing Lineup.ai is $149 per month. Since Lineup.ai is an app, there is no installation fee, bringing me to a cost of **$1,788**.

Ingredient Analysis:

- ***DeepVision AI*:** The cost of DeepVision AI is $25,000 per year and the initial setup will cost $20,000. This will create a **first year charge of $45,000**, with it decreasing to **$25,000 per year after the first year**.
- ***Camera Installments*:** An Axis P3Q55-LVE camera, which costs $500, will be installed into the kitchen and storage in 5 different locations. The installation of the camera costs $300, creating a first year cost of **$4,000**.
- ***Sensor Installments*:** Each sensor from DeepVision AI costs $4,000 and will be installed onto all 5 of the cameras, costing $425 per sensor, therefore creating a cost of **$22,125**.

Restaurant Efficiency:

- ***Tableo AI*:** Tableo AI has a monthly cost of $159, so there will be a yearly cost of **$1,908**.
- ***Ziosks*:** Ziosks come in packs of 24 mini Ziosks, costing $260 per month. 2 packs of mini Ziosks will be ordered to place them on all 27 tables and bar spots, costing $520 a month. This will create a yearly charge of **$6,240**.
- ***AI Maintenance*:** The maintenance and updating of the mini Ziosks, cameras, and sensors will cost **$8,500** following the first year.

Engaging Customers:

- ***Synthesia*:** The cost of buying Synthesia is $4,000 a month. This will bring me to an annual cost of **$48,000**.
- ***Anicca.bot*:** The usage of Anicca.bot costs $6,500 a month, creating a cost of **$78,000**.
- ***Web Developer*:** A remote web developer will be hired to create a chatbot on P.F. Chang's website. They will be paid $200 an hour for 2 weeks, paying a total of **$8,000**.

First Year Cost Table

Activity	Expenses	Cost
Forcasting Insights	Lineup.ai	$1,788
Ingredient Analysis	DeepVision AI, Camera Installments, Sensor Attachments	$71,125
Restaurant Efficiency	Tableo AI, Ziosks	$8,148
Engaging Customers	Annica.bot, Synthesia, Web Developer	$134,000
Total First Year Cost:		**$215,061**

By removing Wisely and Workday for forecasting and using Lineup.ai, P.F. Chang's saves **$189,732** that was spent in those two companies. This money can be used towards implementing the FIRE plan into P.F. Chang's.

Total Investment		
First Year	Lineup.ai, DeepVision AI, Camera and Sensor Installments, TableoAI, Ziosks, Annica.bot, Synthesia, Web Developer	$215,061
Annually	Lineup.ai, DeepVision AI, TableoAI, Ziosks, AI Maintenance Annica.bot, Synthesia	$169,436

Return on Investment (ROI):

By implementing my plan, P.F. Chang's can renovate their current AI strategies as well as implement new AI into the restaurant to improve forecasting, scheduling, quality control, ingredient inventory, efficiency, and customer engagement. The plan is projected to **increase revenue by 17% each year**, so I expect an **average ROI of 61.18%** over the course of the next 3 years from **December 1st 2025 to December 31st 2028.** This will allow me to regain the amount I invested in a few years, allowing P.F. Chang's to be profitable in its expenses.

ROI = 61.18%

VII. BIBLIOGRAPHY

- "Ai in Restaurants: 9 Ways Artificial Intelligence Is Shaping the Food Industry." *RSS*, get.popmenu.com/post/ai-in-restaurants. Accessed 4 Dec. 2024.
- "Ai Forecasting Software for Restaurants." *Lineup.Ai | AI Forecasting Software for Restaurants*, Lineup.ai, www.lineup.ai/. Accessed 15 Dec. 2024.
- "AI Pricing." *WebFX*, www.webfx.com/martech/pricing/ai/. Accessed 14 Jan. 2025.
- *Anicca.Bot*, anicca.bot/. Accessed 22 Dec. 2024.
- Company, The Business Research. "AI in Inventory Management Market Report 2025 - AI in Inventory Management Market Demand and Overview." *The Business Research Company*, www.thebusinessresearchcompany.com/report/ai-in-inventory-management-global-market-report. Accessed 20 Dec. 2024.
- "Digisite." *DigiSite*, www.ziosk.com/digisite#smarttable. Accessed 29 Dec. 2024.
- *Everything You Need to Know about AI for Restaurants*, pos.toasttab.com/blog/on-the-line/ai-for-restaurants. Accessed 6 Dec. 2024.
- "Free AI Video Generator - Create AI Videos in 140 Languages." *Free AI Video Generator - Create AI Videos in 140 Languages*, www.synthesia.io/. Accessed 2 Jan. 2025.
- "Home." *DeepVisionAI*, www.deepvisionai.net/. Accessed 30 Dec. 2024.
- Jonathan. "Restaurant Booking System & Reservation Management." *Tableo*, tableo.com/. Accessed 2 Jan. 2025.
- Panel®, Expert. "Council Post: 13 Ways Ai May Impact and Improve the Restaurant Industry." *Forbes*, Forbes Magazine, 13 Aug. 2024, www.forbes.com/councils/forbestechcouncil/2024/01/22/13-ways-ai-may-impact-and-improve-the-restaurant-industry/. Accessed 3 Jan. 2025.
- "Product Support for Axis P3255-LVE Dome Camera." *AXIS P3255-LVE Dome Camera - Product Support | Axis Communications*, www.axis.com/products/axis-p3255-lve/support. Accessed 30 Dec. 2024.