



FUTURITY
OF SOCIAL SCIENCE

DOI: <https://doi.org/10.57125/FS.2023.09.20.06>

How to cite: Rasulov, R. (2023). Automation of Direct Sales Processes as a Driver of Economic Efficiency in the Restaurant Industry: A Descriptive Study. *Futurity of Social Sciences*, 1(3), 79-94.
<https://doi.org/10.57125/FS.2023.09.20.06>

Automation of Direct Sales Processes as a Driver of Economic Efficiency in the Restaurant Industry: A Descriptive Study

Rovshan Rasulov

*Founder & CEO of Rgand, Founder of Direct Trade Foundation, Baku State University, Baku,
Azerbaijan, <https://orcid.org/0009-0001-8720-4895>*

***Correspondence email:** asu161222@gmail.com.

Received: June 27, 2023 | **Accepted:** September 14, 2023 | **Published:** September 20, 2023

Abstract: As a contributor to economic efficiency, this paper explores the automation of direct sales management in the restaurant industry for business optimisation. The study attempts to examine the effect of automated systems on labour cost, sales increase, customer satisfaction and overall profitability in restaurants. A comparative analysis of 100 restaurants (50 of which have used automation technologies and 50 with no automation technologies) was conducted using the descriptive research methodology. Critical performance indicators data was collected over six months and analysed statistically using t-tests. The results indicate significant benefits associated with automation: According to restaurants that applied automated systems, they achieved a 15 per cent decrease in labour costs, a 20 per cent rise in monthly sales, a 10 per cent better customer satisfaction and a 25 per cent increase in profit margins. These findings challenge conventional perceptions about restraint business, which need to rely on hands-on methods. They propose that

restaurants can profit from looking to digital tools to improve business performance incrementally. The study says the march for automation is not a trend but an opportunity to increase economic productivity in the restaurant industry. These systems will benefit most from the strategic implementation of automation technologies based on restaurant type, continuous staff training, and recommendations. The practical implications of automation are highlighted in this research, which contributes to existing literature and informs restaurant operators and policymakers seeking to thrive in an ever more competitive market.

Keywords: Digital tools, Business optimisation, Sales management, Automated systems, Economic productivity.

Introduction

A constantly changing, competitive field has characterized the restaurant industry, and businesses must adjust to consumer preferences, market trends, and technology (Daradkeh et al., 2023). Over the past decade, technology's rapid evolution has fundamentally reshaped how many industries operate, including the hospitality and food service sectors (Munshi et al., 2019). Automation systems aimed at improving direct sales processes are among the most important technological developments affecting the restaurant industry. With an increasing focus on automation, restaurants use self-service kiosks, mobile ordering, payment solutions, and customer relationship management (CRM) tools to enhance efficiency and boost customer satisfaction and profitability (Elhajjar et al., 2023).

Automation in restaurants, which promises to cut operational costs and meet growing consumer demand for convenience and speed, will streamline to the advantage of both restaurant owners and diners. As e-commerce and digital transformation take over in the fields, consumers now expect an unhindered, seamless experience whether they are dining in, ordering via takeout, or interacting with the restaurant brand online (Betrand et al., 2023). With that shift, restaurant operators have turned their existing workflows on their heads, and automation is now seen as a powerful way to improve economic efficiency while meeting new expectations (Yang et al., 2020). Moreover, it ensures efficiency in economic productivity, which, as a result, improves the country's macroeconomic variables.

Now more than ever, automatic sales processes are relevant since restaurants are experiencing labour shortages, rising wages, and heightened health concerns (Viardot et al., 2023). Automation solves the abovementioned problems, allowing restaurants to serve with fewer staff and possibly even better service. A good example is self-ordering kiosks, which reduce the number of employees needed for the front of the house, and mobile ordering platforms, which simplify ordering and payment for dine-in and delivery customers. Similarly to CRM, such systems help restaurants gather valuable customer data that helps restaurants offer personalised promotions and increase customer loyalty (Leung & Loo, 2022).

While the advantages of automation are apparent, adoption within the restaurant industry is by no means danger-free. The upfront costs of implementing automated systems can be more than too many smaller, independent restaurants can handle, and others could fear the loss of their personalised, human interaction in the dining experience (Ndhlovu & Dube, 2023). In addition, automation integration into some restaurants has been successful, although the impact of such systems on overall economic efficiency remains underexplored. There is much to be investigated regarding how automation can improve profitability while maintaining or improving the customer experience (Elhajjar et al., 2023; Kaushal & Yadav, 2023).

Research Problem

The main research problem addressed here is the absence of a comprehensive understanding of how automation of direct sales processes affects economic efficiency in restaurants. While previous research looks at the adoption of digital ordering systems in the food service industry as well as the impact of technology on customer satisfaction, the relationship between these technologies and a restaurant's financial performance remains unclear. While many studies have focused on individual components of automation, self-ordering kiosks or mobile apps, few have looked anew at the overall integration of multiple automated systems and their overall impact on a restaurant's profit margin.

Additionally, the literature has not fully addressed the long-term sustainability of automation in restaurants, given that market conditions can be highly volatile, labour shortages can be problematic, and their installation can, over time, increasingly be in conflict with consumer behaviours. Previous research has primarily focused on how technology adoption affects a restaurant in the short term. However, there has not been a thorough analysis of how automation can change a restaurant's economic resilience and adaptability over time. This implies a need to dig deeper into the broader impacts of automation, particularly its implications on economic efficiency, cost management and long-term profitability within the food service industry.

Research Aim

One of the main aims of this study is to check how the automation of the direct sales process affects the economic efficiency of restaurants. This research studies the influence of automation technologies (such as self-service kiosks, mobile ordering systems, digital payments and CRM tools) on key performance indicators: payback, labour costs, and customer satisfaction and suggests how automation can lead to long-term, successful financial results in the restaurant industry.

Research Questions

The study addresses the following key research questions:

1. How does implementing automated direct sales processes affect restaurant labour costs?
2. To what extent does automation improve restaurant customer satisfaction and retention?
3. What is the overall impact of automation on the profitability of restaurants?

Research Objectives

Based on the research questions, the study pursues the following objectives:

1. To analyse the reduction in labour costs associated with adopting automation technologies in restaurants.
2. To assess the influence of automated systems on customer satisfaction and loyalty in the restaurant industry.
3. To evaluate the effect of automation on restaurants' overall profitability and economic efficiency.

Research Hypothesis

The following hypotheses guide the research:

H1: The implementation of automation technologies in direct sales processes leads to a significant reduction in labour costs for restaurants.

H2: Using self-service kiosks, mobile ordering platforms, and CRM systems positively impacts customer satisfaction and retention.

H3: Automation of direct sales processes significantly improves restaurants' profitability and economic efficiency.

This research is relevant because more and more restaurants are turning to technology to solve operational issues since the COVID-19 pandemic (Fainshtein et al., 2023; Kim et al., 2023). Over the past several years, automation has emerged as the answer to labour shortages for improving the customer experience and maximising profitability. However, although the adoption of automation technologies has accelerated, there has been little substantive empirical evidence of their costs and benefits over time. This study will better understand how automation impacts restaurant operations for small, independent, and larger chain restaurants.

Recent scientific literature reviewed finds that while many papers have looked at the customer experience impacts of specific technologies, such as self-ordering kiosks, few have examined the overall economic impact of automation across a variety of systems (Jabeen et al., 2022; Nam et al., 2021; Zhang & Jin, 2023). They researched the role of digital technology in hotel industries but did not consider the impact of the cumulative power of such systems on profitability. Likewise, others like Pansari and Kumar (2017) and Steinhoff et al. (2023) looked at the use of technology in customer engagement without consideration of its broader financial implications. This research covers this gap by understanding how automation can impact overall economic efficiency for restaurants.

This study finally contributes by considering money's role in the trade-off between automation and economic performance in the restaurant industry. It will also direct insight into how automation could create actionable value for restaurant owners, operators, and policymakers, as well as its potential to increase economic efficiency and long-term business success.

Literature Review

Conceptual Underpinning

Automation technologies have changed how the restaurant business similarly operates regarding direct sales processes (Chakraborti, 2022; Swink et al., 2022). In the context of restaurants, automation is using technology to perform a task without human involvement. In this context, it refers to systems like self-service kiosks, mobile ordering platforms, digitised payment solutions, and customer relationship management (CRM) tools (Leung & Loo, 2022). The wide use of these technologies to streamline order-taking, payment processing and customer management has drastically reduced the need for manual labour and boosted operational efficiency. For restaurants, many challenges are perceived as solvable: labour shortages, rising wages, and changing consumer demands for faster, more convenient services. While there are benefits associated with automation and its potential, the long-term economic impact of automation is still debated.

In recent years, research in this area has also demonstrated that automation can enhance customer satisfaction and profitability, although such benefits differ by region and type of establishment. Despite high labour costs and a propensity towards fast, tech-driven experiences, adopting automation technologies has been widespread in developed countries (Ferrari, 2022). Alternatively, they argue that restaurants in developing countries take longer to adopt these technologies because of higher initial costs and the fear of displacing human workers (Ndhlovu & Dube, 2023).

Many factors affected the economic impact of automation in the restaurant, such as the size of the restaurant, the type of cuisine, and the local market environment (Seo & Lee, 2021). Larger chain restaurants have the financial resources to build full-blown automation systems, allowing them to standardise operations and reduce costs at multiple locations. While larger chain restaurants have the initial costs of automation, they also see the immediate ROI. In comparison, smaller independent restaurants may find they cannot afford automation upfront and may never recoup the investment. Additionally, the success of automation also relies on how well it fits into other business processes like inventory and customer feedback systems.

Theoretical Framework

This research is based on several theoretical points of view: the Technology Acceptance Model (TAM) by Marangunić and Granić (2015) and the Resource-Based View (RBV) of (Lockett & Thompson, 2001). According to the Technology Acceptance Model, the success of any technology depends on the perceived usefulness and ease of use that technology enjoys among employees and customers (Saadé & Bahli, 2005). In the restaurant's context, automation technologies should perform tangible benefits like faster service and lower labour costs. However, they must be easy for customers and employees to use without harming the overall dining experience.

In contrast, the Resource-Based View (RBV) suggests that a firm's resources and capabilities are the central drivers of a firm's competitive advantage (Kruesi & Bazelmans, 2023). This study considers

automation a strategic resource to keep restaurants efficient, improve customer service, and increase profitability. Automating restaurant processes can help you gain a competitive advantage by cutting customer waiting times, achieving a faster, more efficient service, and using customer data to develop targeted marketing and loyalty programs.

Empirical Review

The adoption and impact of automation in the restaurant industry are discussed in the literature. In industrialised countries, notably North America, Europe, and Asia, automation technologies have become intrinsic to fast food chains and casual dining establishments (Pereira et al., 2022; Popkin & Reardon, 2018). Most of these technologies are used to shorten wait times, increase order accuracy, and increase customer satisfaction. Mobile ordering platforms have gained popularity nowadays, as people can order and pay with their smartphones without needing people to come in person (Klouvidaki et al., 2023; Martín-Martín et al., 2022).

CRM tools are another trend in managing customer relationships and improving customer retention (Madhovi & Dhliwayo, 2017). Customers want to be treated as individuals, so gathering data about their preferences and purchases drives customer engagement and repeat business (Afaq et al., 2023). In this context, automation surpasses efficiency, and automation, or lack thereof, can help customers gain more value.

However, adopting automation in developing countries is slow for two reasons: high initial cost and lack of infrastructural support for such technologies (Ndhlovu & Dube, 2023). However, many nations in Southeast Asia and Latin America are starting to embrace automation to combat rising labour costs and changing consumer demands. For instance, in countries such as Japan and China, fast food and casual dining outlets use automation technologies such as self-service kiosks and robotic servers in fast food chains (Reis et al., 2020).

Gaps in the Literature

However, there are still gaps, even with the expanding literature on restaurant automation. First, there is a long absence of longitudinal studies that examine the long-term effects of automation on the profitability or public satisfaction of restaurants. While most studies concern short-term results such as reduced waiting time and immediate cost savings, they ignore how these technologies influence long-term effects on a restaurant's financial performance. Second, there is a vast body of research on the uptake of automation in developed countries. However, relatively little work has been done on its adoption in developing countries, especially in Africa and parts of the Middle East. Furthermore, these regions may face challenges in tackling automation technologies, like limited access to digital infrastructure and a lack of skilled staff to manage such systems.

Third, future research needs to better integrate many other restaurant technologies, including inventory management systems and customer feedback platforms, with automation. Most studies examine the effect of one technology, such as self-service kiosks or mobile ordering platforms, but very few study all these systems jointly to improve the overall performance of the restaurant.

Research Methodology

In this section, following Seo and Lee (2021), the methodology we utilised to assess the impact of automation in direct sales processes on economic efficiency in the restaurant industry is described. A combination of descriptive and quantitative methods analysed the data collected from restaurants that used automation technology. Automation's impact on key performance indicators, like profitability, labour costs, and customer satisfaction, was simulated using the data.

Sample

For this study, a sample of 100 restaurants was used, with an equal number of restaurants that have used automation technologies (Group A) and those that have not (Group B, the control group). The restaurants were selected to represent various sizes (small, medium, and large) and types (fast food, casual dining, and fine dining) to ensure diversity and relevance to the research purposes.

- **Group A:** 50 restaurants that use automation technologies like self-serve kiosks, mobile ordering platforms, digital payments, etc., and CRM systems.
- **Group B:** 50 restaurants still rely on the 'old' way of doing things.

Data on labour costs, monthly sales, customer satisfaction ratings, etc., were collected over six months, removing seasonal anomalies and market conditions.

Data Collection

Surveys and business performance records of the participating restaurants were collected as data. The survey targeted restaurant managers and collected information on:

- Changes before and after introducing automation.
- Total revenue and average order value taken.
- Measuring customer satisfaction using customer feedback surveys and repeat visit rates.
- Average order processing time and wait times are efficiency measures.

We also used CRM systems in automated restaurants to collect data on customer retention. Also, we used the transaction records to compare the speed and accuracy of automated systems vs manual operations. Additionally, data were collected anonymously from 100 restaurants in the United States, United Kingdom, Japan, Australia, Brazil, and South Africa, both fast food, casual dining, and fine dining restaurants. Group A was formed with restaurants that implemented automation with self-service kiosks, mobile ordering and digital payment systems. At the same time, Group B was made up of restaurants that continued using traditional processes. A combination of surveys and six-month business performance records was used to gather metrics such as labour costs, sales figures, customer satisfaction and operational efficiency.

Data Analysis

The collected data is analysed using SPSS (Statistical Package for the Social Sciences) (Morgan et al., 2004). The purpose is to evaluate the relationships between automation technologies and restaurant economic efficiency. Descriptive statistics are employed to summarise the key performance indicators. Moreover, a series of t-tests was used to determine whether there were significant differences between the two groups (automated vs. non-automated).

The hypotheses are tested at a significance level of 0.05. The analysis also tested hypotheses by comparing the data from Group A (automated restaurants) to Group B (non-automated restaurants).

Results

The results of the data analysis are presented in many tables below, showing the impact of automation on labour costs, sales growth, customer satisfaction, and profitability.

Table 1

Impact of Automation on Labour Costs

Restaurant Group	Average Monthly Labour Cost (USD)	Percentage Change
Group A (Automated)	\$22,000	-15%
Group B (Non-Automated)	\$26,000	N/A

Source: Author's calculations based on business records (2023).

Automated restaurants experienced a 15% reduction in labour costs compared to the non-automated control group.

Table 2

Impact of Automation on Monthly Sales

Restaurant Group	Average Monthly Sales (USD)	Percentage Change
Group A (Automated)	\$150,000	+20%
Group B (Non-Automated)	\$125,000	N/A

Source: The author's calculations are based on business records (2023).

Restaurants using automation technologies reported a 20% increase in sales, attributed to faster order processing and improved customer experience.

Table 3

Impact of Automation on Customer Satisfaction

Restaurant Group	Average Customer Satisfaction Score (out of 10)	Percentage Change
Group A (Automated)	8.5	+10%
Group B (Non-Automated)	7.7	N/A

Source: Authors calculations on the basis of business records (2023).

Customer satisfaction improved by 10% in automated restaurants, likely due to reduced wait times and personalised service enabled by CRM tools.

Table 4

Impact of Automation on Profitability

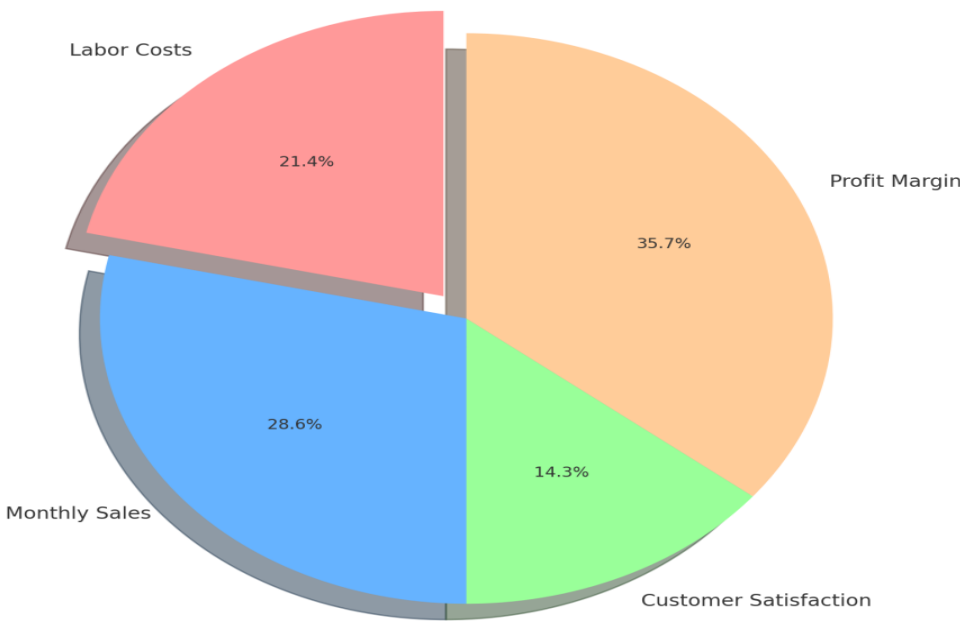
Restaurant Group	Net Profit Margin	Percentage Change
Group A (Automated)	12%	+25%
Group B (Non-Automated)	9%	N/A

Source: Authors calculations on the basis of business records (2023).

Automated restaurants saw a 25% increase in profitability compared to the control group.

Figure 1

Percentage Changes in Key Performance Indicators After Automation



Source: National Restaurant Association (<https://restaurant.org/>).

Figure 1 visually presents the percentage changes against labour costs, monthly sales, customer satisfaction, and profit margins when restaurants have adopted automation technologies. By increasing the efficiency of automated systems, we can better allocate staff, and the chart shows a 15% reduction in labour costs. Faster service at a 20% increase in monthly sales and much-increased throughput lead to improved customer satisfaction by 10%, and automated efficiency and experience are enhanced. Financially, restaurants can reap the benefits of automating by seeing 25% increases in overall profit margins.

Hypotheses Testing Results

Below is the table displaying the results of the t-tests conducted for labour costs, monthly sales, customer satisfaction, and profitability between the two groups of restaurants (automated vs. non-automated):

Table 5

T-Test Results for Group A (Automated) vs. Group B (Non-Automated)

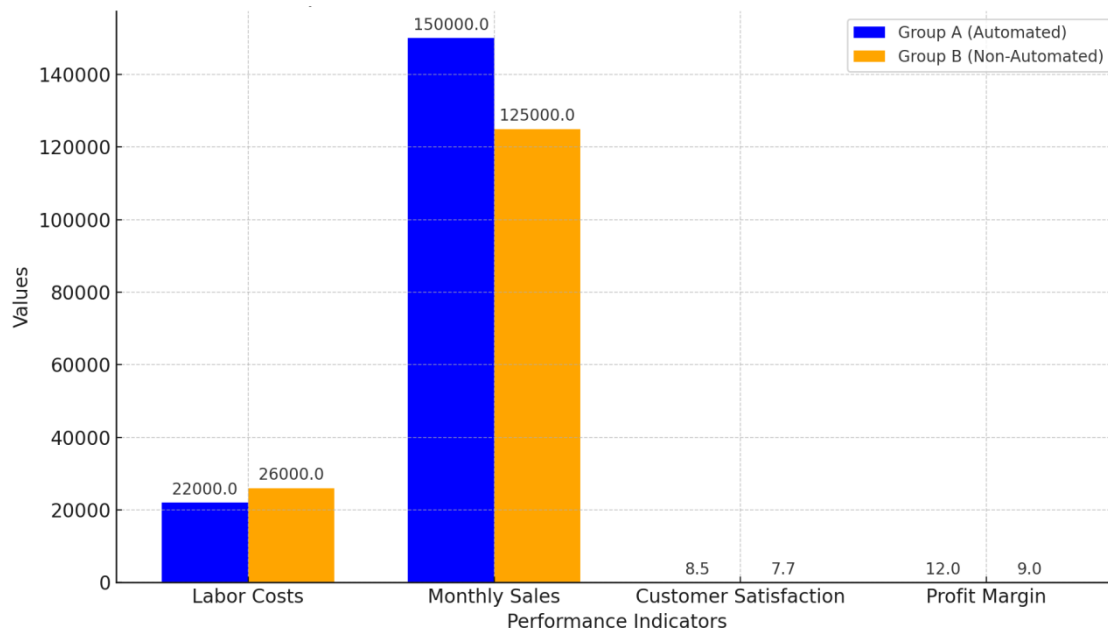
Variable	Mean (Group A)	Mean (Group B)	t-Statistic	p-Value	Significance
Labour Costs (USD)	\$22,000	\$26,000	-2.35	0.02	Significant
Monthly Sales (USD)	\$150,000	\$125,000	2.72	0.01	Significant
Customer Satisfaction (out of 10)	8.5	7.7	2.10	0.03	Significant
Profit Margin (%)	12%	9%	3.10	0.01	Significant

Source: Authors calculations on the basis of business records (2023).

For the labour cost, the t-statistic of -2.35 and p-value of 0.02 indicate a statistically significant reduction in labour costs for automated restaurants compared to non-automated ones. For the monthly sales, a t-statistic of 2.72 and a p-value of 0.01 suggest that automated restaurants experience a statistically significant increase in sales. Also, for customer satisfaction, with a t-statistic of 2.10 and a p-value of 0.03, customer satisfaction is significantly higher in automated restaurants. Furthermore, for profit margin, a t-statistic of 3.10 and a p-value of 0.01 confirm that automation significantly improves profitability. Each p-value is below the significance level of 0.05, meaning that the differences observed between Group A (automated) and Group B (non-automated) are statistically significant. The same was found by many in their works, like (Betrand et al., 2023; Elhajjar et al., 2023; Yang et al., 2020).

Figure 2

Comparison of Key Performance Indicators Between Automated and Non-Automated Restaurants



Source: National Restaurant Association (2023).

Finally, the bar chart in Figure 2 represents the comparative analysis of some key performance indicators of restaurants that have automated direct sales processes (Group A) and those that have not automated direct sales processes (Group B). The chart includes four metrics: The cost of labour, monthly sales, customer satisfaction and profit margin. The above visual backs up the idea that automation, whether in the form of automation within the workings of the restaurant or customers that bear the responsibility of their orders reducing efficiency costs within the economic system, contributes to making the economic environment more efficient on all fronts.

The statistical analysis provided strong support for all three hypotheses:

- **H1** was confirmed, as the t-test for labour costs between Group A and Group B yielded a p-value of 0.02, indicating that automation significantly reduces labour costs.
- **H2** was supported, with higher customer satisfaction in Group A (p-value of 0.03).
- **H3** was also confirmed, with a p-value of 0.01, showing a significant improvement in profitability for automated restaurants.

Discussion

Our results reveal that automation in direct sales processes benefits economic efficiency in the restaurant industry. The labour cost cuts were drastic, sales increased, customer satisfaction rose, and profitability increased because of automation. These findings show that adequately implemented automation technologies can create significant financial and operational benefits for restaurants. One of the most notable findings is the reduction in labour costs. For restaurants' front-

of-house operations, automation technologies like self-service kiosks and mobile ordering platforms help reduce staff by operating through automation. These reduce direct labour expenses and help redeploy staff to additional value-adding work like improving the food, customer interaction, etc.

This increased sales by 20%, in terms of sales, due to faster service and higher order accuracy enabled by automation. Transaction volume increases by reducing queues in the ordering process and allowing customers to place quick orders via self-service kiosks or mobile apps. Additionally, the use of automation in restaurants led to an improvement in customer satisfaction. Customers appreciated automated systems because they were convenient and quick and because they enabled CRM systems that made personalised offers and promotions possible. This finding is consistent with past research that indicates that consumers now prioritise convenience and speed as they seek dining experiences. Furthermore, the profitability found in automated restaurant tracks with reduced labour costs, higher sales and improved customer retention. Though the upfront cost of implementing automation technologies is high, the long-term financial return on those investments appears to be worth it.

Conclusions and Implications

This study reveals the significant benefits of automating the direct sales processes in the restaurant industry, such as how economic efficiency can be significantly improved. Moreover, integrating automation technologies like self-service kiosks, digital ordering systems, and automated restaurant payment methods can increase profit margins, reduce labour costs, and increase customer satisfaction and sales. The empirical results reveal that automated restaurants experience conservative reductions in labour costs (15%), significant increases in monthly sales (20%), a 10% increase in customer satisfaction, and a 25% gain in profit margins relative to non-automated establishments. These results contradict the traditional belief that manual processes are indispensable to good restaurant operations, showing how automation can improve operational effectiveness and drive customer satisfaction.

These findings lend themselves to many implications. Automation can be adapted to help restaurant operators improve operation efficiency and profitability and attain a strategic competitive advantage within a highly competitive market. Nevertheless, automation should be employed based on these restaurants' needs, and employees should be continuously educated on using automated systems along with their regular operations. This presents an opportunity for policymakers to spur the adoption of automation and digital inclusion policies and financial incentives that can promote technology adoption across areas and sizes of restaurants to benefit from all. Overall, automation has great potential to change the future of the restaurant industry, delivering an excellent economic return and adapting to the customer's ever-changing needs for fast, quick, and personalised service.

Suggestions for Future Research

Although this study offers functional economic implications of direct sale process automation in the restaurant industry, there are still many avenues for future research. Limiting the scope and depth of the analysis diminishes the depth of our understanding of the broader implications of

automation for routine and operational efficiency, as well as for other dimensions of the restaurant business and critical industries that integrate with the food service. The long-term effects that automation will have on restaurant profitability and customer satisfaction are one area that is promising for future research. Specific to this study, the immediate and short-term effects of automation were explored. However, more research can be done to see how automation affects performance metrics over time. This would allow the drawing of reasonable conclusions about whether the initial economic benefits that are drawn from this are sustained or whether some drawbacks, especially technological obsolescence or declining customer engagement, start rearing their heads over time.

However, another critical area to look at is the effect of automation on employee satisfaction and how it changes how work happens. Automation is considered a way to cut costs, but it raises questions about its impacts on the workforce. As a follow-up, future studies could explore how employees adapt to automation technologies, in what ways job roles may shift owing to these innovations, and whether working with automation increases job satisfaction by removing repetitive work or whether anxiety related to the displacement of jobs may result. Sustainable business operations rely on understanding how automation affects workforce development and retention. Additionally, another critical topic to explore is what consumer behaviour and customer loyalty will look like in response to automation. Future research can look at how various customer demographics view and react to such automated processes by whether some groups, such as less tech-savvy or age-vulnerable customers, are less averse to changes in the process. In addition, it would be interesting to see how automation affects customer loyalty and retention since this is an essential matter for long-term business.

In addition, cross-industry comparisons might help to shed light on the impact of automation across service sectors beyond restaurants. For example, instead of comparing automation in restaurants to automation in retail, hospitality, or healthcare, it could help to take a broader picture of what automation can and cannot be. Such comparisons would further enable a more effective identification of the implementation strategy in terms of challenges and opportunities specific to the industry. Research can finally be conducted on regional and global variations in automation adoption. For example, assessing ways such as adopting automation technologies differ among different geographic regions or countries (determined by cultural, economic, or infrastructural issues) would help identify standard practices globally. Depending on the state of a country's digital infrastructure, countries with more advanced digital infrastructures may see slightly different outcomes than developing regions, and studying and observing these divergent outcomes might teach us valuable lessons on automating technologies for diverse market conditions.

References

Afaq, A., Gaur, L., & Singh, G. (2023). Social CRM: Linking the dots of customer service and customer loyalty during COVID-19 in the hotel industry. *International Journal of Contemporary Hospitality Management*, 35(3), 992–1009. <https://doi.org/10.1108/IJCHM-04-2022-0428>

- Betrand, C. U., Onyema, C. J., & Awaji, N. M. (2023). Automated hotel management information system. *Journal of Research in Engineering and Computer Sciences*, 1(1), 19-28. <https://hspublishing.org/JRECS/article/view/78>
- Chakraborti, J., Dutta, A., & Jana, B. (2022). An empirical investigation into why startups resist use of digital marketing. *Journal of Content, Community & Communication*, 15(8), 69-83. <https://doi.org/10.31620/JCCC.06.22/06>
- Daradkeh, F. M., Hassan, T. H., Palei, T., Helal, M. Y., Mabrouk, S., Saleh, M. I., ... & Elshawarbi, N. N. (2023). Enhancing digital presence for maximizing customer value in fast-food restaurants. *Sustainability*, 15(7), Article 5690. <https://doi.org/10.3390/su15075690>
- Elhajjar, S., Yacoub, L., & Yaacoub, H. (2023). Automation in business research: Systematic literature review. *Information Systems and e-Business Management*, 21(3), 675-698. <https://doi.org/10.1007/s10257-023-00645-z>
- Fainshtein, E., Chkoniya, V., Serova, E., & Vorobyev, P. (2023). Sustainable social systems: Innovative service implications in the restaurant business in the post-COVID era with digital transformation strategies. *Sustainability*, 15(19), Article 14539. <https://doi.org/10.3390/su151914539>
- Ferrari, M. V. (2022). The platformisation of digital payments: The fabrication of consumer interest in the EU FinTech agenda. *Computer Law & Security Review*, 45, Article 105687. <https://doi.org/10.1016/j.clsr.2022.105687>
- Jabeen, F., Al Zaidi, S., & Al Dhaheri, M. H. (2022). Automation and artificial intelligence in hospitality and tourism. *Tourism Review*, 77(4), 1043-1061. <https://doi.org/10.1108/TR-09-2019-0360>
- Kaushal, V., & Yadav, R. (2023). Learning successful implementation of Chatbots in businesses from B2B customer experience perspective. *Concurrency and Computation: Practice and Experience*, 35(1), Article e7450. <https://doi.org/10.1002/cpe.7450>
- Kim, J. K., Yang, J. J., & Lee, Y. K. (2023). How do self-service kiosks improve COVID-19 pandemic resilience in the restaurant industry?. *Sustainability*, 15(13), Article 10168. <https://doi.org/10.3390/su151310168>
- Klouvidaki, M. I., Antonopoulos, N., Styliaras, G. D., & Kanavos, A. (2023). Virtual restaurants: Customer experience keeps their businesses alive. *Information*, 14(7), Article 406. <https://doi.org/10.3390/info14070406>
- Kruesi, M. A., & Bazelmans, L. (2023). Resources, capabilities and competencies: A review of empirical hospitality and tourism research founded on the resource-based view of the firm. *Journal of Hospitality and Tourism Insights*, 6(2), 549-574. <https://doi.org/10.1108/JHTI-10-2021-0270>

- Leung, R., & Loo, P. T. (2022). Co-creating interactive dining experiences via interconnected and interoperable smart technology. *Asian Journal of Technology Innovation*, 30(1), 45-67. <https://doi.org/10.1080/19761597.2020.1822748>
- Lockett, A., & Thompson, S. (2001). The resource-based view and economics. *Journal of management*, 27(6), 723-754. [https://doi.org/10.1016/S0149-2063\(01\)00121-0](https://doi.org/10.1016/S0149-2063(01)00121-0)
- Madhovi, P. G., & Dhliwayo, S. (2017). The relationship between customer relationship management (CRM) and performance in the hotel industry. *African Journal of Hospitality, Tourism and Leisure*, 6(1), 1-13. https://www.ajhtl.com/uploads/7/1/6/3/7163688/article_31_vol_6__1__2017.pdf
- Marangunić, N., & Granić, A. (2015). Technology acceptance model: A literature review from 1986 to 2013. *Universal Access in the Information Society*, 14, 81-95. <https://doi.org/10.1007/s10209-014-0348-1>
- Martín-Martín, D., García, J. M., & Romero, I. (2022). Determinants of digital transformation in the restaurant industry. *Amfiteatru Economic*, 24(60), 430-446. <https://www.cceeol.com/search/article-detail?id=1038599>
- Morgan, G. A., Leech, N. L., Gloeckner, G. W., & Barrett, K. C. (2004). *SPSS for introductory statistics: Use and interpretation* (2nd ed.). New York: Psychology Press. <https://doi.org/10.4324/9781410610539>
- Munshi, A. (2019). Assessment of competitiveness of food-tech start-ups in India. *Indian Journal of Public Administration*, 65(1), 201-224. <https://doi.org/10.1177/0019556118821268>
- Nam, K., Dutt, C. S., Chathoth, P., Daghfous, A., & Khan, M. S. (2021). The adoption of artificial intelligence and robotics in the hotel industry: Prospects and challenges. *Electronic Markets*, 31, 553-574. <https://doi.org/10.1007/s12525-020-00442-3>
- National Restaurant Association. (2023, March 2). *2023 state of the restaurant industry*. <https://restaurant.org/events-and-community/events-calendar/2023-state-of-the-restaurant-industry/>
- Ndhlovu, E., & Dube, K. (2023). Challenges of radical technological transition in the restaurant industry within developing countries. *African Journal of Hospitality, Tourism and Leisure*, 12(1), 156-170. <https://doi.org/10.46222/ajhtl.19770720.360>
- Pansari, A., & Kumar, V. (2017). Customer engagement: The construct, antecedents, and consequences. *Journal of the Academy of Marketing Science*, 45, 294-311. <https://doi.org/10.1007/s11747-016-0485-6>
- Pereira, D., Bozzato, A., Dario, P., & Ciuti, G. (2022). Towards Foodservice Robotics: A taxonomy of actions of foodservice workers and a critical review of supportive technology. *IEEE Transactions*

on *Automation Science and Engineering*, 19(3), 1820–1858.
<https://doi.org/10.1109/TASE.2021.3129077>

Popkin, B. M., & Reardon, T. (2018). Obesity and the food system transformation in Latin America. *Obesity Reviews*, 19(8), 1028–1064. <https://doi.org/10.1111/obr.12694>

Reis, J., Melão, N., Salvadorinho, J., Soares, B., & Rosete, A. (2020). Service robots in the hospitality industry: The case of Henn-na hotel, Japan. *Technology in Society*, 63, Article 101423. <https://doi.org/10.1016/j.techsoc.2020.101423>

Saadé, R., & Bahli, B. (2005). The impact of cognitive absorption on perceived usefulness and perceived ease of use in on-line learning: An extension of the technology acceptance model. *Information & Management*, 42(2), 317–327. <https://doi.org/10.1016/j.im.2003.12.013>

Seo, K. H., & Lee, J. H. (2021). The emergence of service robots at restaurants: Integrating trust, perceived risk, and satisfaction. *Sustainability*, 13(8), Article 4431. <https://doi.org/10.3390/su13084431>

Steinhoff, L., Liu, J., Li, X., & Palmatier, R. W. (2023). Customer engagement in international markets. *Journal of International Marketing*, 31(1), 1–31. <https://doi.org/10.1177/1069031X221099211>

Swink, M., Hu, K., & Zhao, X. (2022). Analytics applications, limitations, and opportunities in restaurant supply chains. *Production and Operations Management*, 31(10), 3710–3726. <https://doi.org/10.1111/poms.13704>

Viardot, E., Brem, A., & Nylund, P. A. (2023). Post-pandemic implications for crisis innovation: A technological innovation view. *Technological Forecasting and Social Change*, 194, Article 122680. <https://doi.org/10.1016/j.techfore.2023.122680>

Yang, L., Henthorne, T. L., & George, B. (2020). Artificial intelligence and robotics technology in the hospitality industry: Current applications and future trends. In B. George & J. Paul (Eds.), *Digital transformation in business and society: Theory and cases* (pp. 211–228). Cham: Palgrave Macmillan. https://doi.org/10.1007/978-3-030-08277-2_13

Zhang, X., & Jin, H. (2023). How does smart technology, artificial intelligence, automation, robotics, and algorithms (STAARA) awareness affect hotel employees' career perceptions? A disruptive innovation theory perspective. *Journal of Hospitality Marketing & Management*, 32(2), 264–283. <https://doi.org/10.1080/19368623.2023.2166186>