The Future of Flexible Work Arrangements for Hourly Employees

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Abstract: In light of the COVID-19 pandemic, the retail industry has rapidly shifted towards flexible work arrangements (FWAs) due to increased online shopping and changing consumer behavior. This paper provides a detailed analysis of the impact of FWAs on hourly retail employees, with a focus on integrating Artificial Intelligence (AI) and Machine Learning (ML) for schedule optimization and the associated challenges. The global rise in online shopping, which saw a 43% increase in 2020, has highlighted the limitations of traditional fixed schedules in meeting the fluctuating demand for retail staff. To address this issue, the paper proposes a three-module implementation strategy that includes labor focusing, automated schedule publication with shift-swapping capabilities, and a service to ensure compliance with flexible schedules. Labor forecasting is a crucial aspect of this strategy and faces complexities due to the unpredictable nature of the pandemic. Our approach utilizes a truncated dataset and AI/ML algorithms to recalibrate models in real-time, ensuring staffing levels are responsive to immediate market conditions rather than relying solely on historical patterns. Additionally, the paper discusses the development of an auto-population service for advance shift assignments, taking into account statutory notifications such as Oregon's 14-day rule. The inclusion of a 'shift swap' feature empowers employees to proactively manage their schedules, fostering a collaborative workplace culture. To minimize schedule disruptions, we propose a points-based system that penalizes postponements and non-compliance with schedule commitments. This system strikes a balance between operational requirements and employee flexibility, with Standard Operating Procedures (SOPs) in place to guide managerial responses to infractions. In conclusion, embracing FWAs, supported by innovative technologies and fair policies, positions retail businesses advantageously in the current market. This paper also calls for further research into the long-term effects of FWAs on mental health, productivity, and legislative frameworks, offering a comprehensive blueprint for the sector's evolution in the post-pandemic era.

Keywords: Flexible Work Arrangements, Retail Workforce, Artificial Intelligence, Machine Learning, Labor Forecasting, Shift Swapping, Employee Autonomy, Schedule Optimization

1. Introduction

Flexible work arrangements have revolutionized the traditional workplace environment, offering a breath of fresh air from the conventional 9-to-5 schedules that have long dominated the employment landscape. These arrangements are not just a response to employee demands for better work-life balance, but also an adaptive measure for businesses in a world that is rapidly changing due to technological advancements, cultural shifts, and, more recently, the global upheaval caused by the COVID-19 pandemic.

The pandemic, in particular, has been a catalyst for reevaluating work norms, especially in sectors with hourly employees like retail and service industries. While there has been a significant focus on remote work and flexibility for salaried, office-based employees, hourly workers often face different challenges and opportunities when it comes to flexible scheduling. Their roles, which are typically tied to specific operational hours and customer demands, require innovative approaches to flexibility that consider both employee well-being and organizational efficiency.

Initial research and surveys have indicated a positive correlation between flexible work arrangements and increased work-life balance [1]. However, there has been a gap in understanding the nuanced impacts of these arrangements on hourly employees, their productivity, and

overall job satisfaction. This paper aims to bridge this gap, providing insights into the implementation of flexible schedules, the technological solutions aiding this transition, and the potential roadblocks organizations might face.

Furthermore, it explores the specific impacts and responses in the retail sector, an industry significantly affected by the pandemic's push towards online shopping. [2-6]
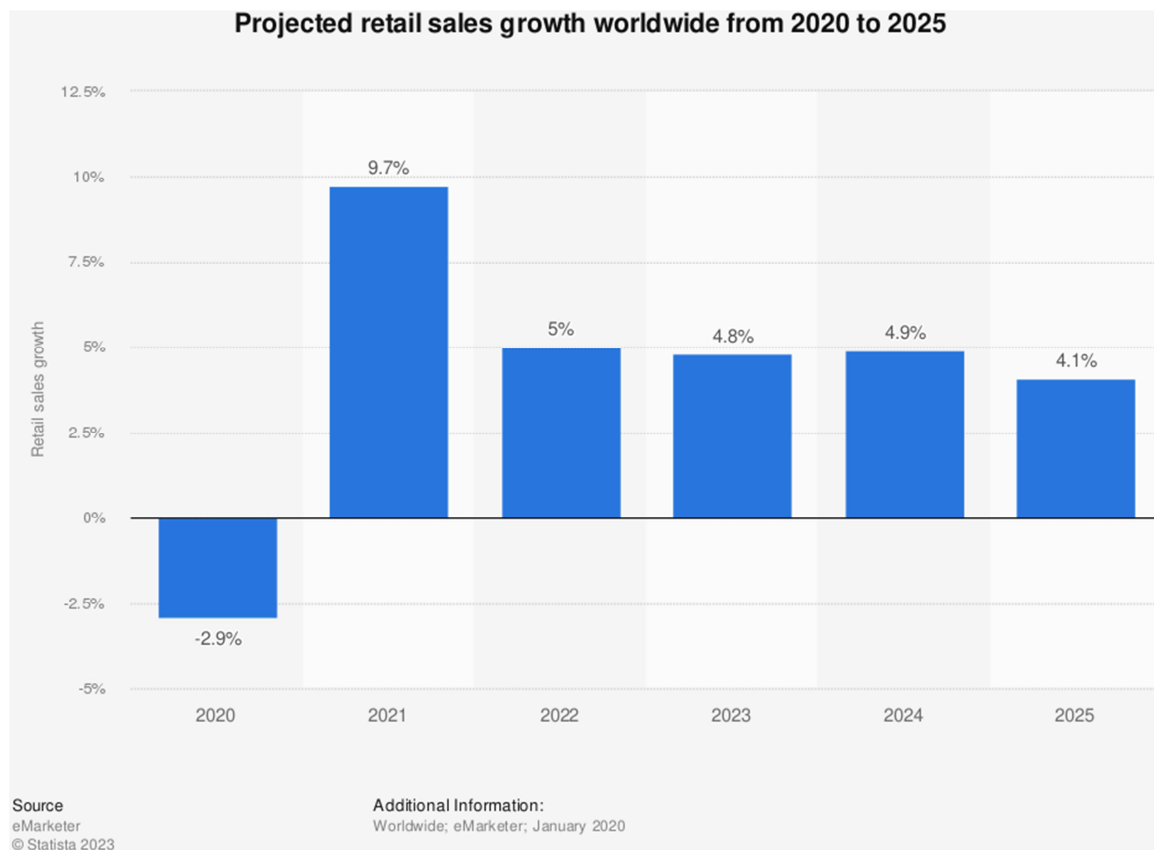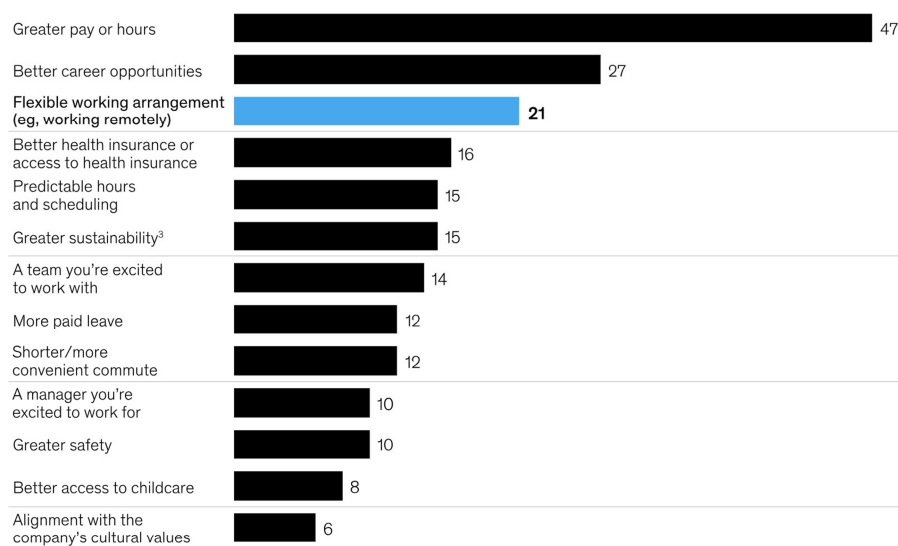

Figure 1. *Projected Retail sales growth.*

A flexible working arrangement is a top three motivator for finding a new job.

Motivation for seeking a new job,[1] % of respondents looking for a job (n = 11,958)[2]

[1]Question: Which of the following are reasons that have motivated you or would motivate you to seek a new job (select as many as 3)? The responses "Other" and
 "Nothing" are not shown.
[2]Only asked of respondents who reported having looked for a job in the last 12 months, are currently looking for a job, or plan to look for a job in the next 12 months.
[3]And ability to maintain mental health and well-being.
 Source: McKinsey American Opportunity Survey Spring 2022

Figure 2. *Motivation to find a new Job.*

2. Flexible Work Arrangements: Options and Benefits

Flexible work schedules offer various options, including:
1. Flextime: Allowing employees to choose their start and end times while fulfilling a required number of work hours.
2. Job sharing: Two or more employees collaboratively cover the responsibilities and hours of a full-time position.
3. Part-time work: Offering reduced hours compared to full-time positions.
4. Shift swapping: Enabling employees to exchange shifts to accommodate personal needs.

Modern employees increasingly value schedule flexibility. To attract and retain top talent, companies must accommodate this preference by providing various work options.

3. Limitations of Traditional Schedules

Traditional scheduling presents several drawbacks:
1. It assumes uniform productivity during fixed hours, which isn't universally applicable.
2. Fixed schedules impede collaboration across different time zones in a globalized business environment.
3. Rigid schedules don't account for employees' diverse personal and family obligations.
4. Retailers struggle to meet labor needs during peak seasons with fixed scheduling.

4. Challenges in Implementing a Flexible Schedule Among Employees

Costs associated with program planning, coordinating implementation, training, and managers controlling can present challenges. These challenges include:
1. Supervision difficulties due to different working times & Coordination difficulties due to different working times.
2. Low productivity for individuals who are not able to use these programs. Belief that such policies may affect career development in the long run.
3. Negative attitudes and resistance from some managers who feel they are losing power.
4. Decline in productivity during early and late working times because the actual work begins only after the manager arrives at work.
5. Difficulty in measuring the benefits associated with these policies compared to their costs.

5. Technologies for Implementing Flexible Work Arrangements

According to the US Census Department, online shopping demand increased by 43% in 2020, the first year of the pandemic. As a result, the demand for retail employees skyrocketed to fulfill online orders, and they couldn't keep up with a fixed schedule.

Therefore, top retail employers introduced flexible schedules. I have implemented this for one of my retail client.

The implementation was carried out in three different modules. First, we ensured correct labor focusing. Secondly, we built the employee service to auto-populate the schedule published to employees, including swapping shifts functionality if an employee has already picked up a schedule. The last part involved building a service that ensures employees abide by their flexible schedule without causing gaps in the schedule. [7-10]
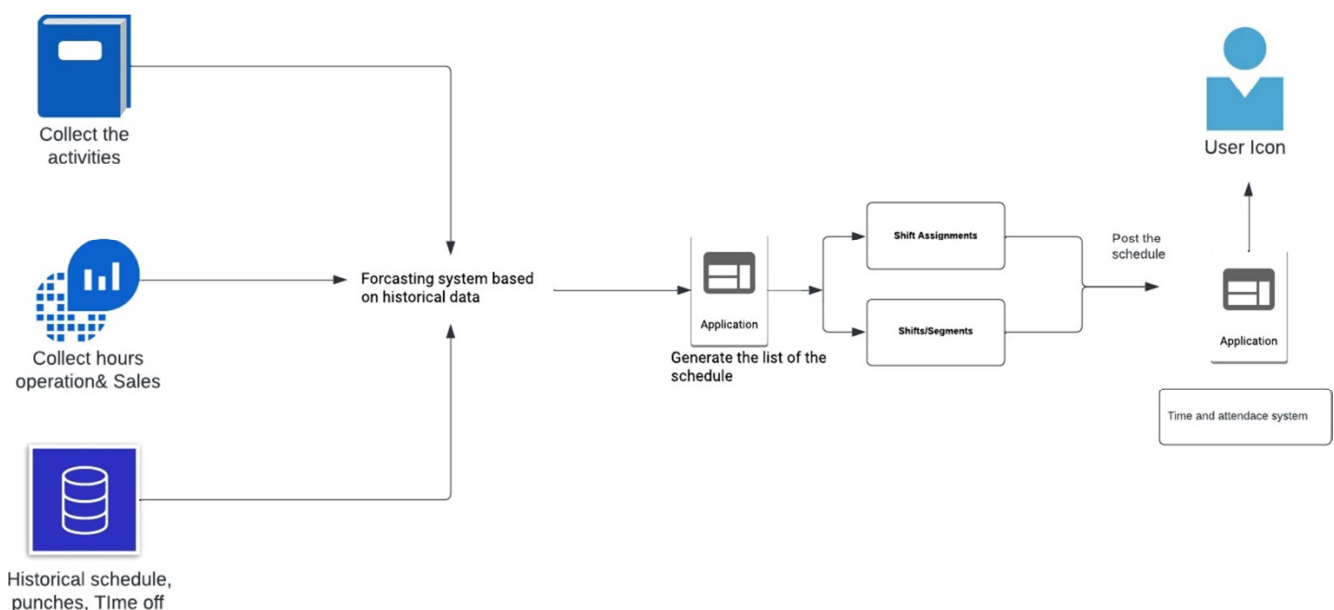

Figure 3. Schedule forecasting.

6. Labor Forecasting

We discuss a challenge that we encountered during the implementation phase. This challenge involved forecasting labor demand due to the unpredictable market behavior caused by the COVID-19 pandemic. We identified two significant complications in the historical labor data: 1) a clear pattern of labor demand corresponding to the peaks and troughs of the pandemic, and 2) emerging short-term trends closely tied to adaptive operational schedules.

To address these forecasting complexity, our methodology pivoted towards a more agile and responsive strategy. Central to this approach was the periodic re-calibration of our predictive models to accommodate the rapidly evolving market conditions and operational variables. Recognizing the potential for historical data to obfuscate current trends due to the unprecedented nature of the pandemic, our models were designed to consider a truncated temporal dataset spanning only the preceding eight weeks.

This temporal data, while short-term, was comprehensive in its inclusion of critical variables. It encompassed historical scheduling records, time clock data, approved leave periods, warehouse operational hours juxtaposed with corresponding traffic data, and a log of diverse employee activities. Aggregating these multifaceted data points provided a rich dataset that, although limited in historical depth, offered poignant insights into the prevailing market dynamics and labor trends.

Furthermore, we employed sophisticated algorithms leveraging principles from artificial intelligence (AI) and machine learning (ML), allowing the system to intelligently adapt to ongoing changes without manual intervention. By integrating these technologies, we could significantly enhance the accuracy of our demand forecasts despite the challenging circumstances, ensuring optimal staffing levels that aligned with real-time demand and operational exigencies. [11-13]

7. Auto-populating in Advance and Shift Swapping

We introduce an innovative service designed to enhance the autonomy and flexibility of employee work schedules while meticulously adhering to labor regulations. This initiative was particularly cognizant of statutory requirements, such as those mandated by Oregon's labor statutes, which stipulate a minimum 14-day notification period prior to the enforcement of work schedules.

The system's sophistication is manifest in its automated distribution of available shifts for a forthcoming week, integrated within a framework that respects both individual employee availability and legal constraints. This dynamic scheduling service is not merely a solution for administrative efficiency but an empowerment strategy, granting employees unprecedented control over their work-life balance.

Further enriching the system's functionality is the incorporation of a 'shift swap' feature. This component permits employees to initiate requests for alterations in their assigned shifts, facilitating exchanges or substitutions among their colleagues. In instances of shift cancellation or rescheduling, the technology is configured to instantaneously update the shift roster, thereby notifying the workforce of available slots in real-time.

This streamlined approach to shift management has yielded dual benefits: promoting a collaborative work environment where employees can seamlessly exchange shifts, thereby fostering a sense of control and ownership over their work schedules, and enhancing operational efficiency through the expedient coverage of shifts. An ancillary advantage observed was the opportunity for employees to augment their earnings by voluntarily assuming additional shifts.

Our analysis further delves into the system's positive impact on organizational culture, employee satisfaction, and operational efficiency. The findings also underscore the system's role as a critical tool in ensuring compliance with labor laws, thereby mitigating legal risks while promoting a flexible, responsive, and employee-centric scheduling model. The integration of such advanced systems, as evidenced by the research, is instrumental in navigating the intricacies of contemporary workforce management, particularly in sectors characterized by variable labor demands. [14, 15]

8. Preventing Employees from Postponing Their Scheduled Shift

To prevent employees from constantly postponing their shift and becoming unavailable for requested time off, we have also created a point based service to prevent this from occurring.

Ensure that employees adhere to their flexible schedules without causing gaps in coverage.

To prevent associates from repeatedly postponing their flexible schedules, we have implemented three different strategies.

The first strategy is to establish a minimum expected number of work hours per week for each employee. This number may vary based on the employee's standard working hours. For example, retail employers may expect some reduced-time employees to work 30 hours per week, while part-time employees may be expected to work 20 hours per week. In other words, employees should select the minimum of either 30 or 20 hours based on their standard working hour in employment contract.

We have built a service that can automatically detect these conditions and trigger anomalies to the supervisor.

The second strategy is to set a minimum threshold for canceling, dropping, or swapping shifts. We have set this threshold to 7 hours before the scheduled shift for all employees. For example, if an employee is scheduled to work from 8 am to 12 pm, they should cancel or swap their

shift before 1 am. If an employee cancels or swaps their shift after 1 am, the automated point system will penalize the employee with 1 point.

The third strategy is to expect associates to apply for time off at least 2 hours before their shift (this should not be applicable for sick or emergency leaves). If an associate doesn't apply for time off on time, the automated system will penalize the employee with 1 point. We have established a set of standard operating procedures (SOP) for providing verbal warnings, written warnings, and termination based on performance evaluations. These procedures should be completely customizable based on the organization and the situation.

9. Conclusion

In conclusion, the landscape of work is undergoing a monumental shift, with flexible work arrangements at the forefront of this transformation. For hourly employees, the traditional constraints of fixed schedules no longer fit the mold of a dynamic, globalized, and technologically driven society. The COVID-19 pandemic has only accelerated this realization, pushing companies, especially in the retail sector, to innovate rapidly in the face of unprecedented challenges.

Implementing flexible work schedules, while beneficial, is not without its hurdles. From initial setup costs to managerial adjustments and potential impacts on employee productivity and career progression, companies must strategize effectively to make the most of these arrangements. Technology plays a crucial role here, enabling efficient labor forecasting, seamless shift swaps, and ensuring adherence to schedules.

However, technology is not a only solution for all challenges; the human element of understanding employee needs and maintaining open communication channels is equally vital.

As the world settles into a new normal, the demand for FWAs is unlikely to decrease. Businesses that continue to rigidly adhere to traditional scheduling may find themselves struggling to retain talent and maintain operational efficiency. Conversely, those that embrace flexibility, supported by robust technology and fair policy, will likely emerge as desirable places of employment, capable of navigating the ebb and flow of market demands.

Future research could delve deeper into the long-term effects of FWAs on employee mental health, productivity metrics in a post-pandemic world, and the specific impacts on different sectors beyond retail. Additionally, exploring the legislative landscape surrounding FWAs, including the variations across different regions and their effects on implementation, could provide valuable insights for businesses and policymakers alike.

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Conflicts of Interest

The authors declare no conflicts of interest.

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