

Title: Human Resource Management (HRM) in gig companies, what do we know so far? An inductive qualitative study to theorise the link between HRM and gig work

Abstract

In gig work contexts, traditionally, HRM strategies are introduced to control gig worker that should be autonomous, through the introduction of algorithmic HRM. The purpose of this study is to better understand HRM practices in gig companies. A qualitative inductive case study has been developed, gathering information from different sources and stakeholders. Interviews will be conducted in several gig companies (i.e., Uber, Cabify, Bolt and FREE NOW). This study has used the NVivo software to code all the information. We expect that this study will contribute to enrich what we know about the implementation of HRM practices within gig work contexts, as well as the employee relationships in this gig environment. Further theory in relation to HRM practices, algorithm HRM and labour relations under gig companies has been elaborated through the different propositions. For instance, the introduction of mental health and well-being initiatives, customised onboarding and training, collaborative platform governance with driver participation, environmental impact incentives for drivers, AI-based bias detection system, transparent surveillance system, gamified training platform, dynamic pricing model with real-time earnings predictions and minimum fare thresholds or adaptive recommendation system that adjusts restrictions and recommendations based on individual driver preferences, among other initiatives to enhance HRM in gig environments.

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1. Introduction

2. Theoretical framework

2.1. Gig work

Gig workers represent a specific type of worker within the broader category of nonstandard work arrangements, which includes temporary employees, part-time employees, and contracted employees (Dickson & Lorenz, 2009). The gig work relationship involves an indirect connection with at least three parties: an intermediary online platform, the worker, and the customers. The defining feature of gig work, distinguishing it from other contingent labour, is the presence of a digital platform intermediary that mediates the relationship between the worker and the customer (Duggan et al., 2020; Gandini, 2019; Gramano, 2020). Table 1 shows definitions of gig work.

Table 1. Definitions of gig work

Definitions of gig work	
Definitions	Authors
Gig work is characterised as one-off employment, where compensation is tied to specific tasks or a predetermined period, resulting in uncertain earnings and work hours.	(Abraham et al., 2018)
Gig work refers to work that uses online platforms to digitally connect workers to consumers	(Duggan et al., 2020; Gandini, 2019; Gramano, 2020)
Gig work is defined as short-term employment arranged and provided through digital platform, without assurance for long-term work.	(Graham et al., 2017)
Gig work is commonly known as on-demand work, typically organised through digital platforms and marked by unpredictable work schedules and compensation. Frequently, gig workers are responsible for providing their own equipment and workspace.	(Stewart & Stanford, 2017)
Gig work is defined as work that is characterized by flexibility and a task-oriented nature.	(Watson et al., 2021)
Gig work isolates workers and generates direct competition between workers, leading them to exploit themselves by being always logged on. Furthermore, gig work generates precarity with short-lived, irregular, and low-paid work experience.	(Webster, 2016)

According to Watson et al. (2021), to distinguish gig work from other nonstandard workers, we focus on three primary characteristics of gig work. To be considered a gig worker, all three characteristics must be present to some degree. Gig work has three primary characteristics: (a) project-based compensation, (b) temporary nature of the work, and (c) some flexibility to perform tasks.

Similarly, Cropanzano et al. (2023) highlights four characteristics of gig work: a) non-membership in an organisation. In this sense, gig workers are not formal employees of a single organisation, they operate independently, without being part of a permanent workforce; b) temporary nature of the work. This implies that gig work involves short-term, on-demand tasks or projects, there is no long-term, stable employment relationship; c) project- or piece- grounded income. This means that gig workers are paid based on the specific tasks or projects they complete, their compensation is not a fixed salary, but rather variable based on the work done; and d) connection with platforms via intermediaries. Gig workers often find and access work opportunities through third-party platforms. These intermediaries connect the workers with the clients or companies needing the work done. In summary, the key distinguishing features of gig work are the lack of permanent employment, the temporary and project-based nature of the tasks, the variable compensation structure, and the involvement of intermediary platforms to facilitate the work arrangements.

Although the non-membership in an organisation feature has been questioned by some authors and legal authorities, as several court rulings have decisions in favour of workers gaining employment right status, for instance, the "Rider Law" has been approved in Spain. This law establishes a presumption of employment status for workers in delivery and other service platforms and requires these platforms to provide information to worker representatives about decisions made using algorithms that affect working conditions (Sánchez, 2021).

In addition, Jabagi et al. (2019) considered that the digital labor platforms can be classified across two crucial dimensions of work: level of skill (low-skilled vs high-skilled) and how the services are fulfilled (physically, local vs virtually, global). These different characteristics enable to identify three types of gig work (De Stefano, 2016; Duggan et al., 2020): capital platform work, crowdwork, and app-work. Capital platform work refers to digital marketplaces that enable individuals to sell products or lease assets, such as Airbnb for accommodations and Etsy for handmade goods.

Crowdwork platforms outsource tasks to a distributed network of workers who perform the jobs online, often involving micro-tasks, such as Amazon Mechanical Turk and Fiverr. App-work based platforms algorithmically coordinate and dispatch workers on-demand to provide in-person services, with examples including ride-hailing (Uber, Lyft) and delivery (Deliveroo). (See Table 2 and 3 for an overview of Characteristics of gig work and Types of gig work respectively).

Table 2. Characteristics of gig work

Characteristics	Description	Source
Project-based compensation	Gig workers are compensated based on specific tasks or projects they complete, leading to variable income rather than a fixed salary.	Watson et al. (2021), Cropanzano et al. (2023)
Temporary nature of work	Gig work is characterized by short-term, on-demand tasks, lacking long-term employment relationships.	Watson et al. (2021), Cropanzano et al. (2023)
Flexibility to perform tasks	Gig workers often have some level of flexibility in how and when they complete their tasks.	Watson et al. (2021)
Non-membership in an organization	Gig workers operate independently and are not formal employees of a single organisation, which means they lack membership in a permanent workforce.	Cropanzano et al. (2023)
Connection with platforms via intermediaries	Gig workers frequently access work opportunities through third-party platforms that connect them with clients or companies needing services.	Cropanzano et al. (2023)

Table 3. Types of gig work

Classification	Type of gig work	Source
Nature of work	Gig work can be categorised into three types: capital platform work (e.g., Airbnb, Etsy), crowdwork (e.g., Amazon Mechanical Turk, Fiverr), and app-work (e.g., Uber, Deliveroo).	(De Stefano, 2016; Duggan et al., 2020)
Nature of work	Examples of gig workers are freelancing, coworking, peer-to-peer lending, resource sharing, etc.	(Zaman et al., 2020)
Nature of work	Examples of gig workers are freelancers, online platform workers, self-employed, on-call workers and other temporary contractual workers	(Masta & Kaushiva, 2024)
Skill level classification	Gig work can be classified based on the level of skill required (low-skilled vs high-skilled) and the mode of service fulfillment (physically local vs virtually global).	(Jabagi et al., 2019)

2.2 Algorithmic HRM

Algorithmic management (AM) refers to the implementation of programmed algorithms by organisations to manage workforce functions either in part or entirely. This includes monitoring employee activities, allocating tasks, setting targets or schedules, evaluating productivity and performance, determining compensation, and even imposing penalties on workers (Parent-Rochelleau et al., 2024; Zaman et al., 2020)

According to Wood et al. (2019), in the algorithmic management system, along with its control mechanisms, workers are controlled and guided by algorithms instead of human managers that operate on predefined action pathways that eliminate undesirable options from its design. These algorithms enhance worker monitoring with performance evaluations, metrics, and data gathered from both customers and suppliers to inform decisions regarding future task assignments and employee retention (Huang, 2023). The growing reliance on algorithms has enabled organisations to boost their efficiency in decision-making, process coordination, and organisational learning (Duggan et al., 2020; Kellogg et al., 2020). In this sense, algorithmic HRM control emphasises the significant and developmental influence of two external parties—customers and suppliers—in the design and functioning of the algorithmic systems employed to monitor workers in app-based work contexts (Duggan et al., 2023).

Algorithmic management is typically employed to guide employees by limiting and suggesting certain behaviours, assess their performance by monitoring and rating their actions, and enforce discipline by either threatening job replacement or offering rewards (Kellogg et al., 2020; Waldkirch et al., 2021). While algorithmic management methods often provide workers with significant flexibility, autonomy, and a diverse range of tasks, they can also lead to negative outcomes such as low wages, social isolation, irregular working hours, overwork, sleep deprivation, and overall exhaustion (Wood et al., 2019).

Algorithm management applied to human resource management (HRM) has developed a new concept namely algorithmic HRM. Algorithmic human resource management represents a developing area of study that is currently burdened by numerous umbrella terms (such as “Digital HRM,” “applications of artificial intelligence in HR,” “algorithms,” and “HR analytics”) (Cameron et al., 2024). Meijerink et al. (2021) state that algorithm HRM refers to implementing software

algorithms that leverage digital data to enhance human resource-related decisions and automate HRM functions. This conceptualisation identifies three key characteristics of algorithmic HRM: 1) the creation and employment of digital data, 2) the implementation of software algorithms that analyse this digital information, and 3) the partial or complete automation of decision-making processes related to human resource management. According to Cheng & Hackett (2021), algorithmic human resource management utilizes computational algorithms to process extensive datasets, uncover patterns and trends, and generate forecasts and suggestions that can enhance or automate decisions related to human resources. A significant advantage of algorithmic HRM is the enhanced ability of HR strategists and planners to gather, organise, and analyse substantial volumes of HR data. This capability enables organisations to more effectively anticipate current and future human capital needs grounded on data mining techniques (Cameron et al., 2024; Priya & Sinha, 2021).

2.3 Algorithmic HRM practices

According to Priya & Sinha (2021), using algorithms in human resources will enhance organisational performance by improving decisions related to talent, predicting workforce needs, and optimising talent through development and planning. It allows HR to support the organisation in achieving its goals through informed decision-making. Furthermore, it supports organisations in managing workers in recruitment, training, employee satisfaction, productivity, and task assignments. It also helps identify reasons for workers turnover and spot valuable workers who may leave.

The recent paper by Waldkirch et al. (2021) adds to the current research on HRM in digital platforms by presenting how HRM practices can differ from those in traditional organisations, emphasising the evolving roles of individuals in developing HRM practices through the idea of ‘crowd-created’ HRM practices, and outlining how digital platforms utilize a ‘hybrid HRM approach’. Indeed, in gig work contexts workers play a central role in implementing and shaping HRM practices (Kost et al., 2020; Meijerink et al., 2016; Waldkirch et al., 2021). For instance, workers engage in peer-to-peer training and development, leveraging their collective knowledge and experience to enhance individual and team capabilities. For example, workers share best practices for self-presentation, identify lucrative opportunities, mentor newcomers, and

offer mutual support and motivation (Waldkirch et al., 2021). In addition, employees actively participate in shaping the performance evaluations they receive (Keegan & Den Hartog, 2019). In this sense, training and development on digital work platforms not only aims to enhance workers' skills for completing tasks but also emphasises 'platform literacy,' which involves learning how to effectively navigate the online marketplace, maintain their presence on the platform, and secure profitable gigs (Waldkirch et al., 2021).

Furthermore, Duggan et al. (2020) contribute to the research on algorithmic HRM by presenting the idea of algorithmic HRM control. This concept refers to a holistic workforce management system in which various stakeholders—both within and outside the organization—play a role in influencing and shaping algorithms that rigorously manage employee activities. Duggan et al. (2023) discuss several aspects related to performance evaluation, task assignment, and rewards management. Their research identifies numerous examples of algorithmic HRM control being used to assess employee performance, including cases where underperforming workers or those not adhering to platform guidelines were “deactivated.” Additionally, their findings provide examples of how algorithms are employed to distribute tasks and ensure efficient service delivery throughout the labour process. Moreover, they demonstrate that the application of algorithmic HRM control by platform organizations can lead to positive outcomes and rewards for employees.

Similarly, Kost et al. (2020) also studied HRM practices within gig contexts, they detected that the platform work context can restrict the development of workers' professional skills and, therefore, limit their development and mobility. Thus, these authors indicate that we must move away from the traditional employer-centered conception and introduce new forms of self-organised and network-based human resource management practices (in the form of collaborative communities of practice) to diminish these limits. Indeed, not clearly delineated formal and contractual responsibilities between platforms and customers within the gig economy discourage both platform and customer organisations from providing appropriate human resource management practices. There are two alternative HR management models that could contribute to improving this dilemma and help promote unlimited careers in the gig economy, that is, on the one hand, shared HR management (or “shared HRM”) between platforms and clients and, on the other hand, self-organised HR management (Kost et

al., 2020). Shared HRM is where platforms and clients could share different aspects of HRM practices to increase the professional skills of temporary workers. Such shared HR practice management setups could work to improve feedback practices on platforms that commonly rely on self-explanatory customer ratings for a given score, what was satisfactory and what could be improved, it might be an idea to involve customers in helping gig workers further develop their skills and see what characteristics are most appreciated. For example, the platforms could organise networking events in the form of webinars and present the different skill requirements. On the other hand, self-organised or community-based HR management finds that temporary workers who want platform resources to support their professional development are likely to be proactive in forming communities of practice or organising development resources among themselves.

Commonly, platform organisations consider gig workers as independent contractors that enjoy the freedom to choose when and how they work, without the control of human managers, which seemingly excludes them from traditional HRM practices (Cross & Swart, 2022; Keegan & Meijerink, 2023a). However, research shows that platforms actively monitor and regulate the activities of these workers to maintain quality and reliability (Wood et al., 2019). In this sense, gig workers are subjected to significant "control-enhancing HRM activities" (Meijerink et al., 2021).

2.4 Employee relations in gig contexts

Employment relations encompasses the design of work within an organisation and the mechanisms in place to facilitate worker involvement and engagement in decision-making processes (Sun et al., 2007; Waldkirch et al., 2021). The rise of gig work and the platform economy is transforming traditional employment relationships (De Stefano, V., Durri, I., Stylogiannis, C., Wouters, M, 2021). Gig work, which connects "self-employed" workers directly with clients via digital platforms, is characterised by temporary, flexible arrangements that differ significantly from standard full-time employment (Spreitzer et al., 2017; Spurk & Straub, 2020). This unique employment relationship has upended the conventional ways of working and brought back discussions on industrial relations and employment law. In this sense, the classification of gig workers as independent contractors by many platform companies is contradicted by the high levels of control exerted over workers through algorithmic management systems, a phenomenon that merits in-depth empirical investigation to better understand the nature of the employment relationship in the gig economy (Kuhn & Maleki, 2017).

So terms such as “riders” or “taskers” are often used by gig companies to refer to gig workers in an attempt to consider them distant from legal responsibilities (Duggan et al., 2020).

According to Meijerink & Keegan (2019), the disputes between app-based workers and their employers over issues like control, dependency, and working conditions indicate that the employment relationship involves more than just financial compensation and flexibility. Indeed, gig workers are subject to extensive human resource management practices aimed at increasing control over their work (J. Meijerink et al., 2021). Certainly, activities related to managing human resources, including recruitment, training, performance evaluation, remuneration, job design, and workforce planning, are implemented in gig companies (J. Meijerink & Keegan, 2019).

Despite platform companies' claims that gig workers are not employees, this does not automatically exempt them from directive forms of human resource management control (Keegan & Meijerink, 2023b). Consequently, workers frequently see themselves as equivalent to employees (Petriglieri et al., 2019), and numerous court decisions have favoured granting them employment status (Duggan et al., 2020). In the gig work context, the traditional manager's role appears to be replaced by the involvement of other non-organisational parties, highlighting the unique dynamics of this employment relationship (Duggan et al., 2023). This contradictory work setup, where individuals are not formal employees but are still governed by platform algorithms, poses a challenge to HRM research that relies on well-defined employee relationships (Duggan et al., 2020). Therefore, the gig economy's reliance on technology not only facilitates economic and social interactions but also plays a key role in shaping these relationships (Wood et al., 2019).

Kalleberg (2011) points out to the substitution of bureaucratic protocols with market-based mechanisms for determining work outcomes in the United States. This shift transfers the burden of financial risks and competency enhancement to the workforce, as organisations become less inclined to offer job security and professional development. These market-centric, open employment structures are underpinned by laissez-faire economic principles and competition, typically accompanied by diminished labour market institutions, standards, and regulatory frameworks (Wood et al., 2019). According to Aloisi (2022), legal systems across Europe have witnessed numerous court decisions reclassifying platform workers' employment status. Concurrently, several

governments have introduced regulatory measures to mitigate the risk of precarious work and established comprehensive legal frameworks to ensure equitable conditions for both workers and platforms. This author examines how current and emerging national and European Union labour regulations can enhance the working conditions of individuals engaged in platform-based employment. The issue appears to be resolved in Spain, as the Supreme Court has ruled that platform workers are employees rather than self-employed, a decision that has been reinforced by corresponding legislation (Vaquero, E., 2022). Professor Luz Rodríguez argues that the primary concern regarding platform work is not the act itself, but the recognition and implementation of labour and social protection rights for platform workers, with several countries already implementing regulatory frameworks to address these challenges (Eg.: Spain, Chile, India or France). The International Labour Organization (ILO), operating under a unique tripartite structure involving governments, workers' organisations, and employers' associations, is considering the establishment of an international standard for platform work, though no definitive decisions have been reached at this juncture (Vaquero, E., 2022).

3. Methodology

3.1 Empirical Setting

To capture the dynamics related to HRM in gig companies, we focus on the operations of Uber, Cabify, Bolt, and FREE NOW. These companies are prominent players in the gig economy, particularly within the ride-hailing sector. Their market-leading positions, large workforces, extensive user bases, widespread presence, and significant influence on the gig economy are central to our study.

The European market for ride-hailing services is highly competitive, innovative, and mature, making it an ideal context for exploring how HRM practices are evolving in response to the gig economy's demands. Uber, Cabify, Bolt, and FREE NOW have established strong positions in the European ride-hailing market, each offering a platform that connects drivers with passengers through sophisticated algorithms. These companies exemplify the operational dynamics of app-based gig work and provide a rich environment for studying the unique HRM challenges and strategies that arise in gig work settings.

In this study, we refer to these companies collectively as “gig companies” or, when presenting quotes, “Company A”, “Company B”, “Company C”, and “Company D” to maintain anonymity. Interviewees are denoted by their role and company (e.g., “Driver, Company A”) to ensure their privacy further.

3.2 Research Design

In light of the lack of research on HRM in gig work environments, this research opted for an exploratory qualitative methodology (Eisenhardt & Graebner, 2007). It employed a nested case study approach (Thomas, 2011), examining multiple ride-hailing platforms (Uber, Cabify, Bolt, and FREE NOW) to develop a holistic understanding of the phenomenon. This method allowed for the integration of insights across cases, aiming to create a comprehensive picture rather than focusing on comparative analysis

Data collection involved semi-structured interviews and questionnaires with key stakeholders, including drivers, managers, company representatives, industry experts, and policymakers, as well as analysis of company websites, corporate reports, statements, and press and media releases. This multi-faceted approach allows us to triangulate data and develop a robust understanding of the HRM landscape in gig work, ensuring the reliability and validity of the results.

With this design, we aimed to develop a holistic understanding of how HRM is implemented and experienced in leading gig companies. Notably, the lack of empirical studies that consider both worker and firm perspectives, together with questions about the relevance of HRM in gig work requires a research design that allows for the development of theoretical depth and a detailed understanding of new and unexplored phenomena (Duggan et al., 2020, 2023). Furthermore, most existing studies on HRM in gig work have been conducted in a North American context. Consequently, by conducting part of this study in Europe, we provide additional empirical insights into how the focal phenomenon is unfolding in a different, yet digitally mature, context.

3.3 Data Analysis

To analyse our data, we followed the methodology proposed by Gioia et al. (2013). The analysis consisted of three main phases and was performed iteratively to develop a comprehensive understanding of the HRM landscape in the gig economy.

In the first phase, we thoroughly read the interview transcripts, questionnaire responses, company websites, company reports, statements, and news multiple times to get an overall sense of the data. This initial immersion helped us become familiar with the content and context, allowing us to identify preliminary patterns and themes.

In the second phase, we engaged in open coding, where we coded the transcripts and documents into inductive first-order codes. These codes were derived directly from the data, capturing the informants' perspectives on HRM, challenges, and strategies in their respective companies. We then adopted an abductive stance by consulting existing literature on HRM in gig work. This comparison between our first-order codes and the literature facilitated the identification of second-order themes, which represented broader patterns and concepts emerging from the data.

In the third phase, we explored whether these second-order themes could be further aggregated. This process led to the definition of several aggregate dimensions. The aggregate dimensions represented higher-level constructs that encapsulated the core aspects of HRM in gig companies. For instance, themes related to scheduling and task allocation, performance management and evaluation, compensation and benefits, training and development, work-life balance, and organizational culture were aggregated into a dimension named "HRM practices".

Throughout the analysis, we maintained an attitude of "well-intended ignorance" (Gehman et al., 2018, p.291), remaining open to unexpected patterns and diverse responses across the different stakeholders and companies. We were also mindful of potential social desirability bias, as the information from company reports, interviewees, or respondents might have projected a positive image of HRM in their companies. Nevertheless, we observed consistent themes across the different stakeholders, regardless of their roles or companies. While interviewees often emphasized the advantages and innovative aspects of their HRM, many also candidly discussed the challenges and limitations they faced, such as issues with algorithmic transparency, worker autonomy, and job security.

Our data analysis revealed a nuanced picture of HRM in gig companies, highlighting both the innovative practices and the inherent tensions in managing gig workers. The overall structure of our data is depicted in Table 4, illustrating the data

process from initial statements through to first-order codes, second-order themes, and aggregate dimensions. This detailed analysis process ensured that our findings were grounded in the data and reflective of the complex realities of HRM in the gig economy.

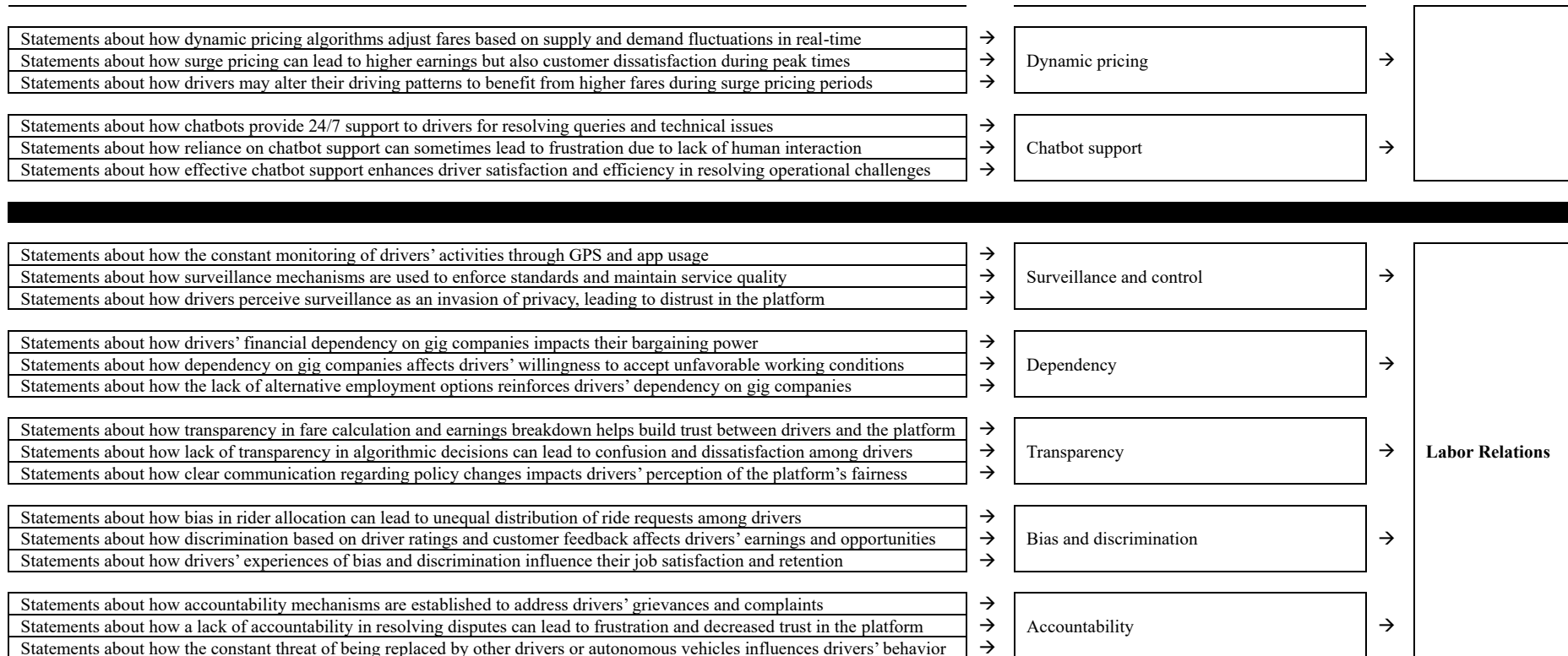
3.4 Case description

The ride-hailing market in Europe is poised for significant growth, with projected revenues expected to reach €18.03 billion by 2024. This growth trajectory is anticipated to continue, with a compound annual growth rate (CAGR) of 4.40% from 2024 to 2029, leading to an estimated market volume of €22.36 billion by 2029. The number of users in this sector is also set to increase, reaching approximately 194.30 million users by 2029, while user penetration is projected to rise from 19.9% in 2024 to 23.1% by 2029. Furthermore, the average revenue per user (ARPU) is expected to grow to €107.50, reflecting the market's overall expansion and increasing consumer adoption of online-only ride-hailing services.

In a global context, while China is expected to dominate the ride-hailing market with projected revenues of €55.23 billion in 2024, Europe is nonetheless forecasted to experience substantial growth. The combination of rising user numbers, increased penetration rates, and higher ARPU indicates a promising outlook for the European ride-hailing market in the coming years, driven by the ongoing shift towards digital transportation solutions and changing consumer preferences (Statista, 2024).

Table 4. Illustration of data processing from first-order codes to second-order themes and aggregate dimensions

FIRST-ORDER CODES		SECOND-ORDER THEMES		AGGREGATE DIMENSIONS	
Statements about how the scheduling systems allow drivers to choose their own working hours	→	Scheduling and task allocation	→	HRM Practices	
Statements about how task allocation considers driver location and performance	→				
Statements about how unpredictable demand can impact drivers' task allocation	→				
Statements about how continuous performance evaluation is conducted through customer feedback and ride completion metrics	→	Performance management and evaluation	→		
Statements about how performance management systems identify and reward top-performing drivers	→				
Statements about how poor performance evaluations can lead to penalties or deactivation from the platform	→				
Statements about how compensation is calculated based on distance traveled, time spent, and dynamic pricing factors	→	Compensation and benefits (rewards)	→		
Statements about how drivers receive additional benefits and rewards for meeting specific performance criteria	→				
Statements about how inconsistent earnings due to variable demand affect drivers' financial stability	→				
Statements about how drivers receive training programs to enhance their customer service and driving skills	→	Training and development	→		
Statements about how continuous development opportunities help drivers stay updated with platform policies and best practices	→				
Statements about how the lack of comprehensive training can lead to service inconsistencies and driver dissatisfaction	→				
Statements about how flexible working hours allow drivers to maintain a better work-life balance	→	Work-life balance	→		
Statements about how the gig nature of ride-hailing work helps drivers balance personal commitments with work	→				
Statements about how the pressure to work during peak hours to maximize earnings can negatively impact work-life balance	→				
Statements about how the organizational culture promotes a sense of community among drivers	→	Organizational culture	→		
Statements about how perceptions of organizational culture influence drivers' engagement with the gig company	→				
Statements about how the organizational culture encourages drivers to adhere to platform policies and guidelines	→				
Statements about how drivers are constantly monitored through passenger ratings	→	Rating systems	→	Algorithmic Management	
Statements about how rating systems can lead to stress and anxiety among drivers due to fear of receiving low scores	→				
Statements about how feedback from rating systems is used to reward high-performing drivers with more ride assignments	→				
Statements about how algorithms restrict drivers' access to certain areas based on real-time data and demand predictions	→	Restricting and recommending behavior	→		
Statements about how algorithms recommend specific behaviors to drivers to enhance service quality and efficiency	→				
Statements about how algorithms restrictive recommendations can limit drivers' autonomy and flexibility	→				
Statements about how algorithms dynamically allocate ride requests to the nearest available driver to minimize wait times	→	Rider allocation	→		
Statements about how allocation algorithms consider driver ratings and performance history to optimize customer satisfaction	→				
Statements about how frequent updates in rider allocation can create uncertainty and stress among drivers	→				



4. Results

In this section, we present the results of our study. Table 1 synthesizes the main characteristics of our findings, organized by dimensions and themes.

Table 5. Summary of the main characteristics of the findings, organized by dimensions and themes.

Dimensions	Themes	Main Characteristics
HRM Practices	Scheduling and task allocation	- Flexible scheduling - Task allocation based on location and performance - Unpredictable demand impact task allocation
	Performance management and evaluation	- Continuous evaluation via customer feedback and ride metrics - Rewards for top performers; penalties for poor performance
	Compensation and benefits (rewards)	- Compensation based on distance, time, and dynamic pricing - Additional benefits for meeting performance criteria - Inconsistent earnings due to variable demand
	Training and development	- Training programs to enhance service and driving skills - Continuous development opportunities provided
	Work-life balance	- Flexible working hours help maintain work-life balance - Pressure to work peak hours impacts work-life balance
	Organizational culture	- Promotes community through events and support - Influences driver's engagement
Algorithmic Management	Rating systems	- Drivers are constantly monitored through passenger ratings - Ratings cause stress and anxiety - High ratings rewarded with more assignments
	Restricting and recommending behavior	- Algorithms restrict area access based on real-time data and demand predictions - Recommendations enhance service quality and efficiency - Restrictions limit driver's autonomy and flexibility
	Rider allocation	- Dynamic allocation minimizes wait times - Ratings and performance considered for rider allocations
	Dynamic pricing	- Real-time fare adjustments based on supply and demand - Surge pricing increases earnings but also customer dissatisfaction during peak times - Drivers may alter their driving patterns to benefit from higher fares
	Chatbot support	- 24/7 support - Frustration due to lack of human interaction
Labor Relations	Surveillance and control	- GPS and app monitoring for compliance - Surveillance enforces standards and quality - Perceived privacy invasion causes distrust
	Dependency	- Financial dependency affects bargaining power - Willingness to accept unfavorable conditions due to dependency - Lack of alternative jobs reinforces dependency
	Transparency	- Transparent fare and earnings - Lack of algorithm transparency
	Bias and discrimination	- Algorithmic bias leads to unequal ride distribution - Discrimination based on driver ratings affects drivers' earnings and opportunities
	Accountability	- Mechanisms to address grievances and complaints - Lack of dispute resolution causes frustration - Threat of replacement influences behavior

5. Discussion

Based on a comprehensive analysis of our findings and a thorough review of existing literature, we develop the following propositions:

Proposition 1: Adaptive HRM Practices

Proposition: Implementing adaptive HRM practices, such as personalized support programs and flexible work schedules, will experience higher driver satisfaction and retention.

Rationale: Given the inherently flexible nature of gig work, HRM practices that align with this flexibility are crucial. Personalized support can include training programs, mental health resources, and performance feedback systems that cater to individual driver needs, promoting a sense of value and belonging.

Proposition 2: Algorithmic Management Transparency

Proposition: Increased transparency in algorithmic management systems will enhance trust and collaboration between drivers and the platform.

Rationale: Drivers often perceive algorithmic management as opaque and biased. By making algorithms more transparent—explaining how decisions are made regarding ride assignments, fare calculations, and driver ratings—companies can enhance trust. This transparency can foster a cooperative environment, where drivers feel more in control and informed.

Proposition 3: Flexible Compensation Model

Proposition: A flexible compensation model with a base income guarantee, performance-based bonuses, and long-term incentives like equity stakes can provide financial stability and align driver interests with platform success.

Rationale: A base income guarantee ensures financial stability, while performance-based bonuses and long-term incentives like equity stakes align drivers' interests with the platform's success. This comprehensive approach can motivate drivers and reduce financial stress.

Proposition 4: Algorithmic Management and Fairness Perception

Proposition: The perceived fairness of algorithmic decisions, moderated by driver feedback mechanisms, will significantly impact drivers' job satisfaction and loyalty to the platform.

Rationale: Fairness in algorithmic decisions is critical to driver satisfaction. Introducing feedback mechanisms where drivers can contest or inquire about algorithmic decisions can mitigate feelings of injustice. When drivers believe that the platform values fairness and their input, their satisfaction and loyalty are likely to increase.

Proposition 5: Labor Relations and Collective Representation

Proposition: Facilitating collective representation and negotiation platforms will improve labor relations and reduce conflicts between gig companies and drivers.

Rationale: Traditional labor relations are often absent in gig work. By providing platforms where drivers can collectively express their concerns and negotiate terms, companies can address issues proactively. This approach can lead to better working conditions, reduce turnover, and enhance overall labor relations.

Proposition 6: HRM and Technology Integration

Proposition: Integrating advanced HRM technologies that utilize AI and machine learning to predict driver needs and optimize support services will enhance operational efficiency and driver well-being.

Rationale: Leveraging AI and machine learning in HRM can provide predictive insights into driver behavior, preferences, and needs. These technologies can help HR teams to preemptively address issues, personalize support, and streamline operations, ultimately benefiting both the drivers and the company.

Proposition 7: Work-Life Balance and Health Initiatives

Proposition: Implementing work-life balance and health initiatives tailored to the gig economy will improve driver productivity and reduce health-related absenteeism.

Rationale: Gig workers often face irregular hours and job-related stress. Programs promoting work-life balance, such as flexible scheduling, health and wellness resources, and access to healthcare benefits, can enhance drivers' productivity and reduce absenteeism due to health issues.

Proposition 8: Technological Literacy and Driver Empowerment

Proposition: Investing in technological literacy programs for drivers will empower them to better utilize platform features, leading to enhanced performance and satisfaction.

Rationale: Drivers with higher technological literacy can navigate app features more efficiently, optimize their work processes, and potentially increase their earnings. Training programs that enhance tech skills can make drivers feel more competent and satisfied with their work environment.

Proposition 9: Adaptive Recommendation System

Proposition: Developing an adaptive recommendation system that adjusts restrictions and recommendations based on individual driver preferences and performance patterns can enhance driver autonomy while maintaining service quality.

Rationale: By considering driver preferences, the platform can provide recommendations that align with individual work styles, enhancing service quality. This balance maintains driver autonomy, reducing resistance to algorithmic suggestions and fostering a more cooperative work environment.

Proposition 10: Dynamic Pricing Model

Proposition: A driver-centric dynamic pricing model with real-time earnings predictions and minimum fare thresholds can balance earnings potential with customer satisfaction.

Rationale: Providing drivers with real-time earnings predictions and the ability to set minimum fare thresholds empowers them to make informed decisions about their work, optimizing their income potential. This approach can also moderate surge pricing, balancing driver earnings with customer satisfaction.

Proposition 11: Hybrid Support System

Proposition: A hybrid support system combining AI chatbots with human "driver mentors" can enhance the support experience by blending efficiency with personalized interaction.

Rationale: While AI chatbots offer efficient 24/7 support, the inclusion of human mentors can address complex or emotionally charged issues that require a personal touch. This hybrid system can improve overall driver satisfaction and resolve operational challenges more effectively.

Proposition 12: Gamified Training Platform

Proposition: Implementing a gamified training platform that offers continuous learning opportunities and rewards can increase engagement and ensure drivers remain updated with platform policies and best practices.

Rationale: The integration of gamification elements, such as achievement badges, leaderboards, and weekly challenges, in driver apps can significantly enhance driver motivation, engagement, and performance by providing clear goals and immediate rewards.

Proposition 13: Transparent Surveillance System

Proposition: A transparent surveillance system with real-time feedback and data privacy controls can balance control with trust and autonomy for drivers.

Rationale: Transparency in surveillance practices, coupled with real-time feedback and robust data privacy controls, can build trust among drivers. This approach ensures compliance with platform rules while respecting drivers' autonomy and privacy.

Proposition 14: AI-Based Bias Detection System

Proposition: Implementing an AI-based bias detection system that continuously monitors and addresses disparities in rider allocation and feedback can ensure a fairer distribution of opportunities among drivers.

Justification: Continuous monitoring and reporting of biases using AI can identify and address discriminatory practices in real-time. This proactive approach promotes fairness and inclusivity, improving driver satisfaction and retention.

Proposition 15: Environmental Impact Incentives for Drivers

Proposition: Providing financial and operational incentives for drivers who adopt environmentally friendly vehicles can significantly contribute to reducing the carbon footprint of ride-hailing platforms while promoting sustainable practices among drivers.

Rationale: Providing financial and operational incentives for drivers who adopt environmentally friendly vehicles can significantly contribute to reducing the carbon footprint of ride-hailing platforms while promoting sustainable practices among drivers. These incentives, such as subsidies for electric vehicles, reduced service fees, or priority dispatch, not only lower greenhouse gas emissions but also encourage a shift towards greener technologies. As drivers benefit from cost savings and operational advantages, they are more likely to adopt sustainable practices, thereby collectively advancing the environmental goals of the platform and contributing to a broader societal push towards sustainability.

Proposition 16: Collaborative Platform Governance with Driver Participation

Proposition: Establishing collaborative governance structures that involve drivers in decision-making processes can improve platform policies and foster a sense of ownership and loyalty among drivers, ultimately enhancing their engagement and satisfaction.

Rationale: Establishing collaborative governance structures that involve drivers in decision-making processes can improve platform policies and foster a sense of ownership and loyalty among drivers, ultimately enhancing their engagement and satisfaction. When drivers are included in discussions and decisions regarding policy changes, platform features, and operational adjustments, they feel valued and heard, leading to increased

trust and commitment to the platform. This inclusive approach not only results in more effective and driver-centric policies but also strengthens the community within the platform, driving better performance, higher retention rates, and overall improved service quality.

Proposition 17: Customized Onboarding and Training

Proposition: Implementing tailored onboarding and training programs to enhance driver skills and service quality, catering to the diverse backgrounds of gig workers.

Rationale: Implementing tailored onboarding and training programs to enhance driver skills and service quality, catering to the diverse backgrounds of gig workers, is essential for optimizing the performance and satisfaction of drivers. Customized training acknowledges the varied experiences and needs of drivers, providing them with relevant skills and knowledge that directly impact their day-to-day operations. This personalized approach not only boosts confidence and competence but also ensures a more consistent and high-quality service for customers, ultimately contributing to the overall success and reputation of the ride-hailing platform.

Proposition 18: Mental Health and Well-being Initiatives

Proposition: Introducing mental health and well-being programs, including counseling services and stress management workshops, to improve driver satisfaction and retention.

Rationale: Introducing mental health and well-being programs, including counseling services and stress management workshops, can significantly improve driver satisfaction and retention. The gig economy often involves irregular hours and high stress, which can negatively impact drivers' mental health. By offering accessible support services and promoting a healthy work-life balance, platforms demonstrate a commitment to their drivers' well-being. This investment in mental health not only enhances drivers' quality of life but also fosters a more loyal, motivated, and productive workforce, thereby reducing turnover rates and ensuring a stable and efficient service.

6. Conclusions

This study aims to enrich our understanding of the implementation of HRM practices within gig work contexts and the nature of employee relationships in gig environments. Our findings definitively demonstrate that HRM practices are implemented in this scenario. Regarding limitations, only ride-hailing companies have been considered in this study. Future research lines are expected to incorporate knowledge-based gig companies for comparison with non-knowledge-based gig companies. As this is a developmental paper, it is still under construction and subject to further refinement.

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