

Mukhopadhyay, Boidurjo Rick; Chatwin, Chris R.

Working Paper

The Significance of Herzberg and Taylor for the Gig Economy of China: Evaluating Gigger Incentives for Meituan and Ele.me

GLO Discussion Paper, No. 849

Provided in Cooperation with:

Global Labor Organization (GLO)

Suggested Citation: Mukhopadhyay, Boidurjo Rick; Chatwin, Chris R. (2021) : The Significance of Herzberg and Taylor for the Gig Economy of China: Evaluating Gigger Incentives for Meituan and Ele.me, GLO Discussion Paper, No. 849, Global Labor Organization (GLO), Essen

This Version is available at:

<https://hdl.handle.net/10419/234175>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

The Significance of Herzberg and Taylor for the Gig Economy of China: Evaluating Gigger Incentives for *Meituan* and *Ele.me*

Boidurjo Rick Mukhopadhyay, *Westminster International University in Tashkent, Uzbekistan*

Chris R. Chatwin, *University of Sussex, United Kingdom*

ABSTRACT

This article investigates the motivation of contingent workers in the gig economy of China, particularly focusing on the two Mobile Food Delivery Aggregators (MFDA) - *Meituan* and *Ele.me* that controls over 80% of the food delivery market in China. The convenience of one 'super-app' on phone, offered by each of these companies, allows users to order a diversified range of products and services starting from food, clothing to travel booking and ride-hailing. Online food ordering, however, tops the chart of online orders and this creates millions of food delivery rider jobs/gigs in mainland China. This paper draws key insights from the employee motivation theories by Herzberg and Taylor which underpins the findings and thematic discussion of this qualitative paper. While it is important to recognise that the usage growth of these MFDAs and consequently new gig creation is exponentially growing, the implications of this research would inform these online platform-based companies how to better design motivational factors or incentives to boost their employee satisfaction, engagement and levels of commitments in the colossal Gig economy of mainland China.

Keywords: *Gig Economy, Contingent Workforce Management, Employee Engagement, Employee Motivation, Employee Retention, Scientific Management Theory, Two-Factor Theory, Collaborative Consumption, China, Mobile Food Delivery Aggregators (MFDA), Meituan-Dianping, Ele.me, Platforms*

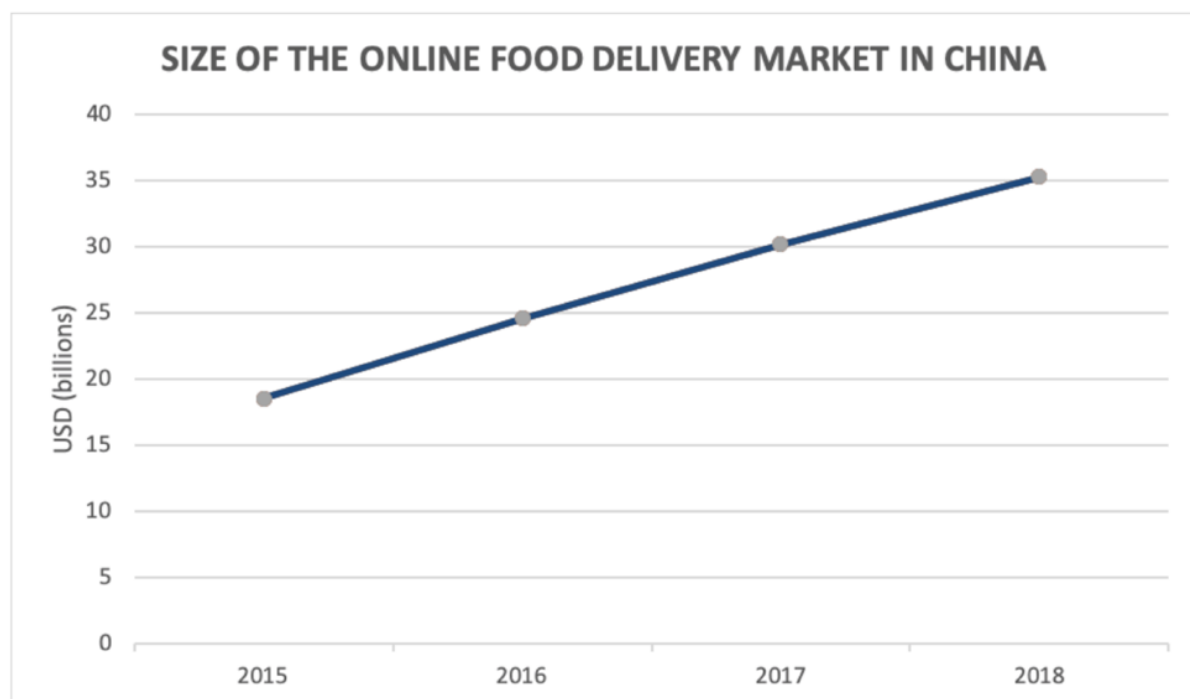
JEL Codes: D86, J41, L86, M51, M52, M54, M55, O30

1. INTRODUCTION

The food delivery market, with the advent and fast user adoption of Mobile Food Delivery Aggregators (MFDAs, hereafter), has grown exponentially and is now estimated to be worth over 37 billion USD (Forbes, 2019). Of all products sold online, food tops the chart. Online food sales rose by 36.8% year-over-year in the first two months of 2018 (Bloomberg, 2019). The popular MFDAs in China have an estimated 355 million users (FT, 2019), which is rising

every day, this means that a quarter of all Chinese people are ordering food from their phones or other smart devices. There are more than 1.8 million food delivery orders placed every day in Beijing alone (Liu, 2018). Besides the top two companies that dominate the market, *Ele.me* (translates to ‘Are you Hungry?’) and *meituan waitan* (*Mei* means ‘beautiful’, and *Tuan* means ‘together’), other companies that have also managed to carve their niche are, a) *ENJOY*, whose slogan reads ‘Life’s too short to be bored’; b) *Home-Cook* that allows customers to share home-cooked meals with other users/customers, and with several different regional Chinese cuisines, this is unlike other platforms that typically deliver restaurant food; c) Similar to *Home-Cook*, by not offering restaurant food, *Daojia*’s platform prefers to form cooperative relationships with large restaurants with established brands. Between 2015-2016, 63% of online food delivery app users were white-collar workers and 30.5% were students. Today, 83% are white-collar workers, and only 10% are students (Shi, 2019). The provinces that top online food ordering demand are Shanghai, Zhejiang, Guangdong, Jiangsu and Beijing respectively (Figure 1).

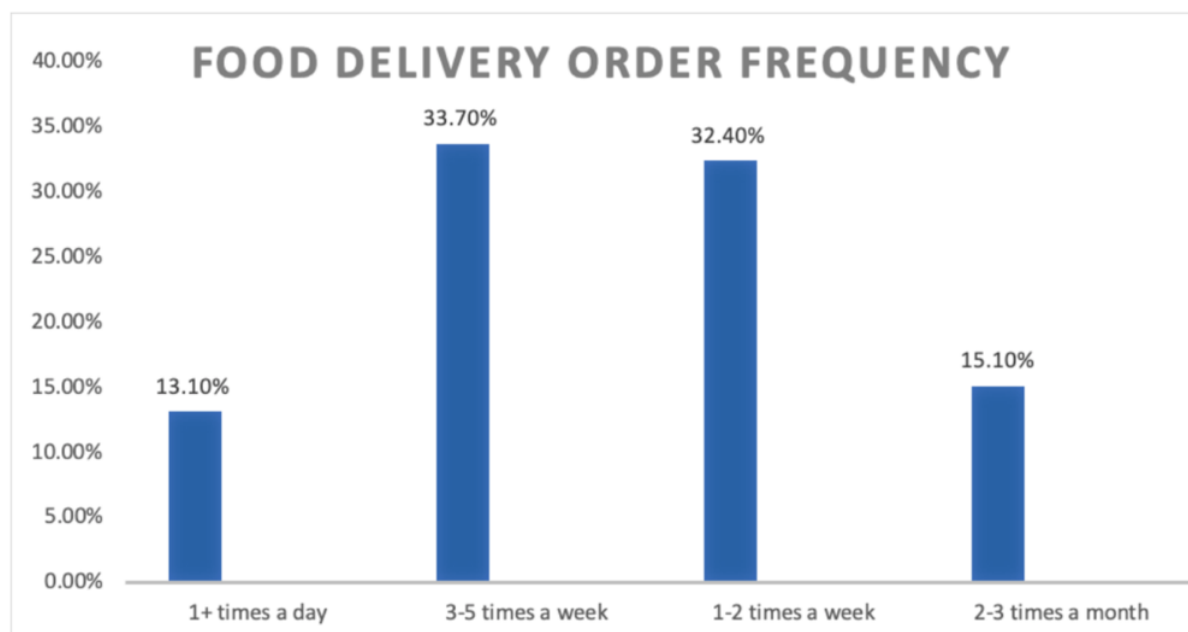
Figure 1. Size of the online food delivery market in China (Daxue Consulting, 2019)



The functionality and features of these Chinese MFDA are similar to food-delivery apps available in other parts of the world, e.g., Uber eats, Deliveroo, Swiggy, Zomato etc. in terms of food selection, daily offers, coupons and vouchers, order and rider tracking, feedback and subscription options. The apps in China take about 20% of the order revenues. In Q2 of 2019, Gross Transaction Value (GTV) of China’s food delivery service grew 36.5% to RMB 93.1 billion, while the number of MFDA-based orders increased by 34.6 percent to 2.1 billion orders. Recently, the Chinese online MFDA giant *Ele.me* acquired one of its rivals, *Baidu Waimai*, and its related services for USD 800 million (DeGennaro, 2019). So far, the three largest MFDA, *Ele.me*, *Meituan Waimai* and *Baidu Waimai*, have dominated over 80% of the

food delivery market in China (DeGennaro, 2019). *Meituan Waimai*, or simply *Meituan*, controls about 40% of China's food delivery market. Similar to *Ele.me*, *Meituan* is also an online-to-offline (O2O) food delivery app that provides users with online ordering, food delivery, and also other diversified services for users. Significantly, *Meituan* also offers more non-food delivery services than *Ele.me*, such as flowers, office supplies, to name a few. The two companies that dominate the online food delivery services in mainland China are *Meituan* and *Ele.me*, and both of them will be introduced further in later sections of this paper (Figure 2).

Figure 2. Food delivery orders - frequency of use (Daxue Consulting, 2019)



While the number of people engaged in the gig economy is staggering, the available number of online platforms providing the gig jobs are also countless in mainland China. Ianole-Călin et al (2020) identifies that studies in the sharing economy that explores the nature of collaborative consumption focus largely on micro and macroeconomic circumstances, respectively on supply and demand-side factors (Kumar et al., 2018), ignoring the psychological and cultural antecedents that lead to the formation of those factors. Additionally, there is a big gap in availability of in-depth studies carried out to understand and identify the functional nature of the sharing economy of China. This research identifies and addresses that gap, particularly focusing on the online food delivery market in mainland China. It is both crucial and timely to understand the contingent workforce management in the gig sectors and how the workers are motivated at the workplace.

The recent unemployment numbers in the gig work dependent sectors are staggering, particularly during the COVID-19 lockdown phase, and the critical importance of the gig workers for an economy is identified more than ever before (Mukhopadhyay, 2020). In China, one of the BRICS, this study shows how gig platforms (largely managed virtually) have

secured a tight grasp over consumer demand creating a strong dependency on delivery services in an emerging economy. The paper connects academia with industry by underpinning the findings with motivation theories by Herzberg and Taylor, and ends with implications that are important for policy makers of the gig/sharing economy, corporate managers who run/design these online platforms and manage millions of gig economy workers (or simply, 'giggers'), as well as providing an understanding of motivation theories in the context of the gig economy.

2. LITERATURE REVIEW

2.1. Gig Economy, Gigs and Giggers

Across developed, developing and emerging economies, the traditional *employee-employer* contract with all sorts of social protection rules has been fast replaced by a way of working called the gig economy. In this economy, people are being hired under flexible arrangements working only to complete a particular task or for a defined time (Friedman, 2014). A gig worker, or gigger, can be defined as a worker with the following characteristics, a) Gets paid per task; b) Has a freelance status; and c) Works via an online labour platform.

Giggers get paid per task, which stems from their freelance status. They do not work for an employment agency but work via a platform that brings organisations, businesses and individuals into contact through the internet. To get access to jobs, giggers sign up on a platform that gives them access to different jobs (De Stefano, 2016). When workers have successfully completed the task, they receive money (Deng & Joshi, 2016). This implies that gig workers need to be managed. Workers will support themselves as flexible, free independent suppliers, moving seamlessly from one job (or 'gig') to another, utilising digital technology to connect with purchasers of their services (Stanford, 2017).

Research evidences that Giggers often earn below minimum wage without any entitlements to social benefits, prices are being raised or decreased by an algorithm depending on demand (Kenney & Zysman, 2016). Gig workers' income thus depends on technology and as a consequence, workers are often found to be underpaid. A platforms' rating systems enabled on mobile phone apps ensures that workers with the highest ratings receive more and better-paying jobs. However, a lack of communication with the platform and other giggers could lead workers to experiencing greater levels of stress due to increasing isolation (Broughton et al., 2018; Forde et al., 2017; A. J. Wood, Lehdonvirta, & Graham, 2018).

The importance of employee involvement and communications with other employees are largely missing in the gig economy, while employee commitment and contribution to the organisation (Marchington, Goodman, Wilkinson, & Ackers, 1992) are still increasingly expected. Communication in the gig economy usually is facilitated via the platform that communicates the goods and services offered to the customer (Busch, Schulte-Nölke, Wiewiórowska-Domagalska, & Zoll, 2016). The mobile app of gig platforms usually has a messaging feature that allows communication between the gigger, client and the platform (Broughton et al., 2018). Researchers in the computer science and information systems disciplines offer solutions for better communication systems in the gig economy (Abhinav et al., 2018; Salehi, Teevan, Iqbal, & Kamar, 2017).

Any ordinary job characteristics model would show that job dimensions consist of skill variety, task identity, task significance, autonomy and feedback (Hackman & Oldham, 1976). However, communication is the key issue in a gig economy, since this significantly affects ratings given by clients (Akgüç, Beblavý, Cirule, & Kilhoffer, 2018). For other job characteristics, it appears that workers in the app-enabled gigs are ordinarily doing standardised tasks repeatedly over a period of time, the structured algorithmic management techniques offer workers a high level of autonomy (Kässi, Lehdonvirta, & Dalle, 2019; A. J. Wood, Graham, Lehdonvirta, & Hjorth, 2019a) with not much skill or task variety. In the gig economy, workers are hired per task and therefore there is minimal or no on-the-job training, this is an area where the employers do not spend much, or make any investment at all.

Equally, the platforms have no incentive to provide training since they cannot guarantee that workers work long enough for the platform to earn a return on their investment (Friedman, 2014). Platforms have added ‘digital reputation mechanisms’ or ‘evaluating and rewarding mechanisms’, these help in assessing performance and also provide feedback (Prassl & Risak, 2015). Ratings on these mechanisms are combined with *work history* (number of completed jobs, hours worked and total earnings) and *test scores* in order to rank workers. However, not only monitoring is simply conducted through ratings but also through GPS and how workers communicate with clients (Gibbs, 2017).

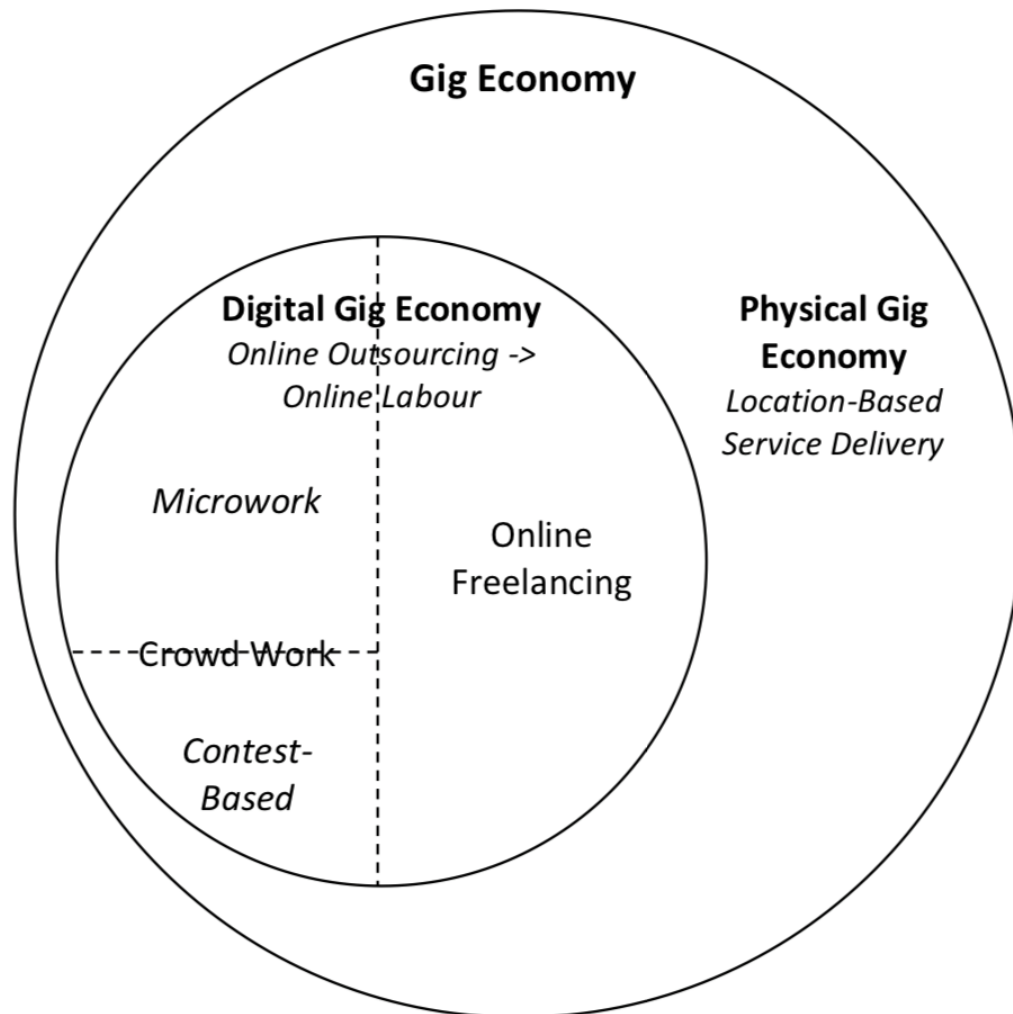
Typically, platform-based giggers tend to be mostly male, young and more educated than the general population, which partly reflects the industry structure of gig economy activity (Boeri et al., 2018; De Groen, Maselli and Fabo, 2016; Hall and Krueger, 2016; OECD, 2019). For example, the young age of Italian workers for the food delivery platforms *Deliveroo* and *Foodora* is partly explained by the flexibility of work schedules, with around one third of couriers working while studying (INPS, 2018). In Italy, for instance, around 60% of workers for whom platform work is their main job work less than 15 hours per week (INPS, 2018).

A significant share of platform workers in European countries provide skill-intensive professional services such as legal and accountancy services, software development and translation (Pesole et al, 2018). Additional income, autonomy and work flexibility remain the key motivator for part-time workers (Berger et al, 2018; Boeri et al, 2018; Pesole et al, 2018). Overall, most giggers are satisfied with their job and working for gig economy platforms appears to reflect mainly voluntary choices rather than the lack of other options. Platform workers typically work low numbers of hours per week, reflecting the high incidence of platform work as a secondary source of income and, in some cases, the lack of opportunities to work more hours. In European countries, around 80% of platform workers declare platform work to be a secondary or tertiary source of income (Boeri et al, 2018; Pesole et al, 2018). Even when platform work is the main source of income, the number of working hours is often low.

The ‘Stuttgart of China’, i.e. Jilin Province in China (Changchun city being the automobile hub) had a series of worker protests in 2016 and 2017 at the Sino-German car giant FAW-Volkswagen in Changchun city. They came up with a new category of labour named ‘dispatch workers’ (CLB, 2018). These workers were paid by a subcontracting agency rather than the employer directly and they complained of unequal treatment in terms of pay when compared with directly employed counterparts at the company. This phenomenon is similar in selected higher education institutions, specifically *Sino-foreign* colleges in mainland China (Mukhopadhyay, 2019). A decade ago, there were 37 million dispatch workers in enterprises in mainland China, most of the sampled dispatch workers were rural migrants. The rest were workers with urban household registration, temporary workers including dispatch workers

recruited from agencies and ‘student interns’ from vocational schools. There exists a systemic usage of subcontracted labour in the Chinese manufacturing, construction, and services sectors; covering a wide range of occupations in logistics and transportation, hotel and catering management, postal and telecommunications services, and property maintenance services (Chan, 2019) (Figure 3).

Figure 3. Categorising the Gig Economy (Heeks, 2017)



2.2. Motivation

One of the key concepts in our daily lives, Motivation, comes from the Latin word *mover* or ‘to move’. One way to define motivation is “*how to provide something to a person to drive him/her to do something*” (Ruthankoon & Ogunlana, 2003: 333). The two other popular contemporary and related issues are job satisfaction and job performance. Job satisfaction is ‘a pleasurable or positive emotional state resulting from the appraisal of one’s job or job

experiences' (Locke, 1976) whereas Gruneberg (1976) views the concept as the total cluster of emotional states an individual has about his/her occupation or job. The nature of the job itself, the pay, the work environment, workplace culture, training and development opportunities are all important variables that could lead to a feeling of job satisfaction.

Job performance refers to how well someone performs at his or her work. It has been defined as work performance in terms of quality, and quality expected from each employee (Khan et al., 2009). Employee productivity and employee job performance could be empirically related, though performance is in some cases measured by parameters such as the number and value of goods produced. In the context of the gig economy, this is primarily referring to 'rating' for a service and from the convenience of a smartphone. Productivity can be generally associated with production-oriented terms (i.e. turnover) and performance is linked to efficiency or perception-oriented terms (i.e. supervisory ratings and goal accomplishments) (Pincus, 1986).

2.2.1. Taylor's Scientific Management Theory

The classical work of Frederick Winslow Taylor, the Father of scientific management, was recorded in his papers: A Piece Rate System (1895); Shop Management (1903); The Art of Cutting Metals (1906) and The Principles of Scientific Management (1911). His approach innately considered the human factor as a commodity, which also happens to be one of the criticisms directed to his work. Taylor's work is based on induction and adopts an empiricist method, which advocated that 'there has to be a best way to do a certain job' principle, this has advanced further in his later works also. This principle has inevitably reached via the time and motion study, the equation of employees with machines and finally automation and robot science (Aydin, 2013). The other observation noted from his works that draws on the assumption that the human factor can be considered as a commodity, the worker needs to work more to get paid more. The 'piece rate' of wages system that was prevalent as a common practice at his time. Though, it applies equally to today's zero-hour contracts and also significantly in a gig economy setting. Despite most studies refuting Taylor's ideas, most of his ideas are the basis of implementation even today in several sectors and industries of various developing and developed nations.

Drucker (1993), in his work, emphasised Taylor's work by saying "*It is the productivity revolution which removes the discrepancies of capitalism and prevents proletarian class from growing poor, and the person who started this revolution is Taylor*". The success of personnel recruitment, human resources management and methods is possible on the condition that the establishment recruits the right people and retains them (Robbins, 2013).

2.2.2. Herzberg's Two-Factor Theory

Another work on Motivation that has stood the test of time and more importantly empirical validity was originally presented by Herzberg. One of his most popular works, called hygiene-motivation theory, is derived from the outcomes of several investigations into job satisfaction and job dissatisfaction (defined earlier in this paper), in studies which replicated his original research in Pittsburgh (CMI, 2012). The theory proposes that most factors which contribute to job satisfaction are *motivators* (includes - achievement, recognition, the satisfaction of the work

itself, responsibility and opportunities for advancement and growth) and most factors which contribute to job dissatisfaction are *hygiene* elements (includes - company policy, general management, the individual relationship with their manager and working conditions, security).

Herzberg et al (1959) published the two-factor model of work motivation and developed the motivation-hygiene theory, which was influenced by Maslow's hierarchy of needs (Jones, 2011). Herzberg created a two-dimensional paradigm of factors influencing people's attitudes towards work. At the heart of the two-factor theory is the difference between motivation and hygiene factors, or intrinsic and extrinsic factors. Herzberg described motivation factors as intrinsic to the job and hygiene factors as extrinsic to the job. Thus, motivation factors operate to only increase and improve job satisfaction; whereas hygiene factors work to reduce job dissatisfaction (Table 1).

Table 1. Summary of the Factors in Herzberg's Theory

Motivation Factors	Hygiene Factors
1. Advancement 2. Work itself 3. Possibility of Growth 4. Responsibility 5. Recognition 6. Achievement	1. Interpersonal relationships 2. Salary 3. Policies and Administration 4. Supervision 5. Working Conditions

Initially Herzberg and his colleagues developed a hypothesis that satisfaction and dissatisfaction with a job were affected by two different sets of factors and thus satisfaction and dissatisfaction could not be reliably measured on the same continuum (Herzberg et al., 1959; Stello, 2011). He also provided an insight into job enrichment, which he described as an extension of Herzberg's hygiene-motivation theory. He saw it as a continuous management function that involved embracing motivators in job design, and it included self-scheduling, control of resources and also accountability.

Further, his classic work (Herzberg, 1968) adapts his 'hygiene' and 'satisfier' factors to apply them to customer satisfaction (Naumann and Jackson, 1999). His work can be seen - in common with that of Elton Mayo (known for the Hawthorne Experiments), of Abraham Maslow (developer of the hierarchy of needs) and of Douglas McGregor (creator of Theory X and Theory Y) - as a reaction to Frederik W Taylor's Scientific Management theories. The presence of motivational factors can produce job satisfaction, but their absence leads to no job satisfaction. Therefore, poor hygiene factors can cause job dissatisfaction, while better hygiene factors can reduce dissatisfaction but cannot cause job satisfaction (Herzberg et al., 1959). Herzberg explained that the opposite of job dissatisfaction is no job dissatisfaction. Likewise, the opposite of job satisfaction is not job satisfaction (Herzberg, 1966; Herzberg, 2003).

3. BACKGROUND OF *MEITUAN* AND *ELE.ME*

Meituan was founded in 2010, and Dianping earlier in 2003, were originally two independent companies, and also rivals. Both of them maintained a strong emphasis on a) food and beverage industry and b) group buying. While Meituan focused primarily on food delivery, Dianping focused on restaurant reviews. In 2015, these two rivals merged together and developed the

app *Meituan Dianping*, maintaining standards of Groupon, Deliveroo, Tripadvisor, and Yelp! and now offers a range of products and services to customers throughout the entire food purchasing process. With Tencent supporting it, *Meituan Dianping* integrates heavily with WeChat that enables easy (and secured) payment for services directly. Further, since its merger with *Dazhong*, *Meituan* was able to acquire a massive user base spread throughout cities nationwide and launched *Meituan Waimai*, simply called Meituan by users though.

This Meituan app captured nearly 60% market share in the first half of 2018. Users could access *Meituan Waimai* directly on a range of apps, including WeChat, *Dazhong Dianping*, *Meituan*, and even on Tencent's QQ. Total revenues from *Meituan*'s food delivery service increased by 44.2% to RMB 12.8 billion in Q2 2019. This increased growth led to, for the first time since its public launch, the company becoming profitable, with profits reaching RMB 875.8 million, a significant improvement over its RMB 7.72 billion loss, which it posted one year ago (DeGennaro, 2019). Profits were mainly driven by the food delivery service however other segments did also help to drive this profitable quarter. Besides convenience, users gain more from the high integration capabilities of meituan with other apps (as mentioned above) that pretty much run daily lives in China (Figure 4).

Figure 4. An illustration of the *Meituan* super-app, adapted from Meituan (2020)

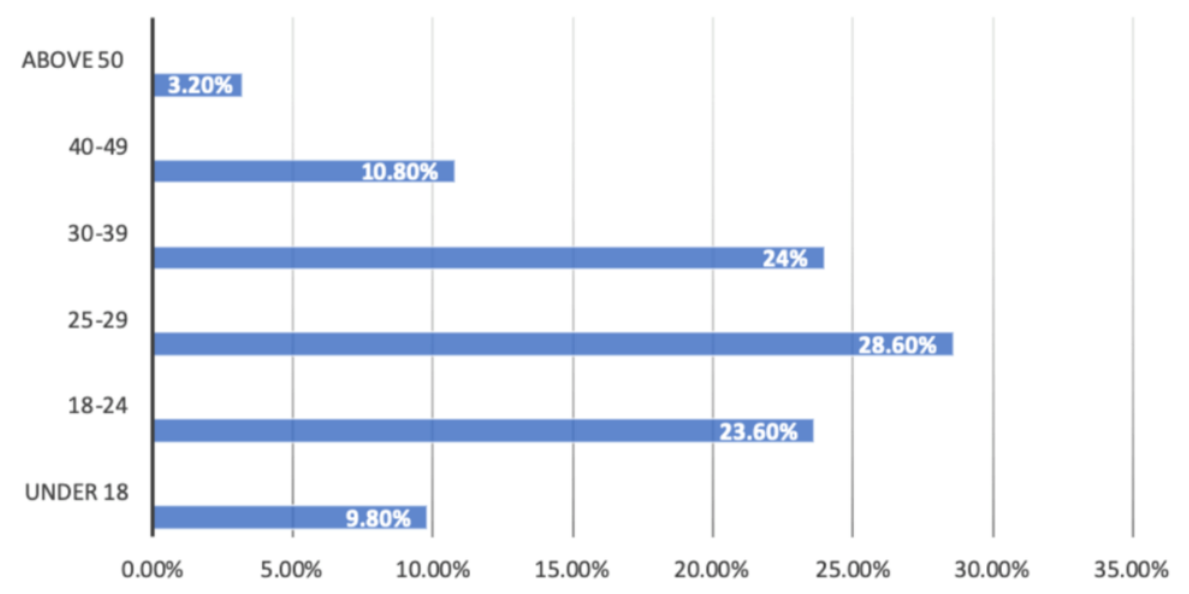


On the other hand, Ele.me, the Chinese food delivery giant, owned by Alibaba since 2019, and after its acquisition of Baidu Waimai, Ele.me claims to have an estimated 53.4 percent of China's food delivery market, with the number of delivery orders reaching RMB 295 million. They secured 3 million couriers, and are estimated to have delivered nearly 300 million orders.

Alibaba in 2018 had valued Ele.me at USD 9.5 billion (FT, 2019). Ele.me offers customer-to-customer meal ordering and food delivery services. Additionally, it helped restaurant owners install computers, thereby, connecting them to Ele.me meal ordering platform, while also creating a system for restaurant management.

Ele.me hires its own food delivery employees and coordinates them based on food-delivery locations. This way it can control the entire supply chain from online meal ordering to food delivery. Additionally, with the help of artificial intelligence technology developed by Baidu Waimai, Ele.me has been developing opportunities in the high-end market of the food delivery industry. Recently however, Alibaba had turned its attention to protecting its e-commerce platform *Taobao* against fast-growing newcomer *Pinduoduo*. Since food delivery is *Meituan*'s main business, and *Ele.me* is only one part of Alibaba's, they have different focuses and resources placed on them. Both the apps, however remain as transactional super apps, amalgamations of lifestyle services that connect hundreds of millions of customers to local businesses (Figure 5).

Figure 5. Age distribution of food delivery app users in China (FT, 2019)



4. METHODOLOGY

This research followed a qualitative approach, applying a case study method and a thematic analysis to discuss and relate the findings to the theories by Herzberg and Taylor. A total of 36 riders were interviewed – 22 from Meituan and 14 from e-lama, meituan being the popular choice amongst the largest users, i.e. College and University students and young working professionals. 28 college students were interviewed and 19 working professionals in the hospitality, banking and entertainment industry. The age range of the food delivery riders was 17-40 years, all of them being male and mainland Chinese by origin. Most of the riders selected

were from Anhui, Guangdong and Shandong provinces of China with a few also from Shanghai. The results were screened from a pool of rider interviews that complied with the following criteria: a) at least 2 years of experience with the company (i.e. either Meituan or Ele.me), b) worked part-time, and had other jobs on the side, and c) had scored above 4.2 out of 5 on the mobile-app rated by the customers. The average number of hours that the riders worked is between 5-10 hours in a given working day for 3-5 days every week. It was important to look at part-time riders for the two companies and see if they had anything else on the side as a source of income to have a better understanding of the Gig economy. Additionally, having at least 2 years of experience would give them enough rides, experiences, an understanding of their employer and company policies. The ‘rating of the rider’ factor was important to better understand the motivation of the drivers, and more specifically what organisational and operational factors affect them positively or otherwise. A thematic analysis is used to systematically analyse the data and to generate a discussion with that is relevant to both managers and practitioners.

Table 2. Rider Demographics

Company Name	Total Riders interviewed	Age-range	Origin province	Workplace province
Meituan	22	22-40	Anhui, Guangdong, Shandong, Shanghai	Jilin, Shandong, Shanghai, Sichuan
Ele.me	14	17-34	Anhui, Guangdong, Shanghai	Shandong, Jilin, Shanghai

5. FINDINGS AND DISCUSSION

Meituan secures a lot of daily orders. Before they started working, the riders thought Meituan's salary and benefits were much better than other competitors. Meituan is famous amongst both users and food delivery riders, they offer a lot more business than E-lama, e.g., book a hotel, order flight or rail or movie tickets.

Largely due to the fact that the company started big and remained diversified since the beginning as described earlier, the giggers for Meituan feel a lot safer in terms of their pay, career potential and job security. The possibility of growth and advancement are two strong motivation factors from Herzberg's theory (see Table 2). The multi-task functionality in the meituan app (see Figure 4) provides a holistic shopping experience for the users, leading to an increase in orders across a range of products and services, thereby creating more work for the gig workers.

Working for a diversified business could also suggest potential ‘*job rotation*’ and ‘*job revolvment*’ possibilities for ambitious employees, nonetheless the giggers do not commit full-time to any one job. The gig work also happens to be transient if the giggers do not get a positive rating for their work from the customers. So, it is not entirely about how much work/number of orders one could take on and complete since that could possibly be curtailed by the performance or more so, by the job performance reflected in ratings.

“Meituan merchants stationed in a comprehensive after-sales service and also improve the clarity in the wage system.”

“Meituan ensures a comprehensive presence of merchants (i.e., restaurants, food chain and e-tail food firms), perfect after-sales service, fair employee benefits. Both meituan and ele.me have kept recruitment barriers low and that helps because there are no similar jobs available with such flexibility...”

Given the fact that most of the gig workers interviewed for this research were not originally from the city or province where they are currently working, it was also clear that most of them didn't have to go through a range of technical or administrative hassle to register themselves with either meituan or Ele.me. Employee benefits being considered good with the recruitment barriers low, these are strong *motivation* factors that brings in and retains the gig workers in the job.

“The commission is a little bit higher. There are other benefits after I leave Ele.me...”

“...The professionalism of the meituan riders should earn a little more than other platforms.”

The sense of *worth* and *relevance* emerges from some of these responses above. Though the particulars of benefits were kept a bit abstract in most responses, it was clear that the job meant a lot more than the monetary rewards involved with it. Considering these gig workers have other income-generating jobs to do simultaneously, seeing a potential in this particular gig within the online food delivery service industry speaks of employee motivation and engagement. Given the exponential rise in demand and use of the services, the companies also reward the riders when the latter introduce and invite new employees (i.e., a form of *finder's fee*) to join the company.

5.1. Multi-Gig Possibility

The flexibility of choosing work hours is a big plus for labour engaged in the gig economy. At the same time however, 'time is money' would be a popular assumption for the very same reason that the choice of work hours dedicated for specific gigs should be able to earn an expected monetary return.

“In addition to working for Meituan, I also sell shoes and sportswear online on taobao, so neither of my job requires full-time engagement or commitment...”

The option of engaging with multifarious work opportunities, across industries and functional roles, requires a good 'division of work hours' suited for each role. The employee commitment remains an issue nonetheless. However, as long as the expected monetary returns meet the projected standard then the gig is considered a success. One observation in this case, is that such gig work has become a very common and accepted norm of work practice amongst the youth in mainland China who are not very highly educated or had never committed to full-time work. This gigger who sells shoes part-time shared that on popular e-tail platforms, that are both B2C, B2B, and also C2C, he requires a delicate balance of stock keeping and online business profile maintenance. For example, Taobao requires all sellers (shoes, in this case) to

update their pages with new stock and detailed information. Depending on how many orders are placed though, some sellers may not be able to afford more stock at a given point in time. Taobao would then close down a sellers' account if the stock is not updated at regular intervals. Therefore, although someone may be an e-seller, part-time, s/he may still need to execute business ideas, skills and actions that are equivalent to a full-time parallel.

"The main reason is that they can work freely in this way, and they can choose their own time to go to work and pick up orders."

"Time is not certain, sometimes can pull an all-nighter, sometimes more than ten hours straight."

Time is very much money in this particular sector, however, that may stretch human capital a bit too far at times. The quotes from Ele.me drivers show that the '*work more, get paid more*' principle applies strongly and frequently in their job. While some of the riders, more experienced ones, can choose how long (days or hours, every week) they would like to work, others may not do that frequently especially if they are newcomers in the company. The main attraction/motivation here however, is money, and their work approach strongly resembles what scientific management theory had proposed nearly a century ago.

5.2. Taylor's Scientific Management Theory – 'More Work, More Pay'

"Take more orders, serve customers well, obey the company's management along with their rules and regulations...They are going to keep doing it for a while."

The profile of the work being rather standardised by nature, a) customer placing their orders on the mobile-app, b) the order is placed with the restaurant, c) the order is confirmed by the restaurant, d) a delivery rider is selected and allocated for the order to the ordering customer, e) rider accepts and confirms the order before picking up the order at the restaurant, f) customer gets to track his/her order online until delivery, g) rider earns points upon completing an order, and feedback/rating request sent to the customer. With updated real-time online systems, both meituan and Ele.me follow the best possible or optimum route to complete each and every single order life cycle.

Standard processes in CPM and PERT are enhanced by Artificial Intelligence (AI) inclusion, particularly for Ele.me who recently invested in a new system. This also resonates with one of the key components from Taylor's scientific management theory - 'Finding the best possible way to do something'. However, in this case the workers (perceived as a 'commodity' in Taylor's theory) are not in a factory setting but, on the streets, and in fact heavily traffic congested ones in mainland Chinese cities. 'More work, more pay' and the 'piece rate system' of wages are component from Taylor's theory that are also visible in the online food delivery services within the large gig economy of China.

The high rate of new riders registering with these food delivery companies are growing exponentially, and hence there is tough competition coupled with 'carrot and stick' measures (as mentioned in this paper), are also due to the fact that there are no barriers to entry and exit

of these workers for such companies. This, however, comes with low background check and no training costs associated with incoming new *gig* riders.

“We can do more on certain days when the demand from the other gig is less...based on our own ability, can only do hard work. The harder you work, the more you earn.”

Quality vs quantity, however, still remains a key question besides the commitment and employee engagement issues. The motivation is money driven by high ratings and consistent performances from the riders working for Ele.me and Meituan. ‘more work, more pay’ is the principle that these giggers approach their work with. However, more recently, Ele.me announced that if the drivers cannot make it to the destination within a specified time, they will have to pay for 50% of the order value. These companies, setting and understanding the rule and motivation of the riders, are using both carrot and stick simultaneously. Most riders feel extremely pressurised due to this, while from the company’s perspective the focus is on delivering quality and setting penalties (such as mentioned above) would bar each driver to take on a greater number of orders within a specified time frame. Faster and newer job creation is another argument that the company is making very recently. It also allows the system to be fairer and less congested in regard to order allocation and reward numbers.

5.3. Herzberg’s Hygiene Factors

“Sometimes there are more orders at the peak period, and sometimes the order delivery is delayed by a few minutes... and the guests’ attitude is very bad and there will be insults...customers will also make a variety of strange requirements, also deliberately giving malicious comments at times”

“Customer's unreasonable request, for example this girl student on X college campus asked me to help her dump garbage... I believe saying No would be rude but I feel her request was also unusual”

One of the downsides of the job, for workers engaged with either Ele.me or Meituan, or even DiDi (Uber equivalent in China, if not better and safer) is that these employers place all the power in the hands of the customer who are directly engaging with the *gig* workers. ‘*Customer is the king*’, as goes the popular saying in Marketing Management, but that conviction existed at a different time. Today, the focus is how well companies can holistically integrate a wide range of stakeholders together.

This approach of placing all the power in the hands of customers to determine the fate of *gig* riders is hugely one-sided. Consequently, it creates a wide range of dissatisfaction (hygiene factors) amongst the giggers. It is the ‘Ratings’ that pretty much remains to be the only employee appraisal parameter. And despite dedicated and consistent work from the employees, there could be a large number of factors that could go against a customer commenting/rating anything positive for the delivery rider. Employees know as much as the customers that the ratings (and appraisal) is determined by the customers, and therefore the element of fairness that should ideally lie on both sides is compromised. As evident from the quotes above, the riders hurled with insults and their experience of other forms of customer misbehaviour along

with receiving inappropriate requests from the customers, are another testimony that the process compromises the fairness principle for the giggers.

“Meituan is not a good company to work for. Salaries do not rise and are generally low...there is also a lack of bonus...Riders have to pay out-of-pocket for their own uniforms...”

“Meituan has a weekly motivation reward for the rider, and if the rider successfully invites another new rider, there will be more rewards. But such a reward mechanism is not enough... it doesn't change our status of easily replaceable labour since the tasks are so standardised...”

The companies have to maintain a duty of care towards their employees, however the process of solely relying on ratings as a parameter of job performance and deciding on rewards is biased, inconsistent and not sustainable. Even more so, because neither of the two companies provide training or development opportunities for part-time workers. Meituan though, for some of their long-standing employees are offering job rotation options that could be used for career progression, increase in income, capacity building and experience across industries. This is possible, however, because Meituan is diversified by nature, as discussed earlier in the paper. Also, the riders shared that these ‘career development’ options are unlocked only for a few and not everybody, clearly *Guanxi* amongst other factors play a role in such referrals (Mukhopadhyay, 2019). This relates to the *hygiene* factor from Herzberg's Two Factor theory, certainly leading to distress and lack of security (in terms of psychological contract with the company) for the gig riders.

“Sometimes customers will ask for help to buy some things on the way to deliver food. We usually help for good reviews, but sometimes the delivery time will be longer than the target time and therefore affects the subsequent deliveries... these are not monitored by the company and there is no mechanism to report or provide our experience of work...”

“The company can provide insurance and subsidies, to cover some of our costs and also to help us develop a sense of belonging...”

No training and development opportunities on top of no contribution or allowance for bikes (and the supporting gear, that are strict requirements) or the employee work uniforms (that happens to be very decorated and colourful) are hygiene factors that the companies should take note of. To some extent, the fact that the potential employees, part-time albeit, are willing to invest their own resources to buy these products and their ride exhibits some level of dedication and sincere interest to work longer term with the companies. Some of the interviewees of this research mentioned the benefit of securing certain levels of insurance or subsidy with time, which would improve the situation even if only a little.

From the company's perspective however, as the total number of employees or customer subscriptions and daily orders grow, it all becomes a matter of numbers and maintaining a high turnover given the boom in this sector. Most responses from company staff and their announcements online show that their primary and the sole interest lies in the number of orders and how many restaurants that they can tie up with. Mention of employee management or consideration of them as key stakeholders are not visible anywhere from their PR (i.e. Public Relations) side of things. A number of factors on the hygiene side from Table 2 are visible in this section.

6. IMPLICATIONS AND CONCLUSION

The growing trend of ordering food from the comfort of home, or student hostels on college campuses, workplaces amongst others is here to stay. A vast majority of the student users interviewed are not allowed to cook on campus hostels where they stay, therefore the two options are either to eat out or to order in. Due to extreme winter temperatures in the *Dongbei* region of China (going down to minus 40 between November to February), ordering takeaway online is a convenient option for students, households, office workers and also others working in the gig economy, shopping malls and theatres. Most of the cities where the research was conducted are filled with innumerable colossal shopping malls (including one in Changchun, called 'Ouya', that claims to be the largest mall in the world), movie theatres and boutique stores where a big percentage of workers fall in the age range of 18-36. Due to their long working shifts and not very generous allowance for taking breaks in between, a vast majority of them would fill themselves by ordering takeaway during allocated lunch hours.

The application and suitability of theories by Taylor and Herzberg are both prominently visible in the two cases reviewed within the online food delivery sector of the gig economy in China. While both the organisations studied (Meituan and Ele.me) offer a range of motivation and hygiene factors, along with a 'piece rate' payment system – there is a host of factors however, particularly from the list of hygiene factors (i.e. leading to dissatisfaction at workplace), that the two food delivery giants should consider discontinuing.

While this emerging online food delivery sector is expected to continually expand across the mainland, there are bigger risks if the employers continue to perceive the gig workers/ food delivery riders to be of a transient and replaceable nature. A change of mindset is expected to evolve in this coming period, as this would transform the type and nature of motivational incentives provided for these workers. Especially after the COVID-19 phase when the importance of contingent/gig workers has been identified and understood with serious implications on economies, large or small, there needs to be a change of mindset towards managing these workers. Multi-gig is a profitable option and comes with an ability to spread the risk, for self-managed and organised giggers, however the latter cannot be considered as a 'commodity' as Taylor's theory had presumed (given the time and context of his research back in 1930s) about a century ago. With these organisations riding on new waves every year, and increasing power in the hands of customers, with reduced scope and job enrichment for the gig workers (particularly those working for food delivery or ride-hailing services)– there is a need for: increasing attention on quality and presence of leadership, an awareness and spread of a kindness culture and a more 'human'-faced HR management and rewards system - in the gig economy.

REFERENCES

- Abhinav, K., Dubey, A., Jain, S., Bhatia, G. K., McCartin, B., & Bhardwaj, N. (2018). Crowdassistant: A virtual buddy for crowd worker. *Proceedings of the 5th International Workshop on Crowd Sourcing in Software Engineering*. doi:[10.1145/3195863.3195865](https://doi.org/10.1145/3195863.3195865)
- Akgüç, M., Beblavý, M., Cirule, E., & Kilhoffer, Z. (2018). *Industrial Relations and Social Dialogue in the Age of Collaborative Economy*. IRSDACE.
- Aloisi, A. (2015). Commoditized workers: Case study research on labour law issues arising from a set of on-demand/gig economy platforms. *Comparative Labour Law & Policy Journal*.
- Aydin, A. H. (2013). *Administrative science* [Yönetim bilimi]. Seçkin Yayıncılık.
- Berger, T. (2018). *Uber Happy? Work and Well-being in the Gig Economy*. Working paper for the 68th Panel Meeting of Economic Policy.
- Bloomberg. (2019). *The World's Greatest Delivery Empire*. Bloomberg Businessweek.
- Boeri, T. (2018). *Social Protection for Independent Workers in the Digital Age*. Academic Press.
- Broughton, A., Gloster, R., Marvell, R., Green, M., Langley, J., & Martin, A. (2018). *The experiences of individuals in the gig economy*. Academic Press.
- Busch, C., Schulte-Nölke, H., Wiewiórowska-Domagalska, A., & Zoll, F. (2016). The Rise of the Platform Economy: A New Challenge for EU Consumer Law? *Journal of European Consumer and Market Law*, 5, 6.
- Chan, J. (2019). *China's Massive Gig Economy*. Asia Sentinel.
- Charter Management Institute. (2012). *Frederick Herzberg, The hygiene motivation theory*. Author.
- China Labour Bulletin (CLB). (2018). *Volkswagen workers in Changchun continue their fight for equal pay*. Author.
- CIPD (2017), *To gig or not to gig? Stories from the modern economy*. Academic Press.
- Consulting, D. (2019). *The Food delivery market in Greater China in 2019*. Author.
- De Groen, W. P., Kilhoffer, Z., Lenaerts, K., & Mandl, I. (2018). *Employment and working conditions of selected types of platform work*. Academic Press.
- De Stefano, V., & Aloisi, A. (2018). *European Legal framework for digital labour platforms* (9279941313). Academic Press.
- de Swart, J. (2018). *Delivering Food in the Gig Economy*. Academic Press.
- DeGennaro. (2019). *How Meituan Dianping Became the World's Most Innovative Company*. Academic Press.
- Deng, X. N., & Joshi, K. D. (2016). Why individuals participate in micro-task crowdsourcing work environment: Revealing crowdworkers' perceptions. *Journal of the Association for Information Systems*, 17(10), 648–673. doi:[10.17705/1jais.00441](https://doi.org/10.17705/1jais.00441)

Drucker, P. F. (1993). *Post-Capitalist Society*. Harper Collins Publishing.

Financial Times (FT). (2019). *China's Meituan Dianping beats estimates with 44% sales rise*. Author.

Forbes. (2019). *The Soon to be \$200B online Food Delivery is rapidly changing the Global Food industry*. Author.

Forde, C., Stuart, M., Joyce, S., Oliver, L., Valizade, D., Alberti, G., . . . Carson, C. (2017). The social protection of workers in the platform economy. *Directorate General For Internal Policies Policy Department A: Economic and Scientific Policy*.

Friedman, G. (2014). Workers without employers: Shadow corporations and the rise of the gig economy. *Review of Keynesian Economics*, 2(2), 171–188. doi:[10.4337/roke.2014.02.03](https://doi.org/10.4337/roke.2014.02.03)

Gibbs, M. (2017). *How is new technology changing job design?* IZA World of Labor. doi:[10.15185/izawol.344](https://doi.org/10.15185/izawol.344)

Graham, M., Hjorth, I., & Lehdonvirta, V. (2017). Digital labour and development: Impacts of global digital labour platforms and the gig economy on worker livelihoods. *Transfer: European Review of Labour and Research*, 23(2), 135–162. doi:[10.1177/1024258916687250](https://doi.org/10.1177/1024258916687250) PMID:[28781494](https://pubmed.ncbi.nlm.nih.gov/28781494/)

Gruman, J. A., & Saks, A. M. (2011). Performance management and employee engagement. *Human Resource Management Review*, 21(2), 14. doi:[10.1016/j.hrmr.2010.09.004](https://doi.org/10.1016/j.hrmr.2010.09.004)

Gruneberg, E. (1976). *Job Satisfaction - A Reader*. John Wiley & Sons.

Hall, J. V., & Krueger, A. B. (2018). An analysis of the labor market for Uber's driver-partners in the United States. *Industrial & Labor Relations Review*, 71(3), 705–732. doi:[10.1177/0019793917717222](https://doi.org/10.1177/0019793917717222)

Heeks, R. (2017). *Decent Work and the Digital Gig Economy: A Developing Country Perspective on Employment Impacts and Standards in Online Outsourcing, Crowdwork, etc.* Development Informatics. Working Paper 71, ESRC.

Herzberg, F. (1966). *Work and the nature of man*. World Publishing.

Herzberg, F., Mausner, B., & Snydermann, B. (1959). *The motivation to work*. Wiley.

Herzberg, F., Mausner, B., & Snydermann, B. (1959). *The motivation to work*. Wiley.

Ianole-Călin, R., Francioni, B., Masili, G., Druică, E., & Goschin, Z. (2020). A cross-cultural analysis of how individualism and collectivism impact collaborative consumption. *Resources, Conservation and Recycling*, 157, 104762.

INPS. (2018). *XVII Raporto Annuale*. INPS.

Jones, T. L. (2011). *Effects of motivating and hygiene factors on job satisfaction among school nurses* (PhD thesis). Walden University, Minneapolis, MN.

Kahn, W. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33, 692–724.

Kässi, O., Lehdonvirta, V., & Dalle, J.-M. (2019). *Workers' task choice heuristics as a source of emergent structure in digital microwork*. Academic Press.

Kenney, M., & Zysman, J. (2016). The rise of the platform economy. *Issues in Science and Technology*, 32(3), 61.

Kumar, V., Lahiri, A., Dogan, O.B., 2018. A strategic framework for a profitable business model in the sharing economy. *Ind. Mark. Manage.* 69, 147–160.

Liu, C. (2018). *Beijing online food providers revealed to be using fake credentials and restaurant fronts*. The Beijinger.

Locke, E. A. (1976). The Nature and Causes of Job Satisfaction. In M. I. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1294–1349). Rand McNally.

Marchington, M., Goodman, J., Wilkinson, A., & Ackers, P. (1992). *New developments in employee involvement*. Academic Press.

Meituan. (2020). Available at about.meituan.com/en

Moazami, Y. (2017). *UBER in the U.S. and Canada: Is the Gig- Economy Exploiting or Exploring Labor and Employment Laws by Going Beyond the Dichotomous Workers Classification?* University of Miami School of Law Institutional Repository.

Mukhopadhyay, B. (2019). Guanxi vs Talent Acquisition: Evaluating the Effects of Guanxi Referrals in Sino-Foreign Colleges. *Research Journal of Business and Management*, 6(4), 232–242. doi:[10.17261/Pressacademia.2019.1155](https://doi.org/10.17261/Pressacademia.2019.1155)

Mukhopadhyay, B., & Chatwin, C. (2020). ‘Your Driver is DiDi and Minutes away from Your Pick-up point’: Understanding Employee Motivation in the Gig Economy of China. *International Journal of Developing and Emerging Economies*, 8(1), 1–17.

Mukhopadhyay, B. R. (2020). COVID-19 and the Gig Economy: Hope Springs Eternal, *Cassandra Voices*, Dublin, 17th July

Mukhopadhyay, B.R. and Mukhopadhyay, B.K. (2020). ‘Here today, Gone tomorrow’: Culture and the Gig Economy”, *North East Colors*, Post-editorial, 4th August

OECD. (2019). Managing self-employment, new forms of work, and the platform economy. In *Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy*. OECD Publishing.

Pesole, A. (2018). *Platform Workers in Europe: Evidence from the COLLEEM Survey*. European Commission.

Pincus, J. D. (1986). *Communication satisfaction, job satisfaction, and job performance*. Human Communication. doi:[10.1111/j.1468-2958.1986.tb00084.x](https://doi.org/10.1111/j.1468-2958.1986.tb00084.x)

Prassl, J., & Risak, M. (2015). Uber, taskrabbit, and co.: Platforms as employers-rethinking the legal analysis of crowdwork. *Comp. Lab. L. & Pol’y J.*, 37, 619.

Robbins, P. S., Decenzo, A. D., & Coulter, M. (2013). *Fundamentals of Management* (8th ed.). Pearson Education Prentice Hall.

Russell, C. R. N. P., & Gelder, F. R. B. E. (2008). An international perspective: Job satisfaction among transplant nurses. *Progress in Transplantation (Aliso Viejo, Calif.)*, 18(1), 32–40. doi:[10.1177/152692480801800108](https://doi.org/10.1177/152692480801800108) PMID:[18429580](https://pubmed.ncbi.nlm.nih.gov/18429580/)

Ruthankoon, R., & Ogunlana, S. O. (2003). Testing Herzberg's two-factor theory in the Thai construction industry. *Engineering, Construction, and Architectural Management*, 10(5), 333–341. doi:[10.1108/09699980310502946](https://doi.org/10.1108/09699980310502946)

Salehi, N., Teevan, J., Iqbal, S., & Kamar, E. (2017). Communicating context to the crowd for complex writing tasks. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. doi:[10.1145/2998181.2998332](https://doi.org/10.1145/2998181.2998332)

Shi, K. (2019). *The 5 Most Popular Food Delivery Apps in China*. AllTechAsia.

Stanford, J. (2017). The resurgence of gig work: Historical and theoretical perspectives. *Economic and Labour Relations Review*, 28(3), 382–401. doi:[10.1177/1035304617724303](https://doi.org/10.1177/1035304617724303)

Stello, C. M. (2011). Herzberg's two-factor theory of job satisfaction: An integrative literature review. *Journal of Education and Human Development*, 1-32.

Wood, A. J., Graham, M., Lehdonvirta, V., & Hjorth, I. (2019a). Good gig, bad gig: Autonomy and algorithmic control in the global gig economy. *Work, Employment and Society*, 33(1), 56–75. doi:[10.1177/0950017018785616](https://doi.org/10.1177/0950017018785616) PMID:[30886460](https://pubmed.ncbi.nlm.nih.gov/30886460/)

Wood, A. J., Lehdonvirta, V., & Graham, M. (2018). Workers of the Internet unite? Online freelancer organisation among remote gig economy workers in six Asian and African countries. *New Technology, Work and Employment*, 33(2), 95–112. doi:[10.1111/ntwe.12112](https://doi.org/10.1111/ntwe.12112)

Dr. Boidurjo Rick Mukhopadhyay, DSc, graduated Summa Cum Laude with a BA (Hons) in Economics following which he received a MA from the Institute of Development Studies (UK) and a PhD from the University of Sussex (UK). Rick is an International Development and Management Economist working extensively with the Government Ministries, higher education industry, and think tanks across the UK, EU and China. He is currently researching, consulting and advising in the areas of Development and Environment Economics, Gig economy/ Collaborative Consumption, the Future of Work, Social Innovation and Entrepreneurship. Rick currently sits on editorial and reviewer boards of over a dozen top international peer-reviewed journals and also serves as non-executive director for various non-profits and charities. Besides publishing his research and speaking internationally, Rick also has experience in leadership development workshops, leading international summers schools (on Innovation Management, Entrepreneurship, Development Economics), quality assurance visits, accreditations (EQUIS, AMBA), blended-learning (with Pearson), and motivational training.

Professor Chris Chatwin holds the Chair of Engineering, University of Sussex, UK; where, *inter alia*, he is Research Director of the "IIMS Research Centre." and the Laser and Photonics Systems Engineering Group. At Sussex has been a member of the University: Senate, Council and Court. He has published two research monographs: one on numerical methods, the other on hybrid optical/digital computing - and more than seven hundred international papers. Professor Chatwin is on the editorial board of the International Journal "Lasers in Engineering". He is also a member of: The Institution of Electrical and Electronic Engineers; IEEE Computer Society; the British Computer Society; the Association of Industrial Laser Users, European Optical Society. He is a Chartered Engineer, Euro-Engineer, International Professional Engineer, Chartered Physicist, Chartered Scientist and a Fellow of: The Institution of Electrical Engineers, The Institution of Mechanical Engineers, The Institute of Physics and The Royal Society for Arts, Manufacture and Commerce.

This article can be cited as:

Mukhopadhyay, B.R. and Chatwin, C. R. (2020). "The Significance of Herzberg and Taylor for the Gig Economy of China: Gigger Incentives for Meituan and Ele.me Food Delivery Riders", *International Journal of Applied Behavioural Economics*, 9 (4), 1-17

DOI: 10.4018/IJABE.2020100101