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# The Antecedents of Courier Continuance Participation Intention: A Dyadic Analysis of Courier–Customer Interactions in Crowdsourcing Delivery

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**Abstract:** Crowdsourcing delivery has emerged as an innovative solution for last-mile delivery in the sharing economy era. However, enhancing courier continuance participation intention is an increasing challenge for crowdsourcing delivery platforms due to the independence of crowdsourced couriers. Given that couriers and customers are subject to interdependencies and may influence each other in delivery service systems, this paper utilizes a dyadic analysis to examine how courier–customer interactions may influence the continuance participation intention of couriers. Specifically, we investigate the influence mechanism of customer satisfaction and courier job satisfaction, as well as the mediating role of courier pay satisfaction, drawing upon the balance theory and distributive justice theory. The empirical results of 261 courier–customer dyads indicate that the customer side impacts the courier side in both direct and indirect ways. There is a direct satisfaction transmission in courier–customer delivery service interactions. Meanwhile, satisfied customers indirectly enhance courier job satisfaction via the mediator of courier pay satisfaction, which in turn strengthens courier continuance participation intention. Our study offers novel insights for administrators on the influence of courier–customer interactions and pay satisfaction on courier continuance participation intention, contributing to decreasing couriers’ turnover in the fluid crowdsourcing labor market.

**Keywords:** dyadic analysis; crowdsourcing delivery; courier–customer interaction; continuance participation intention; job satisfaction



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## 1. Introduction

Crowdsourcing delivery, as a typical form of crowdsourcing, has boomed in the sharing economy era. Drawing from the concept of crowdsourcing as first introduced by Howe [1], crowdsourcing delivery refers to a crowd undertaking instant delivery tasks through internet-based platforms, which has become a cost-efficient solution for last-mile delivery [2]. In recent years, several crowdsourcing delivery platforms have emerged and developed rapidly, such as Postmates, Uber Eats, and Dada. For example, Dada, a leading crowdsourcing delivery platform in China, has fulfilled more than 1.9 billion orders, with a growth rate of 47.4% in 2022 [3]. Such a huge volume of delivery orders attracts numerous crowdsourced couriers to engage in the growing crowdsourcing delivery market. So far, the number of active crowdsourced couriers on the Dada platform alone has reached one million [3]. Furthermore, by the end of 2021, the number of people in flexible employment reached 200 million [4]. Due to advantages in flexibility and cost reduction, crowdsourced workers, including couriers, drivers, and solvers, have become prevalent across various industries as an emerging and important form of employment [5].

However, independent couriers’ high turnover rate is a severe problem that crowdsourcing delivery platforms have to address. It is estimated that approximately 20% of crowdsourced couriers will leave the following month on a voluntary basis [6]. The causes of the high turnover of crowdsourced workers lie in the unique nature of crowdsourcing

jobs. Unlike traditional delivery employees in logistics firms, crowdsourced couriers as independent contractors can determine their own work schedules and not be bound by any platforms [7,8]. They are more likely to switch to other competing platforms or quit this job if they receive lower delivery pay, perceive unpleasant work experiences, or for many other reasons. This flexible employment of crowdsourced couriers may lead to uncertainties in service capacity supplies, which undermines the operational performance and continuous growth of crowdsourcing delivery platforms in the long run [9]. Additionally, compared to attracting new crowdsourced couriers, increasing the continuance participation intention of existing couriers typically means lower recruitment and training costs, high efficiency, as well as better service quality for platforms [10]. Therefore, ensuring crowdsourced couriers' continuance participation intention is essential to these platforms. It is necessary to explore the formation of crowdsourced couriers' continuance participation intention, thereby helping platforms retain more crowdsourced couriers for timely deliveries in response to fierce market competition.

In delivery service interactions, crowdsourced couriers and customers are highly interactive and mutually affect each other [11]. Typically, the fulfillment of delivery orders requires a series of intensive interactions between couriers and customers. Couriers deliver goods to customers' locations, which might be a home, office, or elsewhere, according to the order information revealed by the crowdsourcing delivery platform. Then, customers receive the goods and give ratings on delivery services after face-to-face interactions with couriers. Based on the balance theory established by Heider [12], the customer and the corresponding courier might hold a similar attitude on delivery service interactions, thereby correlating their satisfaction. A pleasant interaction promoted by customers and couriers will lead to both parties' high satisfaction [13,14]. Notably, satisfied customers might be willing to reward couriers' high-quality service performance through the platform's tipping mechanism [9]. Nowadays, many platforms have adopted tipping or rewarding functions as supplementary incentives in response to the fact that increasing couriers' pay is not always a realistic solution for platforms under operational cost constraints [9]. As per the distributive justice theory, delivery commissions provided by the platform and contingent rewards obtained from customers (e.g., service tips) are two parts of couriers' pay, which are highly related to their pay satisfaction and job satisfaction. Compared with formal employees, independent crowdsourced couriers are more sensitive to pay, and their participation is heavily dominated by earnings [15]. As a result, it is crucial to investigate the mutual influence mechanism between customer satisfaction and courier satisfaction and the important role of pay satisfaction.

Crowdsourcing delivery has drawn widespread attention from both academia and the industry, owing to its significant commercial and social value [16]. Previous studies on crowdsourced workers have focused more on their motivation [17], participation [18], engagement [19], trust [20], and job characteristics [21] but rarely on service interactions with customers. Service creation relies not merely on service providers, since customers substantially contribute to achieving the intended value of service [22]. This is also true for crowdsourcing delivery, in which couriers and customers are subjected to intense interactions and complete service co-creation. Due to the interdependence of service providers and customers, a few studies have employed a dyadic analysis, which allows for data interdependence to examine employee–customer relationships in various customer-contact contexts. For example, Christ-Brendemühl and Schaarschmidt found that frontline service employee (FLE) technostress reduces customer satisfaction and delight using dyadic data from FLEs and customers [23]. Amenuvor et al. investigated how adaptive selling behavior affects salesperson consequences, customer consequences, and mutual consequences in the Korean cosmetic industry based on a dyadic analysis [24]. Wang and Hall revealed the substantial impact of employee engagement on customer engagement through the mediating constructs of customer evaluations towards employees and the firm from a dyadic perspective [25]. To the best of our knowledge, our study is the one of the first attempts, from a dyadic perspective, to explore courier–customer interactions in the crowdsourcing

delivery context, focusing on the potential impacts from the customer's side on courier continuance participation intention.

Previous studies revealed that employee satisfaction and customer satisfaction are associated [26,27]. However, there is no unanimity in the causal relationship between employee satisfaction and customer satisfaction. Multiple studies have verified that employee satisfaction exerts an influence on customer satisfaction in different ways. For example, Homburg, based on the balance theory, revealed a significant link between salesperson job satisfaction and customer satisfaction moderated by individuals' characteristics [28]. Wangenheim et al. provided another explanation, wherein employee job satisfaction has an impact on customer satisfaction via employees' display of emotions, in line with the emotion contagion theory [29]. The findings of Prentice's study in the high-contact service industry are also consistent with these results [30]. However, only a few studies reverse the common logic to investigate the impact of customer satisfaction on employee attributes. Frey et al. empirically investigated the fact that customer satisfaction is transmitted to employee satisfaction through employee perceived appreciation from customers [31]. Nevertheless, uncivil encounters with customers trigger a negative affective response, which damages employees' occupational well-being and increases their intention to quit [32]. In this study, we build on the above literature and explore the impact of customer satisfaction on courier job satisfaction when service interactions occur in completing delivery tasks from the novel perspective of a courier–customer dyadic analysis.

This paper aims to illuminate how courier–customer interactions affect courier continuance participation intention using a dyadic analysis with matched data from the Dada platform in China. Applying the balance theory, we propose that courier job satisfaction is positively affected by customer satisfaction. Furthermore, pay satisfaction is introduced as a mediator in the courier–customer satisfaction link, drawing upon the distributive justice theory. Thus, we examine the mutual influence mechanism of courier satisfaction and customer satisfaction and its subsequent influence on courier continuance participation intention. Therefore, this study is expected to make theoretical contributions in the following three ways. First, we focus on crowdsourced courier continuance participation intention, which enriches studies on employee turnover or retention even in the flexible employment market of crowdsourcing delivery. Second, using the balance theory and distributive justice theory, it explores the inherent influence mechanism of the impact that customer satisfaction has on courier job satisfaction, in which courier pay satisfaction plays a mediating role, thereby influencing courier continuance participation intention. Third, due to the interdependence of customers and couriers in delivery service interactions, we employ a dyadic data analysis, which remedies the extant literature that has mainly focused on the vantage of customers or employees by integrating their perspectives simultaneously [33].

The remainder of this paper is arranged as follows. Section 2 reviews the existing literature and derives the research hypotheses to be tested. The methodology part includes data collection and measurements in Section 3. In Section 4, we perform a dyadic data analysis using a measurement model test, a structure model test, and a mediating effect test. Then, we discuss the major findings, theoretical and practical contributions, limitations, as well as future directions in Section 5. Finally, Section 6 concludes this paper.

## 2. Theoretical Background and Hypothesis Development

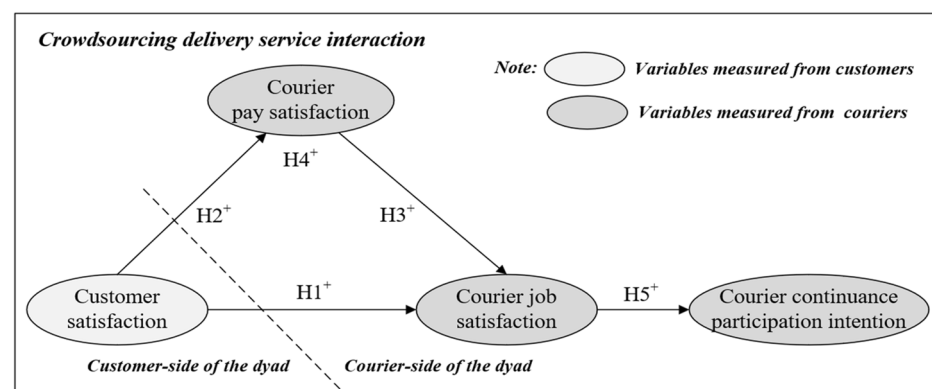
Drawing upon the balance theory and distributive justice theory, we establish a dyadic theoretical model to explore the formation of courier continuance participation intention in crowdsourcing delivery. From a review of existing empirical studies, we first propose a direct relationship between customer satisfaction and courier job satisfaction. Then, an indirect mechanism of the customer–courier satisfaction link is developed, in which courier pay satisfaction plays a mediating role. Lastly, we examine the impact of courier job satisfaction on continuance participation intention.

### 2.1. Customer Satisfaction and Courier Job Satisfaction

A direct relationship between customer satisfaction and courier job satisfaction is proposed by drawing upon Heider's balance theory [12]. Customer satisfaction represents a positive attitude of customers towards employees' service provisions compared to their anticipation [34]. Job satisfaction refers to a positive emotional state arising from the employee's perception of a job or job experience [35,36]. Judge et al. described many dimensions of job satisfaction, such as pay, promotions, supervision, coworkers, the work itself, and more [37]. As a form of non-traditional jobs, crowdsourced courier job satisfaction excludes dimensions like promotions, supervision, and coworkers, which implies a more significant impact of dimensions like pay and work experiences in the formation of their job satisfaction. According to the balance theory, if a system is to maintain a balanced state, persons in this system, whether employees or customers, tend to assimilate their attitudes towards an object [28]. This is also applicable to the crowdsourcing delivery system, in which couriers and customers interact with each other; thus, their satisfaction is mutually influenced to a balanced state. Most of the literature has extensively verified that employee satisfaction affects customer satisfaction [26,29,38]. In other words, employees with high satisfaction will be more involved in their jobs and will elicit customer satisfaction [26].

However, more research is required to explore whether customer satisfaction influences employee satisfaction, which reverses the common logic. Such questions have been proposed by Brawley and Pury [39], as well as Kim and Byon [40], but are not yet well addressed. Frey et al. argued that customer satisfaction enhances employee project satisfaction through employee perceived appreciation from customers [31]. Zhang et al. found that a successful interaction between riders and customers will allow satisfied customers to give positive comments to riders, which leads to rider job satisfaction [13]. In practice, customers could express their perceptions and satisfaction about the service they received in several ways, such as online ratings, online reviews, and online tipping [41], while customer incivility, for example, frustration and insulting manners, significantly reduces employee job satisfaction [42]. Therefore, owing to the intense interactions between crowdsourced couriers and customers, customer satisfaction and relevant behaviors will inevitably affect employee satisfaction and work-related outcomes. Our dyadic theoretical model is presented in Figure 1. Based on the balance theory and prior empirical evidence, we propose the following hypothesis:

**H1.** Customer satisfaction will have a significant positive influence on courier job satisfaction.



**Figure 1.** Dyadic theoretical model and research hypotheses.

### 2.2. Mediating Role of Courier Pay Satisfaction

Apart from the direct effect of customer satisfaction on courier job satisfaction, an indirect effect through the mediating construct of pay satisfaction is hypothesized, drawing upon the distributive justice theory [43,44]. Pay satisfaction refers to an employee's satisfaction with the current base pay [45], which is strongly related to numerous work-related

outcomes of employees like engagement [46], job satisfaction [47], and turnover intention [48]. Derived from Adams's equity theory and Blau's social exchange theory [43,44], the distributive justice theory posits that employee pay satisfaction leans on whether they have been fairly rewarded in the social exchange by comparing outputs (e.g., pay) to inputs (e.g., experience, work effort, and performance) [45,49]. The pay satisfaction of crowdsourced couriers with the simple compensation system is quite different from employees' overall pay satisfaction, which contains four factors: the pay level, benefits, pay raises, and pay structure [50,51].

However, a limited amount of research is related to courier pay satisfaction in emerging crowdsourcing contexts. Crowdsourced couriers are compensated accordingly for the time and effort they devote to crowdsourcing delivery services on a voluntary basis [52]. Typically, delivery commissions for order fulfillment and contingent rewards (e.g., customer tips) for good service are two components of crowdsourced couriers' pay without basic salaries. Pay is a salient benefit factor that determines the job satisfaction and continuance participation of crowdsourced workers [13,53]. Specifically, the amounts of crowdsourced workers' pay are positively related to their pay satisfaction. When crowdsourced workers' pay satisfaction is high, they are more likely to be satisfied with their current jobs and have less intention to exit platforms. On the contrary, unfair pay is one of the top five worst behaviors of requesters leading to the lowest average job satisfaction of workers on Amazon's Mechanical Turk platform, a famous crowdsourcing platform [39]. Notably, satisfied customers would give extra tips to reward the excellent service of couriers, which enhances courier pay satisfaction and job satisfaction [9,54]. Given the above empirical evidence, we propose the mediating role of pay satisfaction in the courier–customer satisfaction link in the crowdsourcing delivery context.

**H2.** *Customer satisfaction will have a significant positive influence on courier pay satisfaction.*

**H3.** *Courier pay satisfaction will have a significant positive influence on courier job satisfaction.*

**H4.** *Courier pay satisfaction will partially mediate the relationship between customer satisfaction and courier job satisfaction.*

### *2.3. Courier Job Satisfaction and Continuance Participation Intention*

In our study, continuance participation intention refers to the willingness of couriers to continue participating in delivery tasks on a certain crowdsourcing platform [21,55]. Since crowdsourcing delivery relies solely on the voluntary participation of crowdsourced couriers, it is vital for crowdsourcing delivery platforms to explore how to retain fluid crowdsourced couriers in the highly competitive crowdsourcing labor market. Multiple studies have identified diverse factors that significantly affect courier continuance participation in crowdsourcing delivery tasks, such as platform incentives [56], justice perception [21], order and information strategies [57], as well as job satisfaction [58]. All of the studies mentioned are concerned with job designs and personal factors in determining crowdsourced worker turnover or continuance participation, while neglecting the role played by external factors. The impact of customers is also particularly relevant for delivery service jobs that require a lot of external interactions.

Job satisfaction has been considered a crucial predictor of employee retention or turnover behaviors in prior studies. For instance, Prockl et al. examined how truck drivers' satisfaction with jobs and employers significantly influences their retention proneness [59]. Almufarreh and Arshad found that online learner continuance behavior relies on three factors: perceived career success, perceived training opportunities, and satisfaction with MOOC platforms [60]. In the same vein, crowdsourced workers with high job satisfaction will continuously participate in a preferred crowdsourcing platform [18]. While these studies are the basis of this study [59,61], we cannot simply apply these results, because crowdsourced workers (e.g., crowdsourced couriers) have unique characteristics that are

rather different from such employees. In particular, crowdsourced couriers can freely enter and exit, as well as decide when, where, and how they work on a voluntary basis. Hence, compared with formal employees, courier continuance participation intention is more sensitive to job satisfaction [21]. Given the distinguished features of emerging crowdsourcing jobs, this study explores the link between courier job satisfaction and continuance participation intention and hypothesizes the following:

**H5.** *Courier job satisfaction will have a significant positive influence on courier continuance participation intention.*

### 3. Methodology

#### 3.1. Participants and Procedure

In this study, a dyadic field survey was conducted in the cities of Shanghai and Xi'an, which are representative cities of China and possess a vast and prosperous market of crowdsourcing delivery. The target population is the current crowdsourced couriers and customers of the Dada platform. The Dada platform (NASDAQ: DADA) is a leading crowdsourcing delivery platform in China, which was founded in 2014 and covered 2600 cities in 2022. The Dada platform operates a crowdsourcing delivery platform (i.e., Dada Now) and an on-demand retail platform (i.e., JD Daojia). Its crowdsourcing delivery service not only brings great convenience to customers' daily lives but also creates numerous flexible jobs for couriers. Customers and couriers interact and influence each other offline in delivery service interactions. The interdependent nature of courier–customer dyads is theoretically more applicable to a dyadic analysis. Furthermore, given that this study focuses on the potential impact of the customer side on the continuance participation of crowdsourced couriers, the unit of analysis is the courier–customer dyads (paired customer–courier responses), not individual-level data either from the courier side or the customer side, separately.

Firstly, we designed individual-level questionnaires for customers and couriers, respectively, referring to validated scales from the previous literature. The survey questionnaire for participants was generated through a popular Chinese survey website, namely, WJX.com. Then, we randomly selected couriers to participate in our survey by filling out research questionnaires when they completed their delivery tasks. The customers who had encountered and interacted with the sampled couriers were also invited to participate. Once the paired surveys were completed, the courier and the corresponding customer responses were immediately matched as one-to-one dyads using a unique delivery order number. We ensured the anonymity and voluntary participation of the sampled couriers and customers to attain authentic responses. Each customer respondent received a reward of CNY 5, and each courier respondent received a reward of CNY 6.66 or 8.88 (in peak time). In addition, two waves of dyadic data collection lasted three months and were separated to reduce the potential impact of a common method bias, as recommended by Podsakoff et al. [62].

A total of 261 courier–customer matched responses (i.e., 522 individual respondents) were deemed valid to estimate the hypothesized model after removing unmatched and incomplete responses with a large number of missing values, with 193 responses from Shanghai and 68 responses from Xi'an. A courier's or customer's refusal to participate or their incomplete responses did not make for a valid dyadic sample. Table 1 shows the demographics of the sampled couriers and customers. Among the customer respondents, 56.3% were female, and 70.1% were younger than 30 years old. In terms of customers' usage frequency, 82.4% of customers access the delivery service on the Dada platform 1–2 times per month. Among the courier respondents, 97.7% were predominantly male, and 67.8% were under the age of 40. Notably, 78.9% of couriers have participated in the Dada platform for less than two years, which indicates the high flexibility and turnover of crowdsourced couriers. The demographic information of sampled customers and couriers was consistent with the reality in China.

**Table 1.** Respondent demographics.

| Customer Description        | No. | Percent | Courier Description         | No. | Percent |
|-----------------------------|-----|---------|-----------------------------|-----|---------|
| Gender                      |     |         | Gender                      |     |         |
| Male                        | 114 | 43.7    | Male                        | 255 | 97.7    |
| Female                      | 147 | 56.3    | Female                      | 6   | 2.3     |
| Age (year)                  |     |         | Age (year)                  |     |         |
| 21 or below                 | 96  | 36.8    | 21 or below                 | 2   | 0.8     |
| 22–25                       | 36  | 13.8    | 22–25                       | 24  | 9.2     |
| 26–30                       | 51  | 19.5    | 26–30                       | 73  | 28.0    |
| 31 or above                 | 78  | 29.9    | 31–40                       | 78  | 29.9    |
|                             |     |         | 41 or above                 | 84  | 32.2    |
| Education                   |     |         | Education                   |     |         |
| Junior high school or below | 9   | 3.4     | Junior high school or below | 117 | 44.8    |
| Senior high school          | 186 | 71.3    | Senior high school          | 138 | 52.9    |
| Bachelor’s degree or above  | 66  | 25.3    | Bachelor degree or above    | 6   | 2.3     |
| Usage frequency (per month) |     |         | Participation time (year)   |     |         |
| 1–2                         | 215 | 82.4    | 1 or less                   | 88  | 33.7    |
| 3–4                         | 35  | 13.4    | 1–2                         | 118 | 45.2    |
| 5 or more                   | 11  | 4.2     | 3 or more                   | 55  | 21.1    |
| City                        |     |         | City                        |     |         |
| Shanghai                    | 193 | 73.9    | Shanghai                    | 193 | 73.9    |
| Xi’an                       | 68  | 26.1    | Xi’an                       | 68  | 26.1    |

Note: N = 261 customer–courier dyads (522 individuals).

### 3.2. Measurement

Unlike prior studies using single-source data, we collected matched data from both crowdsourcing couriers and their customers. We measured the construct of customer satisfaction from the customer respondents, as well as the construct of pay satisfaction, job satisfaction, and continuance participation intention from the courier respondents. We preliminarily confirmed that the scales of all constructs were reliable through a pre-test and a small-scale test. All items were assessed on a five-point Likert scale, anchored at “1 = strongly disagree” and “5 = strongly agree”. In terms of customer constructs, customer satisfaction was measured by four items from Wangenheim et al. [29] and Uzir et al. [34] (Cronbach’s  $\alpha = 0.896$ ). Regarding the courier constructs, we used two items from Tekleab et al. [63] and Heneman and Schwab [50] to measure courier pay satisfaction (Cronbach’s  $\alpha = 0.738$ ). The scale for courier job satisfaction with four items was adapted from DeConinck and Stilwell [64], as well as Singh and Loncar [65] (Cronbach’s  $\alpha = 0.897$ ). A three-item scale from Wu and Gong [66] was used to assess courier continuance participation intention (Cronbach’s  $\alpha = 0.839$ ). Other constructs’ details are presented in Table 2.

**Table 2.** Summary of items.

| Construct                  | Item | Description  | Reference  |
|----------------------------|------|--|--|
| Customer satisfaction (CS) | CS1  | I am satisfied with the crowdsourced courier’s service.                            | Wangenheim et al., 2007 [29]; Uzir et al., 2021 [34] |
|                            | CS2  | The crowdsourcing delivery service meets my expectations.                          |  |
|                            | CS3  | I am satisfied with using this crowdsourcing delivery service.                     |  |
|                            | CS4  | The experience with the crowdsourced courier is pleased in crowdsourcing delivery. |  |

Table 2. Cont.

| Construct   | Item | Description   | Reference  |
|---|------|---|--|
| Courier pay satisfaction (CPS)                    | CPS1 | I am satisfied with the current crowdsourcing delivery commissions from platforms.                | Heneman and Schwab, 1985 [50]; Tekleab et al., 2005 [63]       |
|   | CPS2 | I am satisfied with the current crowdsourcing delivery tips from customers.                       |  |
| Courier job satisfaction (CJS)                    | CJS1 | In general, I am satisfied with my current job.   | DeConinck and Stilwell, 2004 [64]; Singh and Loncar, 2010 [65] |
|   | CJS2 | I am satisfied with the crowdsourcing delivery job itself.  |  |
|   | CJS3 | I am satisfied with the relationship with customers.  |  |
|   | CJS4 | I am satisfied with the crowdsourcing delivery income I receive.                                  |  |
| Courier continuance participation intention (CPI) | CPI1 | I intend to continue being a crowdsourced courier.  | Wu and Gong, 2021 [66]   |
|   | CPI2 | I intend to continue participating in the tasks on the Dada platform.                             |  |
|   | CPI3 | I intend to continue participating in the tasks on the Dada platform rather than other platforms. |  |

3.3. Common Method Bias

Although dyadic data collected from two groups of participants (i.e., customers and couriers) alleviates the influence of a common method bias [67], we still performed several statistical analyses to test it. The correlation matrix in Table 3 does not include any highly correlated variables that may raise the concern for a common method bias. The highest correlation of 0.700 was much smaller than the threshold of 0.9, thus suggesting minimal concern for a common method bias [68]. Meanwhile, we performed Harman’s single factor test, which reveals that the first component accounts for 27.809% (less than 50%) of the total variance explained in Table 4 [69]. Therefore, we ensured that a common method bias was not a critical concern in this study.

Table 3. Descriptive statistics, correlations, and validity analysis.

|   | M     | SD    | 1            | 2            | 3            | 4            | CA    | AVE   | CR    |
|---|-------|-------|--------------|--------------|--------------|--------------|-------|-------|-------|
| Customer satisfaction                       | 4.299 | 0.677 | <i>0.860</i> |              |              |              | 0.896 | 0.740 | 0.919 |
| Courier pay satisfaction                    | 3.653 | 0.968 | 0.280 **     | <i>0.800</i> |              |              | 0.738 | 0.640 | 0.777 |
| Courier job satisfaction                    | 4.074 | 0.758 | 0.327 **     | 0.544 **     | <i>0.803</i> |              | 0.897 | 0.645 | 0.879 |
| Courier continuance participation intention | 3.916 | 0.835 | 0.254 **     | 0.441 **     | 0.700 **     | <i>0.751</i> | 0.839 | 0.564 | 0.793 |

Note: \*\*  $p < 0.01$ ; CA = Cronbach’s  $\alpha$ ; AVE = average variance extracted (AVE); CR = composite reliability; the square root of AVE is on the diagonal in italics.

Table 4. Cross-loading results.

|      | 1     | 2            | 3     | 4            |
|------|-------|--------------|-------|--------------|
| CS1  | 0.115 | <i>0.889</i> | 0.131 | 0.040        |
| CS2  | 0.171 | <i>0.801</i> | 0.033 | −0.046       |
| CS3  | 0.055 | <i>0.903</i> | 0.083 | 0.183        |
| CS4  | 0.130 | <i>0.845</i> | 0.040 | 0.127        |
| CPS1 | 0.562 | 0.121        | 0.086 | <i>0.670</i> |
| CPS2 | 0.136 | 0.123        | 0.174 | <i>0.912</i> |



Table 4. Cont.

|               | 1            | 2      | 3            | 4      |
|---------------|--------------|--------|--------------|--------|
| CJS1          | <i>0.743</i> | 0.248  | 0.275        | 0.232  |
| CJS2          | <i>0.824</i> | 0.078  | 0.206        | 0.069  |
| CJS3          | <i>0.831</i> | 0.185  | 0.199        | 0.111  |
| CJS4          | <i>0.811</i> | 0.092  | 0.268        | 0.197  |
| CPI1          | 0.518        | 0.037  | <i>0.734</i> | 0.071  |
| CPI2          | 0.575        | 0.105  | <i>0.667</i> | 0.060  |
| CPI3          | 0.199        | 0.137  | <i>0.841</i> | 0.190  |
| % of variance | 27.809       | 24.100 | 15.266       | 11.452 |
| Cumulative %  | 27.809       | 51.910 | 67.176       | 78.629 |

Note: CS = customer satisfaction, CPS = courier pay satisfaction, CJS = courier job satisfaction, CPI = courier continuance participation intention. Factor loadings are in italics.

#### 4. Data Analysis and Results

We employed structure equation modelling (SEM) for a dyadic data analysis using SPSS version 25 and AMOS version 24. SEM was chosen over other methods (e.g., linear regression), as it can simultaneously analyze all hypothesized paths with latent variables [70]. Following the two-step procedure [71], we estimated the structure model after confirming the measurement model with sufficient validity. In what follows, we show the results of the measurement model test, structure model test, and mediating effect test. Descriptive statistics contain means (M), standard deviations (SD), and correlations among all constructs, as shown in Table 3.

##### 4.1. Measurement Model Testing

Although the measures used in this study were validated in previous studies, we conducted convergent validity and discriminant validity tests for all constructs, given that the original statements were slightly modified and fully translated into Chinese to accommodate the research context [72]. Convergent validity was established by assessing the indicators of Cronbach's  $\alpha$  (CA), composite reliability (CR), the average extracted variance (AVE), and the results of a factor analysis. Table 3 demonstrates that the values of CA and CR are all above 0.7, and the values of AVE are higher than 0.5 [73,74]. Furthermore, all factor loadings are greater than 0.5 [71]. Discriminant validity was tested by comparing the AVE with relevant correlations and analyzing factor loadings. For all constructs in this study, the square root of AVE was larger than the correlation between this construct and any other construct [73]. In Table 4, we observe that all items loaded more strongly on their respective constructs than other constructs, as expected. Furthermore, the values of variance inflation factors (VIFs) are under the cut-off value of 3, which alleviates the concern of multicollinearity [16]. Thus, we conclude that all constructs had sufficient convergent and discriminant validity.

##### 4.2. Structure Model Testing

This study used multiple indices to determine the model fit of the structure model comprehensively: CMIN/DF (132.305/61) = 2.169, SRMR = 0.042, RMSEA = 0.067, CFI = 0.967, GFI = 0.928, and NFI = 0.942. All fit indices in Table 5 were deemed well within the criteria, indicating the good fitness of the structure model [75,76]. In Table 6, customer satisfaction had a significantly direct effect on courier job satisfaction ( $\beta = 0.162, p < 0.05$ ), thus supporting H1. H2 was supported by the significant relationship between customer satisfaction and courier pay satisfaction ( $\beta = 0.288, p < 0.05$ ). Courier pay satisfaction was positively associated with courier job satisfaction ( $\beta = 0.625, p < 0.05$ ), which supports H3. Courier job satisfaction significantly influenced courier continuance participation intention, as proposed in H5 ( $\beta = 0.797, p < 0.05$ ). In conclusion, the empirical results support the four proposed hypotheses shown in Table 6 and more visually presented in Figure 2.

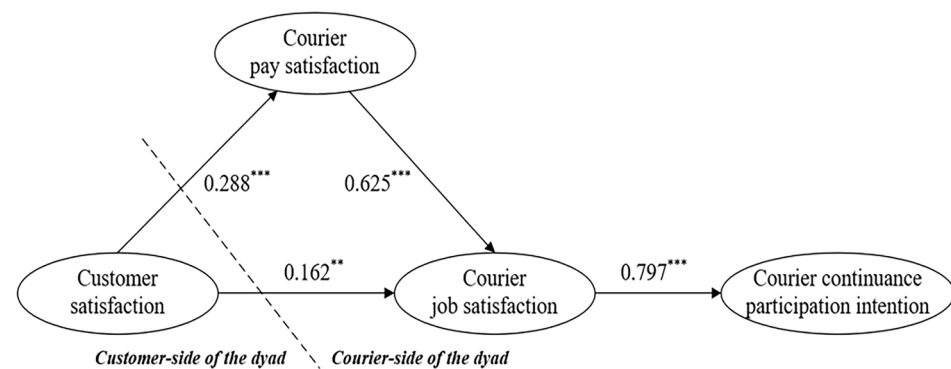
**Table 5.** Fit indices of the structure model.

|                       | CMIN/DF | SRMR  | RMSEA | CFI   | GFI   | NFI   |
|-----------------------|---------|-------|-------|-------|-------|-------|
| Structure model value | 2.169   | 0.042 | 0.067 | 0.967 | 0.928 | 0.942 |
| Reference value       | <3      | <0.08 | <0.08 | >0.9  | >0.9  | >0.9  |

**Table 6.** Hypothesis testing results.

| Path  | $\beta$ | S.E.  | <i>t</i> | <i>p</i> | Support? |
|---|---------|-------|----------|----------|----------|
| <b>H1:</b> Customer satisfaction → Courier job satisfaction                       | 0.162   | 0.064 | 2.680    | **       | Yes      |
| <b>H2:</b> Customer satisfaction → Courier pay satisfaction                       | 0.288   | 0.088 | 4.435    | ***      | Yes      |
| <b>H3:</b> Courier pay satisfaction → Courier job satisfaction                    | 0.625   | 0.068 | 7.137    | ***      | Yes      |
| <b>H5:</b> Courier job satisfaction → Courier continuance participation intention | 0.797   | 0.063 | 13.441   | ***      | Yes      |

Note:  $\beta$  = Standardized coefficient; \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .



**Figure 2.** Hypothesized model and its path estimates. Note: \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**4.3. Mediating Effect Testing**

We carried out the bootstrapping procedure with 5000 resamples to examine the mediating effect of courier pay satisfaction on the association between customer satisfaction and courier job satisfaction ( $\beta = 0.180$ ,  $CI_{95\%} [0.078, 0.320]$ ). In Table 7, the 95% bias-corrected confidence interval ( $CI_{95\%}$ ) of the indirect effect excludes the zero value, verifying the existence of mediation [77]. Additionally, the variance-accounted-for (VAF) index was calculated to distinguish whether the mediating effect was fully mediated or partially mediated [78]. The VAF value of this link was 52.6% (the proportion of indirect effects in the total effect), within the range of 20–80%, indicating that courier pay satisfaction plays a partially mediating role in the satisfaction link of customer and courier. Thus, H4 was supported.

**Table 7.** Hypothesis testing results.

| Path  | $\beta$         | S.E.  | 95% Bias-Corrected Confidence Interval |       | Support? |     |
|---|-----------------|-------|--|-------|----------|-----|
|   |                 |       | Lower                                  | Upper |          |     |
| <b>H4:</b> Customer satisfaction → Courier pay satisfaction | Total effect    | 0.342 | 0.067                                  | 0.212 | 0.474    | Yes |
| → Courier job satisfaction                                  | Direct effect   | 0.162 | 0.078                                  | 0.013 | 0.318    |     |
|   | Indirect effect | 0.180 | 0.061                                  | 0.078 | 0.320    |     |

**5. Discussion**

Drawing on the balance theory and distributive justice theory, this study, based on a dyadic analysis, strives to reveal how a customer–courier interaction influences courier continuance participation intention in crowdsourcing delivery. More specifically, we examined the direct effect of customer satisfaction on courier job satisfaction, tested

the mediating role of courier pay satisfaction, and verified the association between courier job satisfaction and continuance participation intention in the Dada case. Getting a better understanding of the above relationships could help crowdsourcing delivery platforms address the issue of high courier turnovers and contribute to the sustainability of the crowdsourcing industry. Several key findings are summarized as follows.

Firstly, we confirm the significant satisfaction link between customers and couriers. There is a direct satisfaction transmission between customers and couriers in delivery service encounters. The balance theory supports this finding that couriers and customers tend to influence each other in delivery service encounters until they are both satisfied to reach a balanced state. Specifically, customer satisfaction contributes positively to the corresponding courier job satisfaction, indicating that crowdsourced couriers gain job satisfaction from interacting with satisfied customers. Courier job satisfaction can be enhanced by the positive behaviors of customers, such as smiling, eye contact, and greetings. Customer satisfaction, as an intrinsic motivator, not only significantly improves service provider job satisfaction but also elicits their favorable service performance [16,54]. Our empirical results are in accordance with relevant studies (e.g., Frey et al. [31]). The causal direction from employee satisfaction to customer satisfaction provides a view of increasing customer satisfaction from the employee side, which emphasizes the crucial role of customers [26,38]. Differently, our study focuses on the side of couriers (i.e., service providers) and seeks to enhance their continuance participation in the emerging crowdsourcing logistics contexts. Notably, our study aims to explore the reason for this attitudinal transfer between service providers and customers in delivery service interactions rather than simply reversing the causal link between employee satisfaction and customer satisfaction established in prior studies.

Secondly, in addition to the direct effect, customer satisfaction exerts an indirect influence on courier job satisfaction through the partial mediator of courier pay satisfaction. Such a mediating mechanism of pay satisfaction offers a reasonable explanation for why customer satisfaction affects courier job satisfaction based on the distributive justice theory. However, Wangenheim et al. attributed the phenomenon of employee job satisfaction affecting customer satisfaction to emotional contagion, which differs from this study [29].

Specifically, couriers perceive just pay for their inputs (e.g., time, effort, and experience) in crowdsourcing delivery when receiving delivery commissions and extra tips, which increase their pay level and pay satisfaction. On the one hand, pay satisfaction is deemed as an antecedent of job satisfaction and job performance, especially for crowdsourced workers who rely heavily on their pay. For example, Wang et al. confirmed a U-shape influencing relationship between task reward and the quantity and quality of contributors in crowdsourcing tasks [79]. On the other hand, pay is endowed with symbolic meaning as an indicator of couriers' professional competence, thereby affecting their achievements and job satisfaction [51,80]. When they receive extra pay from customers, they deem themselves competent and pleasant in completing their tasks. Conversely, if customers are dissatisfied with the delivery service, they will not give extra tips or will even leave a poor rating, leading to low pay satisfaction and low job satisfaction for couriers. Thus, couriers with high pay satisfaction are more likely to engage in their work, be satisfied with their jobs, and intend to stay on the platform.

Thirdly, the association between courier job satisfaction and continuance participation intention turns out to be significant, which supports Prockl et al.'s findings [59]. This result indicates that couriers who are satisfied with their jobs are inclined to stay on current platforms. In a highly competitive crowdsourcing market, couriers are more sensitive to job satisfaction, because they can independently decide whether to stay or leave, with fewer barriers that are rather different from those of formal employees. Once couriers become dissatisfied with their jobs, they are likely to switch to other competing platforms due to low switching costs in the crowdsourcing labor market. Meanwhile, our study also stresses the importance of external factors in determining crowdsourced courier continuance participation. Existing studies have extensively explored factors that influence the continuance

participation of crowdsourced workers from platform and individual perspectives, such as motivations [81], justice perceptions [21], platform incentives [56], and information disclosures [57], while potential influence from the customer side is neglected. Our empirical results verify that the impact from the customer side is transferred through satisfaction, ultimately influencing their continuance participation intention. Hence, crowdsourcing delivery platforms should strive to increase courier continuance participation intention and retain more existing couriers, since this can efficiently avoid negative effects, such as order delays, customer turnovers, and increased operational costs.

### 5.1. Theoretical Contributions

This study makes threefold contributions, as follows. First of all, this study methodologically contributes to the crowdsourcing delivery literature and advances the understanding of courier–customer dyadic relationships in delivery service interactions. The vast majority of the prior literature on employee–customer relationships has verified that employee (or service provider) satisfaction significantly affects customer satisfaction in various contexts [26,29,38]. However, studies rarely attempt to reverse the common logic and examine the impact of the customer side on the attributes of service providers, such as job satisfaction, turnover, or continuance intention. This study successfully explores the impact of customer attitudes on courier work-related outcomes, which responds to the calls by Brawley and Pury as well as Kim and Byon [39,40]. Due to the interdependence of couriers and customers in delivery service encounters, this study applies a novel dyadic analysis by incorporating both parties' perspectives, which extends the application of this method in crowdsourcing delivery, even in service operations.

Furthermore, this study reveals the underlying mechanism between customer satisfaction and courier job satisfaction. The empirical results indicate that customer satisfaction affects courier job satisfaction directly and indirectly via the mediator of courier pay satisfaction. Specifically, a direct “satisfaction-transfer” phenomenon exists from customers to couriers, which can be reasonably explained by the balance theory. More satisfied customers typically respond actively in interactions, which motivates couriers' better service performance and high job satisfaction. As such, customers and couriers tend to create enjoyable and balanced interactions, verifying the applicability of the balance theory in the field of service operations. Moreover, we also contribute to limited available studies on the pay satisfaction of crowdsourced couriers by identifying the mediating role of courier pay satisfaction in the courier–customer satisfaction link. Unlike regular employees, crowdsourced couriers without basic salaries rely more heavily on their pay in the formation of job satisfaction and continuance participation intention as per the distributive justice theory. When couriers receive just compensation for their inputs, they experience distributive justice, high pay satisfaction, and other positive attitudes. The higher the pay satisfaction, the more satisfied couriers will be with crowdsourcing jobs, and the less intentions they will have to leave the platform. Ensuring the pay satisfaction of crowdsourced workers provides an effective approach to structuring a committed workforce system.

In addition, this study enriches the literature on the continuance participation of crowdsourced workers in non-traditional crowdsourcing job settings. Existing studies on traditional employees have verified that job satisfaction is positively related to retention. Given that crowdsourced workers are independent and fluid, these distinguished features make it impossible to directly adapt the findings of previous studies on employee retention to address continuance participation issues of couriers in crowdsourcing job settings. The results of this study suggest that external factors (i.e., customer satisfaction) and individual factors (i.e., pay satisfaction and job satisfaction) jointly affect courier continuance participation intention, enlightening ways to establish a relatively stable capacity for crowdsourcing delivery platforms. As a result, this study is a further extension of the research on the continuance participation intention of crowdsourced workers as they gradually become popular in various industries.

### 5.2. Practical Implications

The findings of this study offer managerial insights for administrators of the crowdsourcing delivery industry. Firstly, since courier job satisfaction and customer satisfaction are positively correlated in crowdsourcing delivery service interactions, crowdsourcing delivery platforms can implement various policies that achieve customer satisfaction and courier job satisfaction simultaneously. For example, Meituan, a famous meal delivery platform in China, changes the “estimated time point” into the “estimated time period” in their service system, which not only gives customers reasonable expectations of arrival times but also provides couriers with a greater buffer time. From a dyadic perspective, such a little change in crowdsourcing delivery service design could achieve both parties’ satisfaction and elicit favorable service interactions. Therefore, crowdsourcing delivery administrators should avoid merely focusing on the customer side and neglecting couriers’ perceptions and views, because they are equally crucial in delivery service interactions.

Secondly, the significant relationship between courier job satisfaction and continuance participation intention suggests platform administrators should attach great importance to courier job satisfaction in order to retain more crowdsourced couriers in this flexible labor market. Hence, crowdsourcing delivery platforms should take multiple measures to enhance courier job satisfaction. Generally, crowdsourcing platforms conduct monetary incentive programs to motivate and retain crowdsourced workers [82]. Given that pay satisfaction and customer satisfaction are both antecedents of courier job satisfaction in this study, the high turnover rate of crowdsourced couriers cannot be addressed simply by pay raises alone due to the constrained operational costs of platforms. The pay obtained from a platform provides a courier with direct payoffs and extrinsic motivation, while customer feedback (e.g., tips, smiling, or active interactions) contributes to realizing achievement and intrinsic motivation. Thus, in practice, other innovative incentive mechanisms incorporate these two aspects and are designed to overcome the “pay–turnover” problem and improve courier continuance intention from a dyadic perspective, such as customer ratings, priority matching, reputation, and gamification mechanisms [14,54]. This also contributes to the transmission of satisfaction between customers and couriers, as well as the formation of a virtuous circle in the crowdsourcing logistics industry.

### 5.3. Limitations and Future Research Directions

This study successfully reveals the underlying influence mechanism of crowdsourced courier continuance participation intention in crowdsourcing delivery service, but it still has several limitations that should be recognized. First, the effective courier–customer samples of this study were collected from a single platform, which might raise concerns about the generalizability of the results, even though Dada is a highly representative and large-scale crowdsourcing delivery platform. Moreover, the findings are based on dyadic data from two representative cities, which could make them appear regional-specific. Therefore, future research calls for further exploration to verify the conclusions of this study using data from multiple sources, especially from other types of crowdsourcing platforms, regions, and even counties.

Although the predictor and outcome variables were obtained from two parties (i.e., customers and crowdsourced couriers), which to some extent mitigates common method biases, such a bias might still exist, since customers and couriers may have overrated each other in the same space during the investigation [67,83]. Our study examines the attitude changes of customers and couriers (i.e., satisfaction or intention) by exploring the relationship among latent variables. However, it would be more valuable to use actual revenue and order data to analyze or predict the behavior of crowdsourced couriers. Applying more objective approaches, such as data mining, behavioral experiments, and analytical models, could effectively address the biases caused by the subjective responses of participants in future research.

Finally, this study does not consider the heterogeneity of crowdsourced couriers in the formation of their continuance participation intention. Crowdsourced workers are not a

uniform population, with diverse differences that influence their behavior and attitudes, such as cross-cultural differences, motivational differences, and tenure-related differences. For example, crowdsourced workers from India might feel more satisfaction and pride in engaging in the crowdsourcing market than workers from the United States [39]. Some crowdsourced workers rely on crowdsourcing work as a full-time job, while for others, it may merely act as a supplement to their primary jobs [84]. Moreover, newcomers engaging in crowdsourcing jobs may possess different perceptions from experienced crowdsourced workers. Therefore, considering the heterogeneity of crowdsourced couriers, methods such as moderating analyses and multigroup comparisons are needed in future research for a more in-depth discussion.

## 6. Conclusions

Given that independent couriers are flexible and not bounded by crowdsourcing logistics platforms, enhancing the continuance participation intention of crowdsourced couriers is an increasing challenge for platforms. However, existing studies have neglected the potential influence of the customer side on couriers' continuance participation intention. Based on the balance theory and distributive justice theory, this study focuses on crowdsourced couriers' continuance participation behavior by examining the impacts of courier–customer interactions on their job satisfaction and continuance participation intention, as they both are directly involved in service interactions and inevitably influence each other. In particular, we applied a novel dyadic analysis method that incorporates the perspectives of interdependent couriers and customers in delivery service interactions.

Our empirical results demonstrate a direct satisfaction transmission from the customer side to the courier side. Moreover, customer satisfaction also indirectly influences courier job satisfaction via the mediator of pay satisfaction, thereby enhancing courier continuance participation intention. From a theoretical perspective, we contribute to the direct and mediating mechanisms that customer attitude influences courier continuance participation in the fluid crowdsourcing market, i.e., a non-traditional job setting. These research findings enlighten platforms to create favorable service interactions between couriers and customers which could effectively improve the continuance participation of couriers as non-monetary measures for platforms. Overall, our findings serve as the foundation for future research on crowdsourcing logistics contexts and provide valuable insights into the service design of crowdsourcing logistics platforms.

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## References

1. Howe, J. The rise of crowdsourcing. *Wired Mag.* **2006**, *14*, 176–183.
2. Gläser, S.; Jahnke, H.; Strassheim, N. Opportunities and challenges of crowd logistics on the last mile for courier, express and parcel service providers—a literature review. *Int. J. Logist.-Res. Appl.* **2023**, *26*, 1006–1034. [[CrossRef](#)]
3. Dada Group. Dada 2022 Environmental, Social and Governance Report. Available online: <https://ir.imdada.cn/static-files/6814b78e-daa8-4f09-bfba-46bb38000af5> (accessed on 8 October 2024).
4. Human Resource and Social Security Information Network. 2023 China New Flexible Employment Report. Available online: <https://www.hrssit.cn/info/3146.html> (accessed on 8 October 2024).

5. Upadhyay, C.K.; Tewari, V.; Tiwari, V. Assessing the impact of sharing economy through adoption of ICT based crowdshipping platform for last-mile delivery in urban and semi-urban India. *Inform. Technol. Dev.* **2021**, *27*, 670–696. [[CrossRef](#)]
6. Dada Group. Dada 2021 Environmental, Social and Governance Report. Available online: <https://ir.imdada.cn/corporate/environmental-social-and-governance> (accessed on 8 October 2024).
7. Castillo, V.E.; Bell, J.E.; Rose, W.J.; Rodrigues, A.M. Crowdsourcing last mile delivery: Strategic implications and future research directions. *J. Bus. Logist.* **2018**, *39*, 7–25. [[CrossRef](#)]
8. Zhou, W.; Zhu, S.; Cao, P.; Wu, J. Analysis of an on-demand food delivery platform: Participatory equilibrium and two-sided pricing strategy. *J. Oper. Res. Soc.* **2023**, *75*, 1193–1204. [[CrossRef](#)]
9. Castillo, V.E.; Mollenkopf, D.A.; Bell, J.E.; Esper, T.L. Designing technology for on-demand delivery: The effect of customer tipping on crowdsourced driver behavior and last mile performance. *J. Oper. Manag.* **2022**, *68*, 424–453. [[CrossRef](#)]
10. Ta, H.; Esper, T.L.; Tokar, T. Appealing to the crowd: Motivation message framing and crowdsourcing performance in retail operations. *Prod. Oper. Manag.* **2021**, *30*, 3192–3212. [[CrossRef](#)]
11. Solomon, M.R.; Surprenant, C.; Czepiel, J.A.; Gutman, E.G. A role theory perspective on dyadic interactions: The service encounter. *J. Mark.* **1985**, *49*, 99–111. [[CrossRef](#)]
12. Heider, F. *The Psychology of Interpersonal Relations*, 1st ed.; John Wiley: New York, NY, USA, 1958.
13. Zhang, Y.; Shi, X.; Abdul-Hamid, Z.; Li, D.; Zhang, X.; Shen, Z. Factors influencing crowdsourcing riders' satisfaction based on online comments on real-time logistics platform. *Transp. Lett.* **2023**, *15*, 363–374. [[CrossRef](#)]
14. Mai, Y.; Hu, B.; Pekeč, S. Courteous or crude? Managing user conduct to improve on-demand service platform performance. *Manag. Sci.* **2023**, *69*, 996–1016. [[CrossRef](#)]
15. Bai, J.; So, K.C.; Tang, C.S.; Chen, X.; Wang, H. Coordinating supply and demand on an on-demand service platform with impatient customers. *M&SOM-Manuf. Serv. Oper. Manag.* **2019**, *21*, 556–570.
16. Liu, Y.; Liu, Y.; Xiao, B.S. Effect of crowdsourcing work characteristics on perceived work effort in competitive crowdsourcing markets. *Internet Res.* **2023**, *33*, 696–719. [[CrossRef](#)]
17. Liang, H.; Wang, M.M.; Wang, J.J.; Xue, Y. How intrinsic motivation and extrinsic incentives affect task effort in crowdsourcing contests: A mediated moderation model. *Comput. Hum. Behav.* **2018**, *81*, 168–176. [[CrossRef](#)]
18. Wu, W.; Yang, Q.; Gong, X.; Davison, R.M. Understanding sustained participation in crowdsourcing platforms: The role of autonomy, temporal value, and hedonic value. *Inf. Technol. People* **2023**, *36*, 734–757. [[CrossRef](#)]
19. Boons, M.; Stam, D.; Barkema, H.G. Feelings of pride and respect as drivers of ongoing member activity on crowdsourcing platforms. *J. Manag. Stud.* **2015**, *52*, 717–741. [[CrossRef](#)]
20. Ye, H.J.; Kankanhalli, A. Solvers' participation in crowdsourcing platforms: Examining the impacts of trust, and benefit and cost factors. *J. Strateg. Inf. Syst.* **2017**, *26*, 101–117. [[CrossRef](#)]
21. Liu, Y.; Liu, Y. The effect of workers' justice perception on continuance participation intention in the crowdsourcing market. *Internet Res.* **2019**, *29*, 1485–1508. [[CrossRef](#)]
22. Grönroos, C. Value co-creation in service logic: A critical analysis. *Mark. Theory* **2011**, *11*, 279–301. [[CrossRef](#)]
23. Christ-Brendemühl, S.; Schaarschmidt, M. The impact of service employees' technostress on customer satisfaction and delight: A dyadic analysis. *J. Bus. Res.* **2020**, *117*, 378–388. [[CrossRef](#)]
24. Amenuvor, F.E.; Yi, H.T.; Boateng, H. Examining the consequences of adaptive selling behavior by door-to-door salespeople in the Korean cosmetic industry. *Asia Pac. J. Mark. Logist.* **2022**, *34*, 800–816. [[CrossRef](#)]
25. Wang, S.; Hall, K.K.L. Bridging employee engagement and customer engagement in a service context. *J. Bus. Res.* **2023**, *160*, 113803.
26. Son, J.H.; Kim, J.H.; Kim, G.J. Does employee satisfaction influence customer satisfaction? Assessing coffee shops through the service profit chain model. *Int. J. Hosp. Manag.* **2021**, *94*, 102866. [[CrossRef](#)]
27. Huang, C.H.; Lin, Y.C. Relationships among employee acting, customer-perceived service quality, emotional well-being and value co-creation: An investigation of the financial services industry. *Asia Pac. J. Mark. Logist.* **2020**, *33*, 29–52. [[CrossRef](#)]
28. Homburg, C.; Stock, R.M. Exploring the conditions under which salesperson work satisfaction can lead to customer satisfaction. *Psychol. Mark.* **2005**, *22*, 393–420. [[CrossRef](#)]
29. Wangenheim, F.V.; Evanschitzky, H.; Wunderlich, M. Does the employee–customer satisfaction link hold for all employee groups? *J. Bus. Res.* **2007**, *60*, 690–697. [[CrossRef](#)]
30. Prentice, C. Managing service encounters with emotional intelligence. *J. Retail. Consum. Serv.* **2019**, *51*, 344–351. [[CrossRef](#)]
31. Frey, R.V.; Bayón, T.; Totzek, D. How customer satisfaction affects employee satisfaction and retention in a professional services context. *J. Serv. Res.* **2013**, *16*, 503–517. [[CrossRef](#)]
32. Lim, S.; Cortina, L.M.; Magley, V.J. Personal and workgroup incivility: Impact on work and health outcomes. *J. Appl. Psychol.* **2008**, *93*, 95–107. [[CrossRef](#)]
33. Homburg, C.; Stock, R.M. The link between salespeople's job satisfaction and customer satisfaction in a business-to-business context: A dyadic analysis. *J. Acad. Mark. Sci.* **2004**, *32*, 144–158. [[CrossRef](#)]
34. Uzir, M.U.H.; Al Halbusi, H.; Thurasamy, R.; Hock, R.L.T.; Aljaberi, M.A.; Hasan, N.; Hamid, M. The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *J. Retail. Consum. Serv.* **2021**, *63*, 102721. [[CrossRef](#)]

35. Locke, E.A. The nature and causes of job satisfaction. In *Handbook of Industrial and Organizational Psychology*; Rand McNally: Chicago, IL, USA, 1976.
36. Alegre, I.; Mas-Machuca, M.; Berbegal-Mirabent, J. Antecedents of employee job satisfaction: Do they matter? *J. Bus. Res.* **2016**, *69*, 1390–1395. [[CrossRef](#)]
37. Judge, T.A.; Thoresen, C.J.; Bono, J.E.; Patton, G.K. The job satisfaction–job performance relationship: A qualitative and quantitative review. *Psychol. Bull.* **2001**, *127*, 376–407. [[CrossRef](#)] [[PubMed](#)]
38. Hur, W.M.; Moon, T.W.; Jung, Y.S. Customer response to employee emotional labor: The structural relationship between emotional labor, job satisfaction, and customer satisfaction. *J. Serv. Mark.* **2015**, *29*, 71–80. [[CrossRef](#)]
39. Brawley, A.M.; Pury, C.L. Work experiences on MTurk: Job satisfaction, turnover, and information sharing. *Comput. Hum. Behav.* **2016**, *54*, 531–546. [[CrossRef](#)]
40. Kim, K.A.; Byon, K.K. A mechanism of mutually beneficial relationships between employees and consumers: A dyadic analysis of employee–consumer interaction. *Sport Manag. Rev.* **2018**, *21*, 582–595. [[CrossRef](#)]
41. Wen, Y.; Dai, H.; Xu, X.; Tong, T. More to tip, or tip more? Examining consumers’ preservice tipping behavior in the on-demand supermarket delivery context. *Decis. Support Syst.* **2024**, *178*, 114125. [[CrossRef](#)]
42. Doğanekin, A.; Boğan, E.; Dedeoğlu, B.B. The effect of customer incivility on employees’ work effort and intention to quit: Mediating role of job satisfaction. *Tour. Manag. Perspect.* **2023**, *45*, 101071. [[CrossRef](#)]
43. Adams, J.S. Inequity in social exchange. In *Advances in Experimental Social Psychology*; Academic Press: New York, NY, USA, 1965.
44. Blau, P. *Exchange and Power in Social Life*; Wiley: New York, NY, USA, 1964.
45. Schreurs, B.; Guenter, H.; Schumacher, D.; Van Emmerik, I.H.; Notelaers, G. Pay-level satisfaction and employee outcomes: The moderating effect of employee-involvement climate. *Hum. Resour. Manag.* **2013**, *52*, 399–421. [[CrossRef](#)]
46. Jung, H.S.; Yoon, H.H. Understanding pay satisfaction: The impacts of pay satisfaction on employees’ job engagement and withdrawal in deluxe hotel. *Int. J. Hosp. Manag.* **2015**, *48*, 22–26. [[CrossRef](#)]
47. Judge, T.A.; Piccolo, R.F.; Podsakoff, N.P.; Shaw, J.C.; Rich, B.L. The relationship between pay and job satisfaction: A meta-analysis of the literature. *J. Vocat. Behav.* **2010**, *77*, 157–167. [[CrossRef](#)]
48. Jolly, P.M.; McDowell, C.; Dawson, M.; Abbott, J. Pay and benefit satisfaction, perceived organizational support, and turnover intentions: The moderating role of job variety. *Int. J. Hosp. Manag.* **2021**, *95*, 102921. [[CrossRef](#)]
49. Cantor, D.E.; Macdonald, J.R.; Crum, M.R. The influence of workplace justice perceptions on commercial driver turnover intentions. *J. Bus. Logist.* **2011**, *32*, 274–286. [[CrossRef](#)]
50. Heneman, H.G., III; Schwab, D.P. Pay satisfaction: Its multidimensional nature and measurement. *Int. J. Psychol.* **1985**, *20*, 129–141. [[PubMed](#)]
51. Arya, B.; Mirchandani, D.A.; Harris, M.M. Personality and pay satisfaction: Exploring the influence of organizational justice and gender in South Africa. *Int. J. Hum. Resour. Manag.* **2019**, *30*, 219–250. [[CrossRef](#)]
52. Buldeo Rai, H.; Verlinde, S.; Merckx, J.; Macharis, C. Crowd logistics: An opportunity for more sustainable urban freight transport? *Eur. Transp. Res. Rev.* **2017**, *9*, 39. [[CrossRef](#)]
53. Deng, X.N.; Joshi, K.D. Why individuals participate in micro-task crowdsourcing work environment: Revealing crowdworkers’ perceptions. *J. Assoc. Inf. Syst.* **2016**, *17*, 648–673. [[CrossRef](#)]
54. Xu, Y.; Lu, B.; Ghose, A.; Dai, H.; Zhou, W. The Interplay of Earnings, Ratings, and Penalties on Sharing Platforms: An Empirical Investigation. *Manag. Sci.* **2023**, *69*, 6128–6146. [[CrossRef](#)]
55. Bhattacharjee, A. Understanding information systems continuance: An expectation-confirmation model. *MIS Q.* **2001**, *25*, 351–370. [[CrossRef](#)]
56. Xiao, L.; Ke, T. The influence of platform incentives on actual carriers’ continuous participation intention of non-vehicle operating carrier platform: A study in China. *Asia Pac. J. Mark. Logist.* **2019**, *31*, 1269–1286. [[CrossRef](#)]
57. Zhao, Q.; Yuan, J.; Liu, Y.; Yang, J. Continuous participation intention in on-demand logistics: Interactive effects of order assignment and delivery-related information disclosure strategies. *Ind. Manag. Data Syst.* **2022**, *122*, 2417–2439. [[CrossRef](#)]
58. Sun, Y.; Wang, N.; Peng, Z. Working for one penny: Understanding why people would like to participate in online tasks with low payment. *Comput. Hum. Behav.* **2011**, *27*, 1033–1041. [[CrossRef](#)]
59. Prockl, G.; Teller, C.; Kotzab, H.; Angell, R. Antecedents of truck drivers’ job satisfaction and retention proneness. *J. Bus. Logist.* **2017**, *38*, 184–196. [[CrossRef](#)]
60. Almufarreh, A.; Arshad, M. Exploratory Students’ Behavior towards Massive Open Online Courses: A Structural Equation Modeling Approach. *Systems* **2023**, *11*, 223. [[CrossRef](#)]
61. Tsai, C.C.; Lin, C.L.; Chen, Y.H. Impact of Authenticity Perception on Experiential Value and Customer Satisfaction under Contactless Services. *Systems* **2024**, *12*, 19. [[CrossRef](#)]
62. Podsakoff, P.M.; Mackenzie, S.B.; Podsakoff, N. Sources of method bias in social science research and recommendations on how to control it. *Annu. Rev. Psychol.* **2012**, *63*, 539–569. [[CrossRef](#)]
63. Tekleab, A.G.; Bartol, K.M.; Liu, W. Is it pay levels or pay raises that matter to fairness and turnover. *J. Organ. Behav.* **2005**, *26*, 899–921. [[CrossRef](#)]
64. DeConinck, J.B.; Stilwell, C.D. Incorporating organizational justice, role states, pay satisfaction and supervisor satisfaction in a model of turnover intentions. *J. Bus. Res.* **2004**, *57*, 225–231. [[CrossRef](#)]
65. Singh, P.; Loncar, N. Pay satisfaction, job satisfaction and turnover intent. *Relat. Ind.* **2010**, *65*, 470–490. [[CrossRef](#)]



66. Wu, W.; Gong, X. Motivation and sustained participation in the online crowdsourcing community: The moderating role of community commitment. *Internet Res.* **2021**, *31*, 287–314. [[CrossRef](#)]
67. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [[CrossRef](#)]
68. Pavlou, P.A.; Liang, H.; Xue, Y. Understanding and mitigating uncertainty in online exchange relationships: A principal-agent perspective. *MIS Q.* **2007**, *31*, 105–136. [[CrossRef](#)]
69. Jacobs, M.A.; Yu, W.; Chavez, R. The effect of internal communication and employee satisfaction on supply chain integration. *Int. J. Prod. Econ.* **2016**, *171*, 60–70. [[CrossRef](#)]
70. Gefen, D.; Rigdon, E.E.; Straub, D. An update and extension to SEM guidelines for administrative and social science research. *MIS Q.* **2011**, *35*, iii–xiv. [[CrossRef](#)]
71. Anderson, J.C.; Gerbing, D.W. Structural equation modeling in practice: A review and recommended two-step approach. *Psychol. Bull.* **1988**, *103*, 411–423. [[CrossRef](#)]
72. Hair, J.; Black, W.C.; Babin, B.J.; Anderson, R.E. *Multivariate Data Analysis*; Prentice Hall: New York, NY, USA, 2009.
73. Fornell, C.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50. [[CrossRef](#)]
74. Nunnally, J.C. *Psychometric Theory*; McGraw-Hill: New York, NY, USA, 1978.
75. Bentler, P.M. Comparative fit indexes in structural models. *Psychol. Bull.* **1990**, *107*, 238–246. [[CrossRef](#)]
76. Hu, L.T.; Bentler, P.M. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct. Equ. Model.* **1999**, *6*, 1–55. [[CrossRef](#)]
77. Preacher, K.J.; Hayes, A.F. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behav. Res. Methods* **2008**, *40*, 879–891. [[CrossRef](#)]
78. Koay, K.Y. Workplace ostracism and cyberloafing: A moderated-mediation model. *Internet Res.* **2018**, *28*, 1122–1141. [[CrossRef](#)]
79. Wang, D.; Mou, Y.; Ding, Z.; Jiang, X. How to elevate the quantity and quality of contributors for crowdsourcing tasks: The double-edged role of task reward. *Asia Pac. J. Mark. Logist.* **2023**, *35*, 1033–1051. [[CrossRef](#)]
80. Schreurs, B.; Guenter, H.; van Emmerik, I.H.; Notelaers, G.; Schumacher, D. Pay level satisfaction and employee outcomes: The moderating effect of autonomy and support climates. *Int. J. Hum. Resour. Manag.* **2015**, *26*, 1523–1546. [[CrossRef](#)]
81. Wu, W.; Gong, X.; Yang, Q. Role of motivations, self-regulations, and perceived competitive intensity in solvers' continuance intention in crowdsourcing contests. *Behav. Inf. Technol.* **2023**, *42*, 2152–2175. [[CrossRef](#)]
82. Min, X.; Chi, W.; Hu, X.; Ye, Q. Set a goal for yourself? A model and field experiment with gig workers. *Prod. Oper. Manag.* **2024**, *33*, 205–224. [[CrossRef](#)]
83. Fasbender, U.; Gerpott, F.H.; Unger, D. Give and take? Knowledge exchange between older and younger employees as a function of generativity and development striving. *J. Knowl. Manag.* **2021**, *25*, 2420–2443. [[CrossRef](#)]
84. Deng, X.; Joshi, K.D.; Galliers, R.D. The duality of empowerment and marginalization in microtask crowdsourcing. *MIS Q.* **2016**, *40*, 279–302. [[CrossRef](#)]

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