Exploring Intrinsic Motivation and Satisfaction Using Self-Determination Theory:
A Study of Gig Workers on Knowledge-Based Service Platforms in China

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Abstract

Many scholars have discussed the gig economy and gig workers since 2015–2016. Knowledge-based service platforms are growing rapidly with the development of technology. In China, over the past seven years, there have been 1,021 financial investments totaling 131.3 billion Yuan in knowledge-based service platforms. Limited research has been undertaken on gig workers' intrinsic motivation and satisfaction with such platforms. The present research study was based on self-determination theory to study gig workers' intrinsic motivation and satisfaction on the six biggest knowledge-based service platforms in China. It fills a research gap in the study of gig workers' motivation. A self-administrated questionnaire was distributed online to respondents to collect data. Finally, 1,049 valid responses were obtained. The research compared gig workers with and without full-time jobs. The Partial Least Squared method was applied to analyze and generate the results. It was found that self-determination and social capital positively influenced intrinsic motivation, and intrinsic motivation positively influenced gig workers' satisfaction on knowledge-based service platforms. Also, older gig workers in full-time jobs showed less work satisfaction than the younger group. Some practical suggestions were made to platforms as well as to gig workers.

Keywords: *Gig workers, knowledge-based, social capital, motivation, satisfaction*

Introduction

The term "gig" originated in the United States in the 1920s to refer to performers working short-term at jazz clubs when the full-time artist was absent or the club was understaffed (Montgomery & Baglioni, 2020). The gig economy is also called the freelancer economy or the part-time job economy (Ashford et al., 2018). In general, the gig economy refers to workers who provide services to organizations and individuals on a temporary basis (Marquis et al., 2018). Moreover, Lao (2017) defined gig workers as having non-standard jobs that lack long-term industrial relations. The gig economy has grown rapidly during the past two decades in China. At the same time, knowledge-based service platforms have also increased quickly, especially during the COVID-19 pandemic situation. According to Chen (2022), 131.3 billion Yuan has been invested in knowledge-based service platforms in China over the past seven years. Moreover, there were 144 million users using online platforms in 2017, and by June 2022, the number of users had reached 381 million (Wenhao, 2022).

Management styles, motivation approaches, and organizational structures in the gig economy differ from those in traditional full-time employment. The level of intrinsic motivation and job satisfaction of gig workers may also differ from that of full-time employees. As a result, organizations or platforms cannot use a management style appropriate for full-time employees to manage gig workers, and motivation approaches are also different (Duggan et al., 2020). This study focused on gig workers who worked for the six biggest knowledge-based service platforms in China, comparing those who had full-time jobs to those who did not. This research was based on self-determination theory (SDT) to study gig workers' intrinsic motivation and their job satisfaction. There were three main research objectives:

1. To study factors that drive gig workers' intrinsic motivation based on self-determination theory.
2. To investigate how gig workers' intrinsic motivation influenced their satisfaction.
3. To compare differences between gig workers who had full-time jobs and those who did not.

Limited research on SDT in the gig economy has been done, with only one study linking self-determination, job characteristics, and motivation influencing the satisfaction of gig workers (Zaman

et al., 2020). Additionally, many researchers have discussed and studied social capital in different industries and fields. However, most previous research papers have addressed the relationships between social capital, knowledge management, and knowledge sharing (Hau et al., 2013). Also, some previous researchers discussed social capital and innovation in organizations (Weerakoon et al., 2019). This research can provide different perspectives on gig workers' motivation on knowledge-based service platforms based on SDT theory.

Literature Review
Self-Determination Theory

Self-determination theory was developed by Deci and Ryan (2000); it was generally applied to human motivation in work, education, health, and sport. There are three dimensions of SDT, which are autonomy, relatedness, and competence. *Autonomy* refers to an individual's own volition and thoughts leading to their chosen action or behavior that is not directed or influenced by others. *Competence* refers to someone feeling confident in the ability to successfully complete a task or achieve a goal. Finally, perceived *relatedness* refers to a sense of belonging and connection that a person prefers, likes, appreciates, and values in a particular situation (Deci et al., 2017). Donovan et al. (2016) found that gig workers enjoy and are satisfied by independence or working with a high degree of autonomy, especially when they performed well on their own individual tasks. Some gig workers chose to work part-time due to their interests and hobbies. It has been found that gig workers like to work independently, and are able to cope with different challenges and situations (Petriglieri et al., 2019). Moreover, Rockmann and Ballinger (2017) suggested that the psychological needs of relatedness of gig workers might not come from their co-workers or supervisors; they could come from their clients, such as good interactions with clients, positive feedback, and positive comments from the clients. A good relationship with the clients also enables gig workers to internalize intrinsic motivation in terms of acceptance of their own value (Gagné & Deci, 2005). Customers' positive and affirmative feedback also are very important to gig workers, as this satisfies their needs for competence (Rockmann & Ballinger, 2017). Moreover, gig workers have to self-iterate to develop their own skills and capabilities, and engage in self-iteration in order to adapt to the competitive marketplace and unstable work demands (Ashford et al., 2018). Building and developing core competencies, as well as learning and growth, will qualify gig workers to handle various types of work in a wider range of workplaces. Therefore, the following hypothesis was proposed:

Hypothesis 1: Self-determination positively influences the intrinsic motivation of gig workers operating on knowledge-based service platforms.

Social Capital

Many previous research studies have tested and confirmed that social capital is related to intrinsic motivation (Chang & Chuang, 2011; Yamaguchi, 2013). Shared goals, social trust, and social interactions are the most important factors of social capital. Chang and Chuang (2011) discovered that in virtual communities, people had stronger intrinsic motivation connections with shared values and common interests, and that the age of virtual community members was sometimes similar. In the context of the gig economy, people choose to work part-time for various reasons, including work-life balance, and purely personal interest. They want to have more opportunities to meet people and work with different groups and organizations, and they like to share their experience and knowledge with others (Ashford et al., 2018). Meanwhile, some groups of gig workers have their own virtual or offline communities to share their experiences. According to the statements above, the following hypothesis was proposed:

Hypothesis 2: Social capital positively influences the intrinsic motivation of gig workers on knowledge-based service platforms.

Intrinsic Motivation and Work Satisfaction

Based on self-determination theory, researchers have confirmed that intrinsic motivation is linked with satisfaction (Deci et al., 2017). Moreover, previous studies have confirmed that individual achievement, specialization development, and opportunities for improvement are good predictors of job satisfaction (Gagné et al., 2018). Additionally, Davidson et al. (2018) found that employees' intrinsic motivation was related to workplace satisfaction. In the context of the gig economy, workers are intrinsically motivated by some job characteristics, especially those related to their interests and hobbies. It has also been found that some gig workers select gig jobs just because they want to kill time, meet new people, or share their experiences about achieving work-life balance goals (Jabagi et al., 2019). Meanwhile, highly-skilled gig workers with more autonomy and flexibility in their jobs are more easily motivated intrinsically, and also are satisfied with their jobs (Rockmann & Ballinger, 2017). This study focused on gig workers who worked for knowledge-based service platforms. They needed professional skills and knowledge to operate professionally, so they were categorized as highly skilled workers. Hence, the following hypothesis was proposed:

Hypothesis 3: Intrinsic motivation positively influences the work satisfaction of gig workers on knowledge-based service platforms.

Methodology
Sample and Data Collection Procedure

This study targeted gig workers who worked on the six biggest knowledge-based service platforms which are the most popular, and have the most users and daily active users in China. These platforms were Himalaya FM, Dragonfly, Tencent classroom, Cloud classroom of Netease, Zhihu Live, and Dedao application. In this study, an online, self-administered questionnaire was used to collect data from the targeted participants. A snowball technique was applied. The researcher enlisted the help of 47 informants who were gig workers on the six targeted knowledge-based service platforms and collected 1,113 responses in total. They were divided into two groups: Gig workers with full-time jobs, and those without full-time jobs. Valid data from gig workers with full-time jobs was received from 608 respondents, while data from gig workers without full-time jobs was received from 441 respondents. The respondents' demographics are shown in Table 1.

Table 1 *Respondent Demographics*

Characteristic		With a Full-time Job		Without a Full-time Job	
		Frequency	Percentage	Frequency	Percentage
Gender	Male	235	38.7	181	41.0
	Female	373	61.3	260	59.0
Age	< 18 years old	9	1.5	6	1.4
	18–25 years old	159	26.2	116	26.3
	26–35 years old	230	37.8	168	38.1
	36–45 years old	138	22.7	94	21.3
	46–55 years old	55	9.0	43	9.8
	> 56 years old	17	2.8	14	3.2
Education	High school	84	13.8	49	11.1
	College	162	26.6	96	21.8
	Bachelor	295	48.5	224	50.8
	Master	52	8.6	49	11.1
	Ph.D. / Doctoral	15	2.5	23	5.2
Knowledge-Providing Formats	Text	83	13.7	75	17.0
	Audio	144	23.7	114	25.9
	Video	182	29.9	119	27.0
	Comprehensive	199	32.7	133	30.2

Measures and Data Analysis

The measurement scales developed by previous scholars in their studies were adopted in the present research. There are several strengths to utilizing such developed measurement scales. The existing scales have been tested and confirmed as able to indicate the quality of concepts that are measured. Meanwhile, the same measurement scale that has been tested by others shows the validity and reliability of the questionnaire, and the quality of data tends to be high (Hyman et al., 2006). Perceived autonomy (five items) included questions such as: I had the opportunity to set my own priorities at work on this platform. Perceived relatedness (five items) included questions such as: Some people I work with are close friends of mine on this platform. And perceived competence (five items), included questions such as: I feel competent at my job on this platform. These are the three essential dimensions of self-determination theory. The scale of measurement was developed based on Spanuth and Wald (2017).

Social capital consists of three dimensions (social trust, social interactions, and shared goals). Social trust also involved three items; in this section, questions were such as: I have a very good relationship with my community members on this platform. Social interactions (three items), used questions such as: Members of the platform are truthful with one another. And shared goals (three items), used questions such as: The platform members and I share the same ambitions and visions. This measurement scale was as developed by Chow and Chan (2008).

The intrinsic motivation measurement scale was developed according to Altindis' (2011) study, and it consists of four items. One question used was: I enjoy this gig work very much on this platform. The gig workers' satisfaction measurement scale was developed based on Cammann et al.'s (1979) work. An illustrative question was: All in all, I am satisfied with my gig work on this platform. All the measurement items were measured on a five-point Likert scale. The scale ranged from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Besides these items, control variables might also influence the gig workers' intrinsic motivation and their satisfaction with the knowledge-based service platforms. In the research, the control variables consisted of gender, age, education level, and knowledge-providing formats.

In this study the Partial Least Squares Structural Equation Modeling (PLS-SEM) method was used to estimate the proposed model and analyze the data. SmartPLS 3.0 was applied to analyze the data and generate the results. Normality, reliability, validity, and multi-collinearity tests were utilized before analyzing the data using the regression model.

Results

First, the normality of the distribution was tested; skewness and kurtosis are criteria to measure whether a distribution is normal. Based on the suggestions of D'Agostino (2017), the values of skewness and kurtosis should range from -1 to +1. In this research, for the gig workers with full-time jobs, the values of skewness and kurtosis ranged from -0.234 to -0.849, whereas for the gig workers who did not have full-time jobs, the values ranged from -0.155 to -0.754. This indicated that the data from the two groups were normally distributed, and it was acceptable to proceed to the next step of the analysis. Since this research examined latent variables, it was necessary to test for the validity and reliability of the latent variables. According to Zikmund et al. (2013), the value shown by multi-indicator constructs should be > .50 to satisfy the requirement of convergent validity. In this research, for gig workers in a full-time job group, the factor loadings ranged from 0.621 to 0.885, whereas for gig workers who did not have full-time jobs, the indicator factor loading ranged from 0.737 to 0.886. Analysis indicated that all the factor loadings were above 0.50. Hence, the convergent validity requirements for both groups were met in this study.

Another criterion to test validity is discriminant validity. Based on the suggestions of Zikmund et al. (2013), each value returned for the latent variable average variance extracted (AVE) should be greater than other latent variable squared correlations. The results obtained are displayed in Table 2. The next step was to test the reliability. Cronbach's alpha and internal consistency reliability are measures of reliability. According to Hair et al. (2007), Cronbach's alpha should be greater than .70 to

satisfy the level of reliability. Moreover, based on Zikmund et al. (2013), the coefficient value of composite reliability should also be higher than .70.

In Tables 2 and 3, it is shown that Cronbach's alpha and composite reliability coefficients were all greater than the suggested level of .70 for all gig workers. Therefore, the reliability test showed the data of the respondents were satisfactory.

Table 2 *Correlations and Square Roots of Average Variance Extracted (Gig Workers With Full-Time Jobs)*

ITEM	SDT	SC	IM	SAT	GD	AGE	ED	KF	CRONBACH'S ALPHA	COMPOSITE RELIABILITY
SDT	(.859)	.747**	.823**	.828**	.003	.022	.047	-.005	.962	.962
SC		(.878)	.833**	.849**	.019	.005	.046	-.013	.967	.967
IM			(.918)	.749*	-.001	.022	.072	-.021	.924	.920
SAT				(.872)	.021	-.011	.055	-.017	.937	.936
GD					(1)	-.006	.001	-.019	n/a	n/a
AGE						(1)	.02	-.50	n/a	n/a
ED							(1)	-.033	n/a	n/a
KF								(1)	n/a	n/a

Notes. $*p < .05$, $**p < .01$, SDT = Self-determination Theory, SC = Social Capital, IM = Intrinsic Motivation, SAT = Satisfaction, GD = Gender, AGE = Age, ED = Education, KF = Knowledge Formats.

Table 3 *Correlations and Square Roots of Average Variance Extracted (Gig Workers Without Full-time Jobs)*

ITEM	SDT	SC	IM	SAT	GD	AGE	ED	KF	CRONBACH'S ALPHA	COMPOSITE RELIABILITY
SDT	(.848)	.837**	.712*	.823**	-.037	.072	.137*	.109*	.966	.966
SC		(.742)	.715**	.637*	.000	.061	.123*	.057	.970	.968
IM			(.788)	.708*	-.058	.086	.173*	.059	.933	.923
SAT				(.917)	-.031	.044	.143*	.072	.945	.941
GD					(1)	-.070	-.022	.018	n/a	n/a
AGE						(1)	.033	-.039	n/a	n/a
ED							(1)	-.010	n/a	n/a
KF								(1)	n/a	n/a

*Notes.* $*p < .05$, $**p < .01$, abbreviations as in Table 2.

The multi-collinearity properties also were examined. The variance inflation factor (VIF) was used to measure multi-collinearity. According to Hair et al. (2013), the VIF value should be lower than five, and if it is more than five, the latent variables might have a potential collinearity problem. The gig workers with full-time jobs returned VIF values ranging from 2.288 to 4.60, whereas gig workers who did not have full-time jobs showed VIF values ranging from 2.533 to 4.895. Because self-determination, social capital, intrinsic motivation, and gig workers' satisfaction are strongly correlated, the VIF values tend to be close to the threshold of five, but they were still acceptable.

In the PLS-SEM model, the most common model fit indicators are Standardized Root Mean Square Residual (SRMR), d_ULS (i.e., the squared Euclidean distance), and d_G (i.e., the geodesic distance). Litze and Bentler (1999) suggested the SRMR value should be below .08. There are two different approaches to analyzing the discrepancy between the empirical covariance matrix and the covariance matrix, which are d_ULS (i.e., the squared Euclidean distance) and d_G (i.e., the geodesic distance) (Dijkstra & Henseler, 2015). When the difference between the correlation matrix implied by the model

under test and the empirical correlation matrix is very small, it could be attributed purely to sampling error, which means that the model fits very well (Ramayah et al., 2017). Moreover, the difference between the correlation matrix and the empirical correlation matrix should not be significant, which means the *p*-value should be more than .05. On the contrary, if the difference is significant or the *p*-value is less than .05, it means the model fit has not been fulfilled (Henseler et al., 2016). The value of SRMR of gig workers with full-time jobs was equal to .02, whereas for gig workers without full-time jobs, the SRMR value was .024, which was less than the suggested value .08. Hence, the model fit was good. The d_ULS value for gig workers with full-time jobs was equal to 0.622 (*p* = .594), and the d_G value was equal to 0.718 (*p* = .639). By contrast, the d_ULS value for the gig workers without full-time jobs was equal to 0.856 (*p* = .741) and the d_G value was equal to 0.984 (*p* = .906). The d_ULS and d_G differences were not significant, which indicated that the two groups of data fitted the model well. Hence, in this research the two models met the model fit criteria requirements.

The results obtained for testing the two groups of hypotheses are shown in Figures 1 and 2. For gig workers who had full-time jobs, Hypotheses 1, 2, and 3 were all supported; for each hypothesis, the *p*-values were less than .001. Meanwhile, the beta value of each hypothesis was positive. For gig workers who did not have a full-time job, the beta values obtained also were positive, and the *p*-values shown against each hypothesis were lower than .001. This indicated that Hypotheses 1, 2, and 3 for the gig workers without full-time jobs were also supported. The adjusted *R* squared is displayed in Figures 1 and 2. In respect to the control variables, the age of the gig workers with full-time jobs were negatively related to their satisfaction. The beta value was -0.03, and the *p*-value was equal to .043. This means that compared with older gig workers, younger gig workers had more satisfaction with their gig work on the knowledge-based service platforms. For the other control variables, the *p*-value was not significant, which means that other control variables were not significantly associated with full-time gig workers' satisfaction. On the other hand, for gig workers who did not have full-time jobs, the results relating to the control variables were different. All *p*-values were significant, which means that the control variables did not significantly influence gig workers' satisfaction.

Figure 1 *Hypothesis Testing Results (Gig Workers With a Full-time Job Group)*
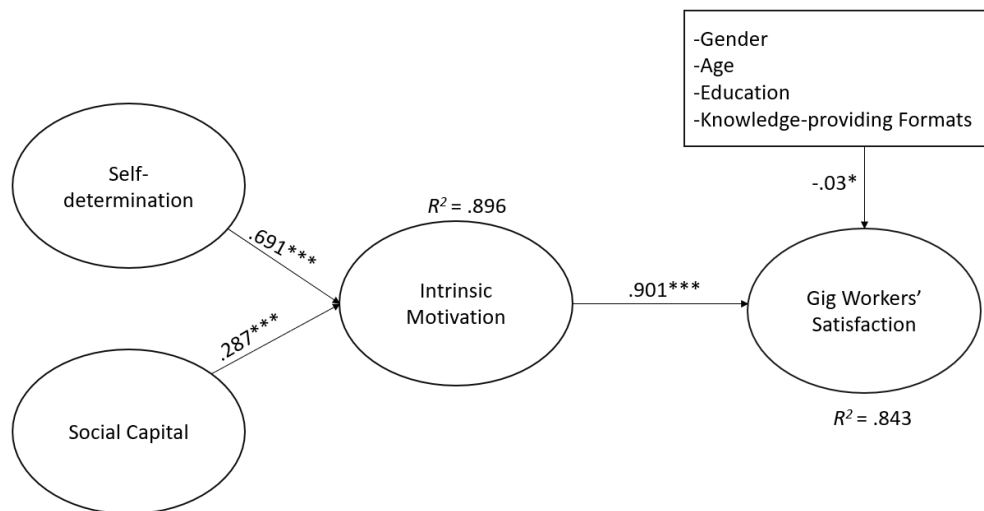
*Note. *p* < .05, ***p* < .001

Figure 2 *Hypothesis Testing Results (Gig Workers Without a Full-time Job Group)*
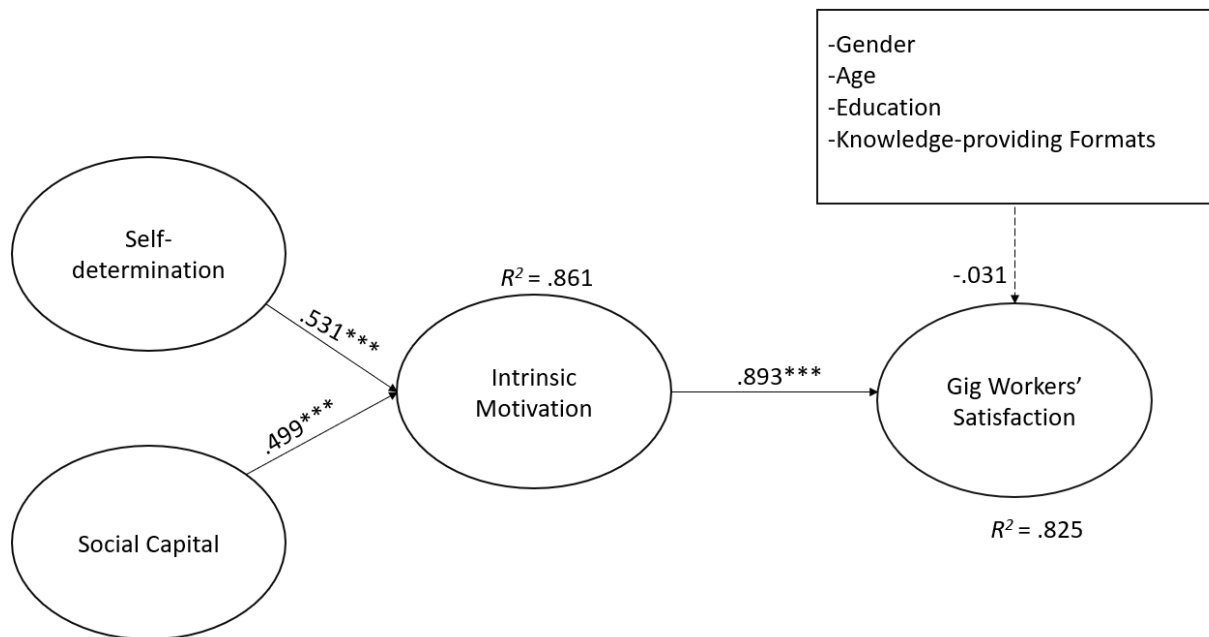
*Note. *p* < .05, ***p* < .001*

Discussion and Conclusions
General Discussion and Contributions

Based on the self-determination theory, an investigation was carried out in this study on gig workers' intrinsic motivation and job satisfaction with knowledge-based service platforms. The study design compared gig workers with and without full-time jobs. It was found that self-determination in terms of perceived autonomy, perceived relatedness, and perceived competence were positively associated with intrinsic motivation. These findings are consistent with those of Haivas et al. (2012), who investigated the impact of self-determination on volunteer motivation. They found that self-determination in terms of autonomy was the most effective factor that influenced volunteers' intrinsic motivation.

Moreover, it also was found that social capital was significantly positively related to intrinsic motivation. Zhang et al. (2017) found and confirmed that social capital, in terms of social trust and shared goals, positively influenced the intrinsic motivation that made people have a higher intention of sharing their knowledge in a health question and answer community.

This research also indicated that intrinsic motivation was positively associated with gig workers' satisfaction. Meanwhile, it applied to both gig workers with and those without full-time jobs. This finding is consistent with the previous study of Zaman et al. (2020) on job characteristics, motivation, and satisfaction of gig workers. These researchers found that gig workers' intrinsic motivation positively affected their joy of work as well as their work satisfaction; they also found that intrinsic motivation was related to workplace satisfaction.

Furthermore, from the standpoint of control variables, the age of gig workers in full-time jobs was negatively related to their work satisfaction, and the *p*-value was less than .05, which was statistically significant. This means that respondents who were gig workers with full-time jobs, particularly younger gig workers, were more satisfied with work involving knowledge-based service platforms. When compared to younger gig workers, older gig workers were less satisfied with their jobs. The reason for this may be that younger gig workers had more energy and were more willing to try new things than older generations. Moreover, a majority of younger gig workers were not married with their own families, whereas the older gig workers might already have their own families, and may not have enough energy or time to focus on their gig work. Rožman et al. (2019) also studied age-diverse employees' occupational stress, burnout, and work satisfaction. They found that age was positively

related to occupational stress; however, age was negatively related to their work satisfaction due to stress, along with behavioral, emotional, and physical symptoms of burnout.

The present study fills a research gap in the application of self-determination theory to the gig economy and knowledge-based service platform industries. It also compares gig workers with full-time jobs to those without full-time jobs. Some procedures and suggestions can be provided to knowledge-based service platforms, as well as to gig workers. First, the platforms should provide autonomy to the gig workers, such as flexible working hours and working places, and even allow the gig workers to choose their tasks and projects. Meanwhile, the platforms can also provide an internal referral rewards system to encourage gig workers to introduce their qualified friends to join the platforms and work together with them. Second, in terms of social capital, the platforms can host online activities and forums to encourage gig workers to interact more. They can also hold on-site and face-to-face activities in different cities to give gig workers opportunities to meet in person in order to boost their social interaction and social trust, and improve their intrinsic motivation. Thirdly, the study found that intrinsic motivation significantly influenced gig workers' work satisfaction, and the beta value obtained was the highest. Therefore, gig workers' intrinsic motivation is the key to their work satisfaction. It is suggested that gig workers find a field that they really enjoy and are interested in before they join a platform.

This research also enables some advice and suggestions to be made to people who would like to join the knowledge service providing platforms and become gig workers. In order to become a gig worker on such a platform, individuals have to choose a field that they are really interested in and are very good at. It is not necessary to have a professional certificate, but they should have enough knowledge and qualities to share, such as beauty and makeup, fitness, storage, and so on. Finally, the knowledge-based service platform operators might consider giving more opportunities to the younger generation when they recruit. Moreover, platforms could also let gig workers try to use different types of tools for sharing their knowledge, such as video, audio, and comprehensive methods.

Limitations and Future Studies

This research study had some limitations. First, because the data was collected using a self-administered questionnaire, the study could not provide a more in-depth look into the thoughts of gig workers. Additionally, the study did not test other factors that might have influenced gig workers' intrinsic motivation and their work satisfaction. Also, the study did not classify the specific area and field in which the gig workers worked on the knowledge-based service platforms. This means that the research could not be used to compare which area of knowledge the gig workers had more intrinsic motivation and work satisfaction.

As stated in the limitations, it is recommended that it would be advantageous to use a mixed methods approach and incorporate qualitative research methods to enable in-depth interviews to be conducted with gig workers in future studies in order to better understand their perspectives. Furthermore, future researchers could examine how extrinsic motivation affects gig workers job satisfaction. They could also categorize the different fields of knowledge that gig workers have, and compare their intrinsic motivation and satisfaction towards the platforms, such as language learning, beauty and health, career development, soft skills development, and other features.

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