The Study of Working Patterns in the Gig Economy

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Abstract

The economy and technology have changed normal work modes in recent years. A new gig economy has been catalyzed, and job opportunities have increased rapidly. Some constant entrepreneurs take advantage of the gig economy and the characteristics of the sharing platform to create new business models. More and more workers want to earn income while achieving a better quality of life and thus become gig economy workers. In 2016, McKinsey Global Institute presented the first study related to the gig economy, which showed that workers in the gig economy are slightly more satisfied than those in traditional employment. Therefore, the purpose of this study is threefold: 1) to explore the factors affecting job satisfaction in the gig economy, 2) to explore the applicability of the Job Characteristics Model (JCM) in the gig economy, and 3) to explore the effects of the job patterns affecting the gig economy on job satisfaction. The study used a quantitative questionnaire to examine the impact of the JCM on job satisfaction. This study was conducted using a quantitative questionnaire survey. The questionnaire was divided into four parts: demographic variables, job characteristic models, job patterns in the gig economy, and job satisfaction. Regression analyses were conducted to verify the effects of job-distinct models and job patterns on the gig economy. The study results showed that the JCM theory is generally applied to the gig economy. Still, the effect of "task importance" on "job satisfaction" was not significant. In the gig economy, "substitutability" and "uncertainty" have substantial adverse effects on "job satisfaction," while "flexibility" and "degree of freedom" have significant positive impacts on "job satisfaction".

Keywords: Gig economy, Job characteristic model, Job pattern, Motivation potential index, Job satisfaction.

1 | Introduction

The way people work has changed, and the old concept of a steady income from 9 to 5 is no longer the norm. In the past, workers believed that a typical employment contract was the only way to protect their rights and interests. However, the rise of the digital economy and the development of business service models have changed the labour market structure, and "atypical hiring or contracting" has become popular. The work

pattern of odd-job workers who mainly complete errands and dispatch work through platforms has inspired the 21st century to become the Gig Economy.

According to the May 2023 Manpower Utilization Survey report by the Census and Statistics Department of Taiwan's Executive Yuan, there were 806,000 atypical workers, an annual increase of 1.08%, accounting for 7.01% of all employed people. Jobs in the gig economy have lower entry thresholds, higher flexibility, and autonomy [1], and they can choose whether or not to take on a case and decide on their own the hours of work and the length of time they want to work. Just like the analogy in the book (Gig Economy is Coming), if all jobs are compared to a spectrum of light, traditional full-time employment and unemployment are at the two ends of the spectrum, and the middle of the range is the gig economy [2].

The gig economy is a phenomenon that has been around for a while. Freelancers have worked independently for many years in various industries, differentiating themselves from full-time workers. Mulcahy [2] defines a variety of occupations as gig economy workers, including corporate consultants, contingent workers, part-time workers, temporary workers, freelancers, self-employed, part-time workers, and those who engage in part-time employment through the Internet. McGovern and Schnaubelt [3] take the duration of work as an entry point and consider workers in any field with an indeterminate duration of employment. Huang [4] pointed out in his study on the management of self-media that most self-media creators start from their professional fields and interests, or they share what happens in their daily life with the public in the form of records and then make use of the online platform to exert their influence. It can be seen that the diversity of work in the Internet digital generation has accelerated the diversification of work styles in the gig economy.

For workers in the gig economy, it is better to choose a typical job in the gig economy than to find stable and secure employment and give up control of their lives. Instead, it is better to select a specific job in the gig economy, where independence and degree of freedom are preserved despite the loss of organizational protection and support and the sense of insecurity that comes with a traditional job [5].

The 2016 McKinsey Global Institute report shows that worker satisfaction in the gig economy is slightly higher than that of traditionally employed workers, encompassing both job satisfaction and life satisfaction. Although the difference is slight, the report suggests that it is statistically significant and that workers who voluntarily choose the gig economy job patterns are, in turn, more satisfied than those who do not [6]. Therefore, the motivation of this study is to investigate what factors influence job satisfaction in the gig economy.

In summary, the research objectives of this study are threefold: 1) to explore the factors affecting job satisfaction in the gig economy, 2) to examine the applicability of the Job Characteristics Model (JCM) in the gig economy, and 3) to explore the impact of job patterns on job satisfaction in the gig economy.

2|Literature Review and Hypothesis

2.1|Gig Economy

The term Gig Economy was introduced by academic Mulcahy [2], which focuses on the work period and points to the use of different short-term or contractual jobs instead of full-time work patterns. Huws and Joyce [7] focus on online platform matchmaking, which they see as a model of work mixes created by online platform matchmaking. Online platform matchmaking to create a model of work portfolios. Heeks [8] views it as continuous online labour from micro-working to online freelance work. BEIS, the Department for Business, Energy and Industrial Strategy of the United Kingdom, uses piecework as an entry point and views it as a short-term or piecework transaction in which labour and money are exchanged [9].

Various scholars also have different views on what kind of workers are considered gig economy workers. McKinsey Global Institute's report in October 2016 pointed out that there are three main characteristics of independent workers: 1) high degree of autonomy and control over work: workers have a high degree of control over the workload and work mix, and they can choose their work based on cost, customer demand,

and time, 2) work income is based on the number of pieces of tasks or the number of hours. Payment for work is based on the number of jobs or sales volume: unlike traditional employees, if there is no work, there is no time and no income, and 3) short-term relationship between worker and client: jobs last for a short period (less than 12 months).

Mulcahy [2] defines various occupational types as workers in the gig economy, corporate consultants, contract dispatchers, part-time employees, temporary workers, freelancers, self-employed, part-time sideline workers, and those who take on cases through online platforms. The McKinsey Global Institute also classifies them into four categories (voluntary or involuntary and whether their income is primary or supplemental): 1) free agents: 30% are voluntary and serve as the primary income earner, 2) casual earners: voluntary, as supplemental income, 40%, 3. Reluctant workers (Reluctant): due to the needs of life as the primary income, but prefer traditional workers, accounting for 14%, and 4) financially strapped: those who use it as a supplemental income due to the necessities of life at 16% [6]. The Royal Society of Arts and Letters, in its 2017 report, classified odd jobs into three categories: 1) professional or creative or administrative services, 2) skilled manual or personal services, and 3) driving and delivery services [10].

In summary, there are differences among scholars on the gig economy, both in terms of definition and workers, due to different connotations and angles of entry. In the past, when we think of freelancers, we always think of workers who take on cases independently, and they are highly skilled in our impression. However, according to Harvard Business Review, some workers say they use digital platforms for casework because of limited employment opportunities [11], and they become temporary and casual workers because of force majeure [12]. The gig economy undoubtedly provides job opportunities with a low entry barrier for newcomers in society. It can be seen that there are huge differences between workers in the gig economy, whether the definition is generated from the period of work, the online platform media cooperation as an entry point, or all recognize the piece-rate method of payment. There is a lack of unanimous consensus. Therefore, this study hopes to use the employment contract as an entry point, and those who do not have an employment contract are the target of this study.

2.2 | Job Characteristics Model

Hackman and Oldham [13] proposed the JCM in 1975, which aims to enhance the psychological state of employees by mastering the five core components of job design to motivate and achieve organizational goals. According to this theory, job satisfaction is higher when the job characteristic model composite index is higher and motivation and job performance are higher. JCM can be divided into five dimensions: 1) skill diversity is completing the job requiring multiple skills or techniques, 2) task integrity: the work performed is complete or has distinguishable segments, 3) task importance: the degree to which the work results impact the organization, society, and humanity, 4) autonomy: the degree of independence and freedom the job provides the worker, and 5) feedback: the results and information the worker obtains when performing the job.

In terms of the relationship between job characteristic models and job satisfaction, many empirical studies have been conducted by scholars in the past. Lin [14] used primary and secondary school teachers as the subjects of her research and found that job characteristics were significantly positively correlated with job satisfaction. Lai [15] studied university administrators with the same result. Chiu [16] used internal auditors as the subjects of her study and also obtained the same result. Chen [17] studied international news editors and found that job characteristics had a positive impact on job satisfaction. Chen [17] studied international news editors and found that importance and variability in the construct significantly positively affected intrinsic satisfaction for medical professionals. Lin [18] and Faraji et al. [19] applied A study of the relationship among leadership.

In conclusion, many scholars believe that the relationship between job characteristic models and job satisfaction is significantly positive, and this conclusion is also found in many research fields. Still, there is a lack of research in the field of gig economy. Therefore, this study hypothesizes that there is a significant

positive effect of job characteristic models on job satisfaction and that all the subcomponents of job characteristic models are significantly positively related to job satisfaction; the hypotheses are listed as follows:

I. H 1: there is a significant positive effect of "MPS" on "job satisfaction".

II. H 1-1: there is a significant positive effect of "skill diversity" on "job satisfaction".

III. H 1-2: there is a significant positive effect of "task integrity " on "job satisfaction".

IV. H 1-3: there is a significant positive effect of "task importance" on "job satisfaction".

V. H 1-4: there is a significant positive effect of "autonomy" on "job satisfaction".

VI. H 1-5: there is a significant positive effect of "Feedback" on "job Satisfaction".

2.3|Job Pattern in the Gig Economy

Compared to the full-time work type, as the supply of odd-job manpower is mobile, with high flexibility in terms of wages and working conditions, it is not difficult for employers to find zero-worker workers [11], and there is a high degree of substitutability compared to the general work. In addition, workers in the gig economy are free to choose their co-workers and whether or not to take on a case [20] and can decide for themselves when to do it and how much to do it [11]. Some workers can also choose their workplace and have more flexibility than the average job.

Despite the economic degree of freedom of the gig economy compared to full-time employment, workers have a constant sense of uncertainty, fearing for their money, reputation, and even their jobs due to a lack of organizational support [5], financial insecurity and a lack of interpersonal connections [12]. However, this is not a bad thing, and some workers believe that that sense of insecurity motivates them to continue learning and staying on top of their game [5]. As a result, jobs in the gig economy have a higher degree of uncertainty than typical jobs.

With the development and advancement of technology, many emerging business models incorporate the concept of the gig economy, taking advantage of the convenience and immediacy brought by the Internet and mobile devices to form the 'on-demand economy,' which provides a better experience to customers by offering goods or services immediately [3]. For example, the food delivery platforms Foodpanda and Uber Eats satisfy customers' needs by instantly providing food delivery matchmaking services, and so does Uber, which satisfies customers' ridesharing needs by immediately matching riders and drivers through apps. Workers can decide whether or not to take on a job and have a high degree of autonomy in their work. Compared to full-time jobs, gig economy workers have more freedom to choose what they want to do.

Based on the above discussion, this study has compiled four types of jobs in the gig economy, namely, substitutability, flexibility, uncertainty, and degree of freedom, and the meaning of these four types will be discussed in the following.

Substitutability

Substitutability is a relative concept; the opposite is irreplaceability or irreplaceability; because of the rarity of the thing measured or the characteristics that cannot be replaced or substituted, the value generated is irreplaceable. Barney [21] put forward the view on the irreplaceability of the company that due to the company having rare, valuable, and not easily imitated and irreplaceable resources, heterogeneity and irreplaceability are generated. Hickson et al. [22] argued that the irreplaceability of a department arises from the department's function or the dependence of other departments or even organizations on the department.

In job patterns, if a worker's job pattern is substitutable, it may be due to the fact that the skills of the job are not rare or not easy to imitate, or the learning curve is relatively short. In other words, the skills required for the job content are relatively simple, or the number of people with the skills is large, so it is easy to find a

replacement worker. Therefore, this study defines substitutability as "the degree to which it is easy to be replaced".

Regarding the relationship between substitutability and job satisfaction, there have been fewer studies on the relationship in the past. Chen [23] mentioned that when employees' knowledge or skills are no longer superior, the possibility of substitutability will increase, in which case job insecurity is likely to occur. Since the possibility of being replaced is similar to the concept of substitutability in this study, and job insecurity and job satisfaction are opposite concepts, this study suggests that the relationship between substitutability and job satisfaction should be negatively related. Therefore, one of the hypotheses of this study is that substitutability has a significant negative effect on job satisfaction, as follows:

– *H 2-1: "substitutability" has a significant negative effect on "job satisfaction".*

Flexibility

Flexibility is a physical term used to describe the pattern of matter. Gustavsson [24] suggests that elasticity is adjustable, bending, turning, or changeable, and Poole and Warner [25], Blyton [26] suggest that elasticity is the ability to adapt, adjust, and react to stress or change. In organizations, Jan Eppink [27] indicates that resilience allows them to protect from or reduce harm and to respond to changing environments. In competition, Sethi and Sethi [28] consider resilience as its ability to adapt continuously to the competitive environment. Colclough and Tolbert [29] consider resilience to be the ability of firms to grasp the changes and make directional adjustments to face the changes in the market. Brewer [30] suggests flexible working arrangements affect work patterns, skills, performance, training, health, autonomy, and commuting. This study defines flexibility as "the degree of self-control".

There is a lack of research on the relationship between flexibility and job satisfaction. Still, the concept of flexibility as "being in control" is partly similar to autonomy in the job characteristic model in that both are about workers having a certain degree of control; in this study, flexibility is defined as the worker's right to make decisions about the time and place of work. The greater the degree of choice a worker has, the more likely he or she is to be satisfied at work. The more choices a worker can make, the easier it is for him/her to be satisfied at work. Therefore, hypothesis two bis of this study is that flexibility significantly affects job satisfaction. It is as follows:

– *H 2-2: Flexibility has a significant positive effect on job satisfaction.*

Uncertainty

Uncertainty is a psychological feeling that arises when a change in environment, status, or situation or a crisis results in feelings of unease, instability, and insecurity. In their work, Leana and Feldman [31] suggest that uncertainty is the cause of insecurity, and Ashford et al. [32] suggest that insecurity arises due to changing expectations, perceived role ambiguity, and perceived role conflict. Therefore, this study defines uncertainty as "the degree to which one feels unsettled, unstable, and insecure."

Regarding the relationship between uncertainty and job satisfaction, although there is a lack of relevant research, there are some similarities in the study by [33], in which it was hypothesized that employees' perceptions of organizational change had a significant positive effect on job insecurity. However, the final result of the study was not significant; it may be because it was conducted on the bank employees, and therefore, organizational change brought about insecurity was not significant. In his study, Lai [34] mentioned that job insecurity most deeply affects employees' uncertainty about change, so the two should be correlated and positively related. Therefore, hypothesis 2-3 of this study is that uncertainty significantly negatively affects job satisfaction. Therefore, this study hypothesis 2-3 is that uncertainty has a significant negative effect on job satisfaction:

– *H 2-3: Uncertainty has a significant negative effect on job satisfaction.*

Degree of freedom

As the name suggests, the degree of freedom is the degree of freedom. The opposite of degree of freedom is a constraint, which means the degree of freedom from constraints, an ability to make one's own decisions as a result of being born as a human being, but also a right that is granted to a human being, enabling him or her to enjoy certain benefits. In the context of work, the degree of freedom becomes the right to decide whether to accept a job, so one can judge whether one wants it or not according to one's own free will. Therefore, this study defines freedom as "the degree of self-determination in accepting a job."

Regarding the relationship between degree of freedom and job satisfaction, few studies have directly separated degree of freedom from job satisfaction, and most of them have used the concept of autonomy in the job characteristic model to analyze the relationship between degree of freedom and job satisfaction. Degree of Freedom has a significant positive effect on job satisfaction. It is as follows:

– *H 2-4: A significant positive effect of ″degree of freedom″ on ″job satisfaction″ exists.*

2.4|Job Satisfaction

Job satisfaction, as a worker's subjective feelings, perceptions [35], and the degree of satisfaction with work [36], is a feeling that is easily influenced by a variety of factors. In the past, many studies have used job satisfaction as a dependent variable to explore the relationship between other factors, such as the above-mentioned studies on job characteristic models and job satisfaction. In addition, age [37], [38], gender [38], education [39], [40], years of experience [40] have been examined in the context of job satisfaction.

3|Research Methodology

This study will investigate the effects of JCMs and job patterns on job satisfaction under the influence of the gig economy through questionnaire surveys and regression analyses. According to the theory of JCM, the higher the score of the composite index of JCM, the higher the job satisfaction will be, and this study will investigate the applicability of the JCM in the gig economy by using this characteristic. This study will investigate whether the JCM model applies to the gig economy. In addition, through a literature review, we will find out the types of jobs in the gig economy and analyze the relationship between them and job satisfaction. The structure of this study is shown in *Fig. 1*.

In this study, the demographic variables were classified into eight dimensions, namely gender, age, marriage, education level, industrial sector, job nature, average daily working hours, and average monthly income. The literature has shown that there are five dimensions in the JCM: 1) skill diversity, 2) task integrity, 3) task importance, 4) autonomy, and 5) feedback, and the proxy variables for integrating the five dimensions can be calculated based on the Motivational Potential Score (MPS). There are four characteristics of the job pattern in the gig economy: substitutability, flexibility, uncertainty, and degree of freedom. This study will use the five dimensions of the JCM and the four job patterns of the gig economy as independent variables. Job satisfaction will be used as the dependent variable in this study.

The questionnaire will be divided into four parts: Part 1 is "Basic Information," Part 2 is "JCMs," Part 3 is "Job Patterns in the Gig Economy," and Part 4 is "Job Satisfaction." In the first part of the questionnaire, the respondents were asked to choose their group according to their situation. Starting from the second part of the questionnaire, a 5-point Likert scale was used, namely, "Strongly Disagree," "Disagree," "Normal," "Agree," and "Strongly Agree," with the scores ranging from 1 to 5, respectively.
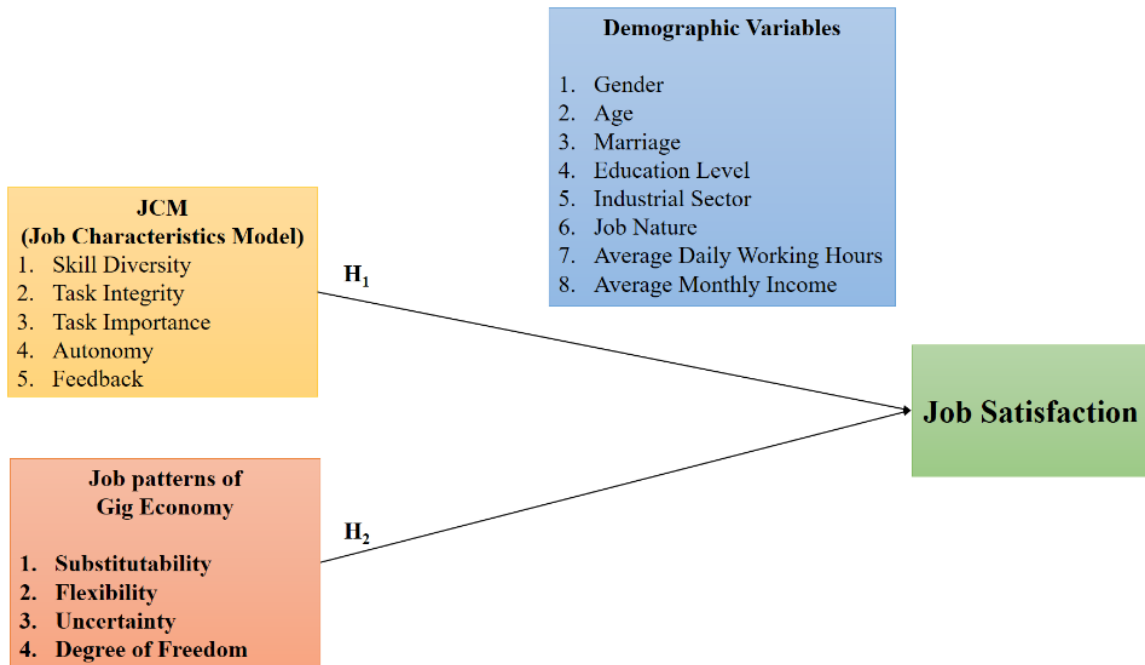
Fig. 1. Structure of the study.

3.1|Basic Information

The first part of this study was used to analyze the basic information of the respondents. The questionnaire included eight items "gender," "age," "marriage," "education level," "industry," "job nature," "average daily working hours," and "average monthly income," and then added the questionnaire of "being a freelance worker or not" to confirm whether or not they were the target of the study, a total of nine items were used as the basis for the design of the questionnaire. A total of nine items were used as the basis for the questionnaire design.

3.2|Job Characteristics Model

As mentioned in Section 2 of the literature review, this study was based on the theory of Hackman and Oldham [13]. The JCM was classified into five parts, namely, "skill diversity," " task integrity, "task importance, "autonomy," and "feedback," which served as the basis for the design of the questionnaire.

Measurement method

The Job Diagnostic Survey (JDS) developed by [13], based on the theoretical foundations of Turner and Lawrance [41] and Hackman and Lawler [42], was used in this study to measure the five dimensions of the JCM. The JDS was used to measure the five components of the JCM, namely, "skill diversity", "task integrity", "task importance", "autonomy", and "feedback", using a five-point Likert scale. The original authors designed two forward questions and one reverse question for each of the five dimensions of the JCM. ICM subjects are in *Table 1*.

Table 1. JCM subjects [43].

Dimension	Subjects
Skill diversity	I need to use many different skills to perform the multiple tasks required by the job.
	I need to use many different skills to perform the multiple tasks required by the job.
	My job is simple and repetitive.

Table 1. Continued [43].

Dimension	Subjects
Task integrity	I can be involved in the entire process, be consistent throughout, and see my contribution to the outcome of the work.
	At work, I can do everything I set out to do thoroughly.
	As the work had been pre-assigned, I was unable to complete the whole job from start to finish.
Task importance	The results of my work have a significant impact on others.
	My performance affects the performance of others.
	On the whole, my work is not very important to the organization.
Autonomy	I have almost total control over how and when the work is done.
	I have considerable opportunities at work to make free and independent decisions about the conduct of my work.
	I am not free to exercise my own ideas or judgment in performing my work tasks.
Feedback	This job is designed in such a way that I get almost immediate feedback on the results of my work as I complete it.
	I am always aware of my performance when carrying out my work priorities.
	I have a hard time getting hints about my performance at work.

3.3|Job Pattern in the Gig Economy

Operational definition

As mentioned in the literature review, this study found four phenomena in the gig economy regarding job patterns: ' substitutability', 'flexibility', 'uncertainty' and 'degree of freedom'. Based on the literature review, the following definitions were generated.

Measurement method

In this study, reference was made to the questionnaire modified by [23] based on [44], and the test was conducted using a Likert five-point scale, with the questions shown in *Table 2*.

Table 2. Substitutability subjects [23].

Dimension	Subjects
Substitutability	Co-workers can do my job.
	Temporary staff can do my job.
	My job is highly repetitive and doesn't require much time for training.
	My job is low-complexity and doesn't require a lot of time for training.
	Inexperienced newcomers can quickly learn new work.
	Colleagues from other units can easily deputize for me.

Flexibility

This study referred to the questionnaire designed by [45], in which the degree of job flexibility was divided into two parts, namely, the flexibility of schedule decision and the flexibility of location choice, and the test was conducted by using a five-point Likert scale, with the questions as shown in *Table 3*.

Table 3. Flexibility subjects [45].

Dimension	Subjects
Flexibility	I have a lot of autonomy in determining my daily workflow.
	I can do my work outside the office.

Uncertainty

This study referred to [34], who used [46]–[51] and other scholars as a basis for developing the questionnaire, and the original questionnaire consisted of 20 questions. To meet the needs of this study, eight questions were selected from the original questionnaire, which were more suitable for the needs of this study. The textual description of "after anticipating possible organizational changes" was deleted. The test was conducted using a five-point Likert scale, and the questionnaire is shown in *Table 4*.

Table 4. Uncertainty subjects [34].

Dimension	Subjects
Uncertainty	At work, I feel insecure about my personal future.
	My current life may have changed due to work.
	My existing job skills may be inadequate.
	I'm worried about the potential increase in workload.
	My future work will probably be diverse.
	In terms of work, I am concerned that the resources available may be reduced.
	At work, I would be concerned that my personal autonomy would be reduced.
	At work, I have relatively less personal power.

Degree of freedom

After exploring the literature, since no questionnaire items were found to meet the needs, this study designed its questionnaire based on the definition of degree of freedom to describe whether or not one has the degree of freedom to decide whether or not to accept an assignment at work, which was divided into two questions, one positive and one negative. It was tested using a Likert five-point scale, as shown in *Table 5*.

Table 5. Degree of freedom subjects.

Dimension	Subjects
Degree of freedom	At work, it's up to me to decide whether or not to accept an assignment.
	At work, I can't decide for myself whether or not to accept an assignment.

*Source: Collated by this study

Job satisfaction

As mentioned in the literature review, many scholars have proposed their definitions of job satisfaction, with slight differences in the description. Still, it can be broadly summarized as "workers' positive feelings towards their jobs," so this study takes this as the definition of job satisfaction. In this study, the short-form 20-question version of the Manual for the Minnesota Satisfaction Questionnaire (MSQ) was used as a reference by [42], and to meet the needs of this study, the word "Supervisor" was changed to "Task Deliverer," and the Likert 5-point scale was used for the test. The questions are shown in *Table 6*.

Table 6. Job satisfaction subjects.

Dimension	Subjects
Job satisfaction	I am satisfied with the level of busyness of my current job.
	This job gives me the opportunity to work on my own.
	This job gives me the opportunity to do different things that will help me in the future.
	My job gives me a special position in the company.
	I am satisfied with the manner in which I am treated by the person with whom I am working.
	I am satisfied with the ability of the person I am working with to make decisions.
	There's no way this job would make me do anything against my conscience.

Table 6. Continued.

Dimension	Subjects
	I think this job provides me with job stability.
	I feel that there are opportunities to do things for others at work.
	I think there are opportunities to tell people what to do at work.
	I feel that my abilities and skills are compatible with my current job.
	I am satisfied with the way the company implements its policies.
	I am satisfied with my salary compared to the amount of work I do.
	I think this job will give me a chance for advancement.
	I feel free to use my own judgment at work.
	I have the opportunity to try to handle things in my own way at work.
	I am satisfied with the working environment.
	I am satisfied with the way my colleagues are getting along with each other.
	When I do a good job, I'm usually praised for it.
	I get a certain sense of fulfilment out of this job.

3.4 | Subject of the Study

As mentioned in the literature, many definitions of the gig economy are quite heterogeneous, and various scholars have their own theoretical bases. To fulfil the research needs, this study needs to define a zero-worker economy so that the respondents can make clear choices and establish the scope of the target population of this study. Therefore, the target population of this study is the "people who do not have a contract of employment".

The questionnaire of this study is a web-based questionnaire, which was distributed and collected using the SurveyCake questionnaire platform. The questionnaire was distributed in May 2020 for 15 days, with a total of 1,213 clicks, 403 questionnaires collected, and a response rate of 33.2%.

3.5 | Pre-test Questionnaire Survey

The pre-test of this study was divided into four parts. Thirty-five questionnaires were sent out for pre-testing by random sampling method, and 35 questionnaires were recovered, with 35 valid questionnaires. After the questionnaires were collected, SPSS statistical software was used to conduct reliability and validity analyses. The reliability of the questions was first checked, and the questions were deleted according to Cronbach's α. Validity analyses were then conducted, and the questions of poor validity were filtered out to produce the official questionnaires.

3.5.1 | Credibility analysis

In this study, Cronbach's α was used as a measure of reliability to examine the internal consistency of the constructs, and the larger the Cronbach's α value, the better the reliability and the higher the internal consistency. DeVellis [52] stated the following about Cronbach's α: the best reliability is when the alpha coefficient is greater than 0.80, high reliability is between 0.70 and 0.80, okay between 0.65 and 0.70, and poor reliability is below 0.65.

After the question adjustment, the reliability analysis was conducted again in this study, and the adjusted reliability of each construct is summarized in *Table 7* below. As shown in the table, autonomy, feedback, substitutability, and job satisfaction reliabilities were optimal, skill diversity and immediacy reliabilities were good, and task integrity, task importance, flexibility, and uncertainty, although still poor, were the results of the question adjustment and were retained for the purposes of the study.

Table 7. Adjusted reliabilities of the dimensions' subjects.

Main Dimension	Sub-Dimension	Cronbach's α of Dimension	No. of Subjects
JCM	Skill diversity	0.752	2
	Task integrity	0.584	2
	Task importance	0.353	2
	Autonomy	0.909	2
	Feedback	0.851	2
Job patterns of the gig economy	Substitutability	0.915	6
	Flexibility	0.586	2
	Uncertainty	0.640	6
	Degree of freedom	0.928	2
Job satisfaction		0.930	20

3.5.2 | Validity analysis

After completing the reliability analysis, the validity of the constructs was measured using the KMO and Bartlett's ball-point test, with the factor loadings indicating the degree of variability in the explanatory variables of the constructs. Kaiser and Rice [53] suggested that a KMO of less than 0.5 is unacceptable and a KMO greater than 0.6 is average. Bartlett's ball-point test P-value of less than 0.01 is significant. Bartlett's spherical test P-value less than 0.01 is considered significant. Bartlett's ball-point test P-value less than 0.01 is considered significant, while factor loadings should be greater than 0.5. Regarding the results of the validity analysis, the factor loadings for the ten major types of questions: 1) skill diversity, 2) task integrity, 3) task importance, 4) autonomy, 5) feedback, 6) substitutability, 7) flexibility, 8) uncertainty, 9) degree of freedom, and 10) job satisfaction were all greater than 0.5, and the KMO value was equal to 0.5. Bartlett's ball-point test showed that the factor loadings for all questions were greater than 0.5, and the KMO value was equal to 0.5. Bartlett's sphere test results are significant, so the questions are not deleted.

4 | Result and Discussion

A total of 403 questionnaires were sent out, and 403 questionnaires were returned, and the question "are you a freelance worker or not?" was used to select the target population for this study. 104 valid samples were obtained, which accounted for 25.8% of the total recovered samples.

4.1 | Reliability and Validity Analysis of the Responded Questionnaires

As can be seen from *Table 8*, Cronbach's α values of most of the constructs were greater than 0.65, but the task integrity and flexibility reliabilities were not good. Still, the construct questions were retained to maintain the completeness of the constructs.

Table 8. Post-test reliability analysis.

Main Dimension	Sub-Dimension	Cronbach's α of Dimension	No. of Subjects
JCM	Skill diversity	0.668	2
	Task integrity	0.433	2
	Task importance	0.000	1
	Autonomy	0.908	2
	Feedback	0.782	2
Job patterns of the gig economy	Substitutability	0.932	5
	Flexibility	0.407	2
	Uncertainty	0.776	6
	Degree of freedom	0.875	2
Job satisfaction		0.912	20

From *Table 9*, the dimension KMO values are all greater than or equal to 0.5, and Bartlett's spherical check P-values are all significant.

Table 9. Post-test validity analysis.

Main Dimension	Sub-Dimension	KMO Value	P-Value of Bartlett's Spherical Determination	No. of Subjects
JCM	Skill diversity	0.500	0.000	2
	Task integrity	0.500	0.003	2
	Task importance	0.000	0.000	1
	Autonomy	0.500	0.000	2
	Feedback	0.500	0.000	2
Job patterns of the gig economy	Substitutability	0.851	0.000	5
	Flexibility	0.500	0.005	2
	Uncertainty	0.755	0.000	6
	Degree of freedom	0.500	0.000	2
Job Satisfaction		0.832	0.000	20

4.2| Discussion of Hypothesis Testing

4.2.1|The relationship between the "job characteristic model" and "job satisfaction

Relationship between MPS and job satisfaction

Table 10 shows that the relationship between MPS and Job Satisfaction is significantly positive, and the higher the MPS, the higher the Job Satisfaction, and vice versa. Therefore, hypothesis H1 is valid.

Table 10. Effect of MPS on job satisfaction.

	Job Satisfaction (Dependent Variable)					
(Independent variable)	β	t	p	R2	F	P
MPS	0.596	7.491	0.000	0.355	56.109	0.000

Relationship between "skill diversity" and "job satisfaction"

As shown in *Table 11*, the relationship between skill diversity and job satisfaction is significantly positive, as the higher the skill diversity, the higher the job satisfaction, and vice versa. Therefore, the hypothesis H 1-1 is valid.

Table 11. Effect of skill diversity on job satisfaction.

	Job Satisfaction (Dependent Variable)					
(Independent variable)	β	t	p	R2	F	P
skill diversity	0.353	3.816	0.000	0.125	14.562	0.000

Relationship between task integrity and job satisfaction

As shown in *Table 12*, the relationship between task integrity and job satisfaction is significantly positive; the higher the task integrity, the higher the job satisfaction.

Table 12. Effect of task integrity on job satisfaction.

	Job Satisfaction (Dependent Variable)					
(Independent variable)	β	t	p	R2	F	P
task integrity	0.258	2.701	0.008	0.067	7.295	0.008

Relationship between task importance and job satisfaction

As shown in *Table 13*, the relationship between task importance and job satisfaction is positive; however, the p-value of 0.123 is higher than 0.05, which is not significant. Therefore, the hypotheses H 1-3 are not significant.

Table 13. Effect of task importance on job satisfaction.

Job Satisfaction (Dependent Variable)						
(Independent variable)	β	t	p	R2	F	P
task importance	0.152	1.554	0.123	0.023	2.416	0.123

Relationship between autonomy and job satisfaction

As shown in *Table 14*, the relationship between autonomy and job satisfaction is significantly positive, as the higher the autonomy, the higher the job satisfaction and vice versa. Therefore, hypotheses H 1-4 are valid.

Table 14. Effect of autonomy on job satisfaction.

Job Satisfaction (Dependent Variable)						
(Independent variable)	β	t	p	R2	F	P
autonomy	0.455	5.157	0.000	0.207	26.598	0.000

Relationship between feedback and job satisfaction

As shown in *Table 15*, the relationship between feedback and job satisfaction is significantly positive, as the higher the feedback, the higher the job satisfaction and vice versa. Therefore, hypotheses H 1-5 are valid.

Table 15. Effect of feedback on job satisfaction.

Job Satisfaction (Dependent Variable)						
(Independent variable)	β	t	p	R2	F	P
feedback	0.519	6.125	0.000	0.269	37.516	0.000

4.2.2|The Relationship between "job satisfaction" and "job pattern of the gig economy"

Relationship between substitutability and job satisfaction

As shown in *Table 16*, the relationship between substitutability and job satisfaction is significantly negative. The higher the substitutability, the lower the job satisfaction, and vice versa. Therefore, the hypothesis H 2-1 is valid.

Table 16. Effect of substitutability on job satisfaction.

Job Satisfaction (Dependent Variable)						
(Independent variable)	β	t	p	R2	F	P
substitutability	-0.309	-3.281	0.001	0.095	10.766	0.001

Relationship between flexibility and job satisfaction

As shown in *Table 17*, the relationship between flexibility and job satisfaction is significantly positive, as the higher the flexibility, the higher the job satisfaction and vice versa. Therefore, it is assumed that H 2-2 is valid.

Table 17. Effect of flexibility on job satisfaction.

Job Satisfaction (Dependent Variable)						
(Independent variable)	β	t	p	R2	F	P
flexibility	0.394	4.332	0.000	0.155	18.762	0.000

Relationship between uncertainty and job satisfaction

As shown in *Table 18*, the relationship between uncertainty and job satisfaction is significantly negative; the higher the uncertainty, the lower the job satisfaction and vice versa. Therefore, the hypothesis H 2-3 is valid.

Table 18. Effect of uncertainty on job satisfaction.

Job Satisfaction (Dependent Variable)						
(Independent variable)	β	t	p	R2	F	P
uncertainty	-0.194	-1.996	0.049	0.038	3.983	0.049

Relationship between "degree of freedom" and "job satisfaction"

As shown in *Table 19*, the relationship between degree of freedom and job satisfaction is significantly positive; when the degree of freedom is higher, job satisfaction is higher and vice versa. Therefore, the hypothesis H 2-4 is valid.

Table 19. Effect of degree of freedom on job satisfaction.

Job Satisfaction (Dependent Variable)						
(Independent variable)	β	t	p	R2	F	P
degree of freedom	0.284	2.992	0.003	0.081	8.952	0.003

4.3 | Summary

The relationship between the "job characteristic model" and "job satisfaction" and the relationship between the "Job pattern of the gig economy" and "job satisfaction" is shown in *Table 20* below, based on the results of the hypotheses examined in this study.

Table 20. Summary of results of hypothesis testing in this study.

Number	Hypothesis	Results
H 1	"MPS" has a significant positive effect on "job satisfaction".	Valid
H 1-1	"Skill diversity" has a significant positive effect on "job satisfaction".	Valid
H 1-2	"Task integrity " has a significant positive effect on "job satisfaction".	Valid
H 1-3	"Task importance" has a significant positive effect on "job satisfaction".	Not obvious
H 1-4	"Autonomy" has a significant positive effect on "Job Satisfaction".	Valid
H 1-5	"Feedback" has a significant positive effect on "Job Satisfaction".	Valid
H 2-1	"Substitutability" has a significant negative effect on "Job Satisfaction".	Valid
H 2-2	"Flexibility" has a significant positive effect on "Job Satisfaction".	Valid
H 2-3	"Uncertainty" has a significant negative effect on "Job Satisfaction".	Valid
H 2-4	"Degree of freedom" has a significant positive effect on "Job Satisfaction".	Valid

5 | Conclusion

As with the JCM theory, according to the H1 validation results, overall, the higher the MPS score, the higher the job satisfaction. When disaggregated, it is generally true that skill diversity, task integrity, autonomy, and feedback are all significantly positively related to job satisfaction, except for task importance, for which no correlation with job satisfaction can be demonstrated. Therefore, this study concludes that the job characteristic model theory also generally applies to the gig economy.

According to the results of the H2 test, all the gig economic job patterns, as defined in this study, are related to job satisfaction. Substitutability, flexibility, uncertainty, and degree of freedom are all significantly related to job satisfaction, with substitutability and delay being negatively related and flexibility and degree of space being positively related. This indicates that job satisfaction decreases when job substitutability is higher. When job uncertainty is more elevated, job satisfaction decreases. Job satisfaction increases when there is more flexibility, either in terms of location or time. The same is true for the degree of freedom, as job satisfaction increases when there is more decision-making power.

The target population of this study is only Taiwan's gig economy workers in Asia. However, the gig economy is prevalent in many countries worldwide, and there may be some differences among countries due to regulations, institutions, culture, values, and other factors.

It is suggested that the following two aspects can be explored in the follow-up study:

I. In terms of the source of the sample for this study, since this study encountered many limitations in the sample collection process, as stated in the study limitations if the resources of the researcher permit in the future, it is suggested that simple random sampling or cluster sampling can be used to obtain a statistically closer sample source to the parent sample.

II. Finally, in terms of the subgroups of research subjects, since there are many workers in the gig economy, and there are also considerable differences among the groups, it is not easy to follow a single theory consistently, and it is easy to be insignificant if we look at the whole, so it is suggested that future researchers can subgroup the gig economy workers, and compare the differences among the groups, to construct a theory that is more consistent with each group.

Author Contribution

Conceptualization, Y.F. L..; Methodology, Y.F. L., Software, Validation, formal analysis, and investigation, K.L. H..; writing-creating the initial design, K.L. H.; writing-reviewing and editing, Y.F. L. All authors have read and agreed to the published version of the manuscript.

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Data Availability

All the data are available in this paper.

Conflicts of Interest

The authors declare no conflict of interest.

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