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EXPLORING ALTERNATIVE CREDIT RISK PROFILING METHODOLOGY TO ASSESS CREDITWORTHINESS OF PLATFORM WORKERS IN GIG ECONOMY AND HELP LENDERS MAKE DECISION

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ABSTRACT
The rise in quick commerce, food delivery, ride hailing platforms etc. has led to a large pool of gig workers. They are recognised as independent contractors and not employees of the company. This leads to irregular income patterns and lack of traditional financial documentation. Hence, they remain excluded from the formal credit system and general financial system. This paper explores alternative credit risk assessment methodology to assess the creditworthiness of platform workers and help lenders make decisions using alternative data.

The models leverage non-traditional data sources such as platform activity, digital transaction behavior, mobile usage patterns, and psychometric indicators. Alternative data sources include bank statements, income, utility bills, digital payment patterns, expenses etc. The study also highlights the challenges and current gaps offering recommendations for ethical implementation. This paper also aims to enhance decisions by policymakers, support lender assessment and financial institutions in designing credit assessment frameworks that are fair, data-driven, diverse data and accessible to growing segments of the workforce.

Keywords: *Gig economy, credit risk profiling, alternative data, credit scoring, platform workers, digital lending, credit access, credit risk assessment.*

1. INTRODUCTION

1.1 Rise in Gig Workers and Growth in India's Gig Economy
There is a rise in digital platforms like Zomato, Uber, Ola, Instamart, Swiggy, Zepto etc. providing varied services like ride hailing, grocery delivery and food delivery. This growth has also amplified the number of "independent contractors" also known as "gig workers" supporting the operations and are transactional face to the consumer for the company. According to Niti Aayog (2022), the estimates for the gig workers in the country with the data of 2020-21 was 7.7 million workers in the gig economy. It also projects the number to rise to 23.5 million by 2029-30. This is a large number and forms a large part of the country's total workforce.

Because of the nature of the work, as they are independent contractors and not the employees of the company they lack financial documentation. They also remain deprived of the employee benefits by the company and work in their personal capacity. This leads to lack of access to various financial services like loans and credit. Due to lack of traditional documents to apply for a loan, they remain excluded from the traditional credit access from banks.

1.2 Problem Statement and Rationale
There is a credit gap where millions of worthy individuals are denied access to formal credit avenues, because the system is not designed for them and not because of traditional reasons like risky borrower labels. This makes them rely on other informal lending sources such as family, friends and moneylenders, most of the time at a high interest rate. This limits their growth in life and a huge financial burden for lifetime.

Given the exponential growth of the gig workers industry, it's hard to overlook their credit issues and there is an urgent need to rethink the way credit risk profiling is undertaken. This paper argues that we must move beyond traditional credit scores and design a new inclusive framework that relies on more varied alternative data sources, which gives a more accurate picture of a risk profiling of an individual. By using data sources like platform earnings, work performance, ratings, frequency of work, digital behaviour, payment habits, mobile usage and a holistic psychometric test involving indicators to test financial literacy and spending habits. This is more comprehensive profiling to ensure an effective loan portfolio for lenders and beat the issues of non-repayments and accurate product introductions for niches.

1.3 Research Questions
As this is an exploratory research paper the aim is to ask questions and explore all the past findings and current realities than test a hypothesis. The central research question is:

"How can alternative credit risk profiling methods be designed and applied to accurately assess the creditworthiness of platform workers in the Indian gig economy?**"**

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The above central question gives rise to many more subquestions like:

1. What are the specific limitations of traditional credit assessment models specifically for gig and platform workers?
2. What types of alternative data sources (e.g., platform data, digital behavior, psychometrics) are available and usable for credit profiling?
3. How can these alternative indicators be organized into a coherent and practical credit risk framework?
4. What are the ethical, regulatory, and operational challenges of using such a framework?
5. How can this model help lenders make better, fairer decisions while expanding credit access?

These research questions are designed to achieve objectives and uncover nature, relevance and feasibility of the alternative credit risk profiling models for gig workers in India.

2. LITERATURE REVIEW

2.1 Introduction

The evolution of India's labour market has experienced transformation over the last decade, aided by the emergence of the gig economy characterizing labour and forms of work arrangements that reflect short-term, task-specific, and platform dependent employment. It has been supported by digital platforms such as Swiggy, Uber, Zomato, Urban Company and many others, enabling and facilitating a retained segment of urban youth, migrant workers, semi-skilled individuals seeking flexible and diverse livelihood options.

Although the gig economy provides many benefits including independence and potential income, it also brings exposure to precariousness, informal work, and economic insecurity. A key form of this precariousness is the limited access to formal financial services. Especially credit, for gig workers traditional credit systems in India rely heavily on formal employment indicators, such as fixed salaries, stable jobs, income tax returns, and formal credit history which most gig workers do not have access to. Consequently, this emerging labour force is excluded from accessing mainstream credit; and instead is dependent on informal loan agreements or usury lending practices.

This literature review will examine the body of research and literature around gig work, and financial inclusion in India. It considers the structural and institutional barriers gig workers are facing accessing credit, and defines the response of new fintech developments that potentially restructure creditworthiness into an acknowledged form of labour in the gig economy.

2.2 Theoretical Foundations

Understanding credit accessibility for gig workers in India necessitates working with several theoretical frameworks that crosscut development economics, labour studies, and financial inclusion.

a. Credit Rationing and Information Asymmetry

One of the foundational theories relating to credit exclusion is Stiglitz and Weiss's (1981) theory of credit rationing. This theory states that lenders may deny credit to borrowers, but it does not mean that borrowers are not creditworthy . Based on lenders' assessment of risk, it is based on lenders' information asymmetry relative to borrowers. For gig workers, the concern about lack of verifiable income data, lack of employment contracts, and the absence of credit history multiply the information asymmetry. Formal lenders who must assess loan risk using measurable risk data exclude gig workers entirely, or offer loans with exorbitant interest rates . The lender protects itself, as there is no risk from the borrower. This exclusion means stay in cycle of invisibility- invisible on transaction platforms, banks likely will not be able to see avenues to lend, so exclusion holds.

b. The Dualism of Formal and Informal Economies

An often represented model of dualism is that of formal and informal economies (Lewis, 1954). Gig work in India occupies intermediary space -it is digitally recognised, however, it has an informal status regarding labour protections, and financial integration. The lack of an institutional mechanism, which are formal institutions, linking informal workers to financial services is Hart's (1973) concept of an economic and industrial barrier affirming formal institutions to informal institutions were used to articulate the dualism between the informal sector (the employer and employee) of informal workers, in turn explaining why common financial instruments were unsuccessful to include both formal knowledge, with its obvious vulnerabilities but legitimized imperatives.

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c. Financial Inclusion and Social Exclusion
Much has been said about financial inclusion (for champions, see World Bank 2014 and RBI in India) as the provision of useful, affordable financial products and services with equitable or no barriers. However, from an understanding based on some literature on social exclusion theory (Sen 2000), access on its own does not signify the removal of exclusion, especially while barriers are upheld (e.g. caste, gender, informal labour status) (for example, some gig workers are not only socially excluded because they do not make enough income to be included in finance or hold their incomes volatile, but remain darkening by broader social exclusion and institutional cosseting).

d. Alternative Data and Behavioural Credit Scoring
In recent years, fintech innovation has included, and provided tools from, behavioural economics and big data analytics to implement into a credit risk model. Some emerging literature (for example, Ravikumar & Sinha 2021) discussed using a variety of types of alternative data (for example, ride history, app usage and engagement, mobile payments, and/or a user's online and/or digital footprint) as proxies for financing risk with anticipatory behaviours. These decision-support tools would seek to create alternative assumptions of credit risk based on alternative processes and decision-making as it extended beyond only income and assets as reliable reflections of creditworthiness. This could be understood through a capability approach (Sen, 1999) in terms of what a person (in this case, gig workers) could do or achieve with the right resources, even if they didn't have credentials in the traditional academic or work sense.

e. Precarity and Platform Capitalism
Based on labour process theory and platform capitalism (Srnicek, 2016), researchers suggest that platform-based gig work produces new forms of algorithmic control, precarity, and economic dependency. These conditions not only make gig workers susceptible to exploitation but also create barriers to developing any sense of financial security. Credit access is a structural problem not a technical problem driven by the very nature of the gig economy, the absence of protections for workers, and the squeezing of value without social support in place.

2.3 Empirical Review

a. Financial Exclusion of Gig Workers
As per a 2021 survey by Flourish Ventures, nearly 70% of India's gig and informal platform workers use informal sources of credit - moneylenders, family and friends. Nearly 85% of them said they had faced financial strain due to income uncertainty and no emergency savings. Lastly, just 23% of gig workers responded that they had borrowed from a formal bank. This is because traditional banks prefer documented proof of stable income, something that is not always available for gig workers.

Research conducted in urban informal sectors on household credit by Chakravarty and Sane (2021), suggests that individuals engaged in gig work without fixed monthly incomes—primarily gig workers for ride-hailing and delivery app platforms—have acute barriers to even small-value formal loans. Their research shows that these workers do not possess a credit history and hence cannot qualify for typical credit scoring systems.

b. Gig Workers and Informal Credit
In 2020, the Centre for Financial Inclusion established that gig workers often turn to rotating savings and credit associations (ROSCAs), employer advances or informal loans for short periods of time with interest rates that could be as high as 36% annually. While these informal loans helped fill the immediate liquidity gap, they often resulted in a spiral of debt since earnings vary. Das & Thakur (2022) conducted a field survey of 500 gig workers in five cities in India. They found roughly 62% of respondents said that they had been denied a loan at their bank; of these, 40% had approached microfinance institutions (MFIs) as well, who also asked for group guarantees or income information from their households. They also found that 11% of respondents had access to app-based credit; however, the majority were worried about high fees and transparency, along with high-cost credit and data privacy.

c. Early Signs of Success in Fintech Integration
Despite the challenges that are inherent to traditional lending, some Fintech solutions that are integrated with the Platform economy are starting to demonstrate quantifiable changes in their clients' uses of credit and borrowing. In one example, KarmaLife - a Fintech platform that provides voluntary earned wage access (EWA) to gig workers, indicates that more than 70% of its users have never had access to a loan. Additionally, early repayment rates reported to pilot studies average over 92%. In other words, when repayment is structured in a similar timeline as revenues are earned, borrowers have exercised strong financial discipline. Similarly, FlexPay

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and Jai Kisan are pilot projects testing approaches to provide credit programs to informal workers or gig-economy workers.

d. Platform-Specific Credit Practices

A number of gig platforms have collaborated with non-bank financial companies (NBFCs) and fintech lenders to embed financial products within their platform. For example: Zomato and Swiggy provide smartphone financing and fuel credits to delivery partners through pre-approved small-ticket loans. Urban Company has experimented with credit features linked to health insurance; uptake remains low due to worker distrust and limited awareness.

That said, these financial products are often opaque, are not standardized, and are tied to the service the worker provides on the platform, creating relationships of dependency that makes it difficult to distinguish the contractual nature of their relationship as either employment or service arrangement. Rajagopal and Iyer (2023), write about a similar phenomenon of risk regarding financial entrapment where loans are embedded within gig platforms and without proper safeguards.

e. Empirical Evidence Gaps

While these isolated efforts are commendable, there still exist significant empirical gaps on the credit behaviour, default patterns, and long-term credit outcomes of gig workers at any large scale. Most studies have focused on metro cities, leaving behind those in rural contexts, and women gig workers are particularly underrepresented. There are also significant gaps in metrics on the performance of alternative credit scoring models in India, especially with respect to fairness, inclusivity, and long-term outcomes.

Additionally, as with other ethical implications, there is a dearth of empirical evidence regarding the ethical disposition of data: consent, bias, and algorithmic responsibility.

3. CONCEPTUAL FRAMEWORK

3.1 Rationale for an Alternative Framework

The gig workers community is becoming a very important part of the Indian economy. However, even though they earn money and have financial habits, they are usually excluded from the formal credit system. This is mainly because they do not get salaries through employers or don't have fixed monthly income, so banks and lenders find it hard to judge whether they can repay a loan. So, the goal of this framework is to explore new ways to understand their creditworthiness by using the kind of digital data they leave behind in their everyday lives.

For example, a delivery partner gets paid for the no.of food deliveries, or a cab driver earns for every ride it completes. This gives them flexibility and choice based opportunities to earn. This also means that they don't have any official financial documentation like salary slips, ITRs or any other formal documents considered as income proofs that banks require for loan application process.

The workers face a lot of issues while accessing credit such as personal loans, vehicle loans or business funding. Traditional credit systems are built for people who have past credit history like salaried or business individuals. Most of the gig workers are new to credit in formal settings but have borrowed before from informal sources. As a result, they remain new to credit from a formal bank's perspective and high risk due to their income volatility and financial activities remain out of sight.

To solve the situation an alternative credit risk assessment is needed and becomes important. Alternative data sources are data like UPI transactions, platform earnings, work volatility, phone usage, ratings etc to understand a person's creditworthiness. It's about diversifying the data sources other than previous credit records for a holistic credit risk assessment of an individual. All of the other data helps understand various other aspects of an individual like earnings, expenses, savings, behavior rather than just repayment actions.

3.2 Theoretical Base

Risk Assessment Theory: The methodology builds on the classical credit risk theory including the current needs and unique features of gig work. Traditional models like of Merton, assume constant scale or parameters and stable income flows. Our methodology also includes stochastic processes that calculate for volatility and seasonality of their income.

Information Asymmetry Theory: The framework includes information asymmetries between lenders and gig workers by using alternative data sources. It provides more detailed insights into borrower behavior and repayment capacity.

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Behavioral Economics Principles: The inclusion of behavioral signs and digital behaviour analysis is taken from behavioral economics theory. It recognises that financial decisions are influenced by psychological factors and social behaviour. This theoretical foundation supports the inclusion of non-traditional factors in credit risk assessment models.

Financial Inclusion Theory: The framework is rooted in financial inclusion theory, which highlights the significance of providing equal access to financial services to all. This theoretical foundation is the guiding force for a better inclusive model that will be able to serve the marginalised segments.

3.3 Core Dimensions of the Framework
Alternative sources of data include and try to understand every aspect of an individual engaging in a transaction. Frequency, volatility, ratios etc will be calculated from sources. Following are the four main types of data sources needed for the platform workers to analyse credit risk associated.

A.Platform Metrics
This refers to how the worker performs on the gig or platform app they are using. These platforms usually collect a lot of internal data that shows how active and reliable the worker is. Some important indicators include:

Platform metrics include all the data on the digital platform they are using for their primary work like Zomato, Swiggy, Zepto, etc. These platforms have internal data that shows work performance of gig workers consolidated. Relevant important indicators include:

1. No. of deliveries/ rides
2. Ratings
3. Feedback from customers
4. Cancellation rate
5. Time on Platform

These factors contribute and reflect the individual's commitment, consistency, discipline and earning power. These factors will also help in classifying the workers, for example someone who has delivered over 2000 products with a 4.5 rating is more reliable than someone who has less numbers in these factors.

B. Financial and Digital Data
Even with no formal documentation, one engages in financial activities through various means like Google Pay, PhonePe, Paytm or Bank A/c. These activities can derive a lot of financial habits and insights and be used as indicators.

Following are some of the data types:
1. UPI Transactions
2. Timely Payment of Utility Bills like Electricity, Gas, Water etc.
3. Savings and Spending Analysis Through Bank Statement
4. Subscriptions Like Recharges, OTT services etc.

These are factors that reflect the person's financial habits and responsible behaviour. For example: Regular bill payment, non-volatile spending patterns, savings behaviour are traits of repayment, an essential component or virtue for repaying a loan.

C. Income Volatility, Saving Behaviour and Spending Pattern
Income Volatility remains a huge problem as it depends on the amount of work done by the worker. A stable income based on their activity undertaken, sources, timeline etc also have importance.

Data:
1. Earning Trends (Daily, Weekly, Monthly)
2. Income Sources from multiple platforms
3. Seasonal Variations (Festival, Holidays, Peak Season of Earnings can vary)

Even though income can fluctuate, it may show a pattern of regularity over a period of time. It can help lenders analyse the affordability and repayment capacity of a person taking a loan.

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D. Digital Activity and Behaviour
As these workers use digital platforms for their work, they are heavily engaged in digital interactions. Stability and predictability can be revealed using data from:

1. How often apps or installed or deleted (Loan Apps)
2. Location Consistency (Do they work from multiple locations or one particular location)
3. Regular use of apps for Communication and Work
4. Browsing Habits, Screen time

It's highly confidential and reflects a lot on a person's digital behaviour. For instance, someone with high volatile locations and use of small loans apps can be suspicious.

E. Psychometric Test
A simple test or survey can help understand a borrower's psychological traits.

Traits include:
1. Risk taking behaviour (Cautious or Impulsive)
2. Planning and Goal Setting Behaviour
3. Emotional Stability
4. Trustworthiness and Willingness to follow rules

All these traits give a holistic picture of an individual's life and behaviour. It looks beyond the income and bank records and allows lenders to understand the psychological and digital behaviour important to analyse credit risk associated.

3.4 Conceptual Framework Architecture
Each layer in this framework helps understand a specific trait to calculate credit risk in a composite score based on risk weightage assigned to each layer.

- Is the person reliable?
- Do they earn regularly?
- Do they manage money well?
- Do they have the right mindset?
- Debt-to-income ratio, income volatility, earnings trends, suspicious digital activity etc.

Lenders can use these frameworks to analyse the traits of repayment behaviour and overall credit risk and also help customize their lending products. It will help understand the affordability, tenure and payback cycles more efficiently.

Layer	Type of Data	Reflecting Traits
Layer 1	Platform Work History	Work ethic, responsibility, user reputation
Layer 2	Earnings and Income Trends	Ability to repay based on regular income
Layer 3	Digital Behaviour and Device and App Usage	Spending habits, financial discipline
Layer 4	Device and App Usage	Consistency, behavioral stability
Layer 5	Psychometric Test or Profile Data	Risk tolerance, mindset, planning ability

How does the Layer's Work?
Each layer will contribute a certain score based on the risk weightage. All of the individual layered scores can be further added and averaged to finally get a composite score out of 100. Lenders can use this final score to approve or reject loans, set interest rates based on risk and offer custom products for platform workers based on needs.

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4. DISCUSSION

4.1 Limitations of Traditional Credit Scoring for Gig Workers

a. Variable Compensation and Irregularity
The conventional credit scoring was based on the FICO scoring method but still there was no accuracy in its accounting as their income was not stable and their short-term savings were regular.

b. Lack of Traditional Employment Verification
Banks require letters of employment which are not provided to Gig workers as they are not permanent in the company. So, verification is not there as they work either on a temporary or daily basis.

c. Low Credit History
Credit history is not easily available for Gig Workers as they take loans from informal sources and there is no historical data. It is very difficult to provide them loans as there is no relevant data as they are new to credit from formal sources.

d. Non-compliance of savings and bank statements
Gig Workers work on a cash basis and they have no official record of their expenses they create on a daily basis. This creates an impact on bank statements and savings made by them is not officially shown which creates difficulties while making statements.

e. No Income Tax Returns (ITRs)
Banks usually ask for ITRs to see a person's total income. Many gig workers don't file ITRs regularly, as their income may be below the tax limit or unorganized. This becomes a hurdle in the loan approval process.

f. Frequent Job Changes
Gig workers may switch between platforms or work for more than one at the same time. Traditional systems are not designed to handle such flexible work patterns, making it hard to track stable income.

g. Bias Toward Formal Sector
The current platform created for permanent employees is more helpful for them, but at the same time Gig Workers face difficulties in operating them which ultimately creates a bias towards the informal sector.

4.2 Advantages of Credit Accessibility to Gig workers

a. Accelerating access to finance for platform workers
Platform workers may use loans and a variety of sectors and they can just develop their skill. These are provided to them at pre-revenue or early revenue stage where they can use this loan to access their different preferences to build something of their own. Even the Fintech industry provides loans to gig workers and many others in exchange for collateral.

b. Quick flexible loan
Since the framework is designed for the gig workers then it's easy to access the loan on a quicker basis and like the traditional loans which were lots of paper work to complete the application. But here they can access the loan using an online platform which helps in the fastest approval for their quick needs of liquidity.

c. Financial Inclusion
Empowers marginalized segments who are often excluded from traditional banking and credit systems due to irregular income or lack of formal documentation.

d. Boost to the Broader Economy
Gig workers contribute to consumption when they have access to affordable credit, thus boosting the country's local economy. It will help in organizing and formalizing the informal economy, making gig work more visible in macroeconomic indicators.

4.3 Ethical concern in credit framework

a. Data privacy and consent
It is really very important to take permission before the things that should work out, so firstly the permission related to digital scrutiny of gig workers and the concern should be taken so that they cooperate with us.

b. Decision making
Gig workers should be practical enough to make decisions if they are not then required training should be provided to them and just to understand the basic key ethical responsibility so that they can fully fulfill their own requirements.

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c. Transparency in credit terms
It's very difficult to say that all of the gig workers are educated, they do not understand the difficult terms that are related to finance so the basic language explanation should be made to them so that they get comfortable with it and fulfill their demand.

d. Bias and discrimination
Credit scoring models and frameworks that use AI/ML may have bias from historical data, creating an unconscious discrimination against a particular group of people, for example women or people belonging to a particular geographic location.

5. CONCLUSION AND FUTURE AVENUES OF RESEARCH

5.1 Summary
Platform-based gig work in India has changed the relevant models of employment, income, and labour organization. Being at the forefront of financial inclusion, the gig economy offers flexibility and new income-earning opportunities. However, it replicates structural financial exclusion—particularly in the domain of access to formal credit systems. Credit assessments typically consider fixed income proofs and personal credit histories associated with conventional employer-employee relationships. By contrast, these traditional frameworks lack the foundational validity for evaluating platform-based workers in the gig economy.

This paper calls for an assessment of credit risk that recognizes non-traditional and diverse data, which might arise from patterns of behaviour of platform work, other digital transactions, the frequency of income receipts, patterns of mobile behaviour, and psychometric traits. Collectively, they represent the necessary layers of data to develop an inclusive, and adaptive credit framework and an assessment of credit-worthiness, which is indicative of the lived experience of gig workers in India.

While alternative and diverse data-driven assessments of credit worthiness and financial risk are encouraging, they are not beyond caution, nor beyond the need for ethics. Issues of privacy, consent, transparency of data, and responsibility in using data, and algorithmic fairness in credit assessments must be addressed to avoid replicating inequities.

5.2 Areas for Future Research

a. Pilot testing the framework using real-time data from platform workers in collaboration with fintech firms, NBFCs, and gig platforms.
Future research should concentrate on operationalising and validating use of the model proposed in this paper through pilot studies with real-time data from platform workers. This could be done through pilot studies in collaboration with fintech startups or NBFCs and gig economy platforms to assess feasibility and improve predictive accuracy.

b. Comparative studies across sectors to assess the variation in risk profiles and repayment behaviour.
In addition, comparative sectoral studies - for example, riders and food delivery could be helpful to provide greater understanding of the variability of income stability and repayment behaviours between industry-specific gig roles.

c. Cross-country comparisons to study how alternative credit models for informal workers are implemented in other developing economies.
There is also potential for cross-country comparative research, importantly across emerging economies with large informal labour markets, to examine how aspects of inclusive credit systems conduct and scale in similar socio-economic contexts.

d. Ethical design frameworks for credit scoring algorithms to ensure fairness, non-discrimination, and accountability in credit decisions.
Future research must address the ethical implications of algorithmic credit scoring. This involves creating transparent, consent-based frameworks that help mitigate bias and discrimination and entail, data privacy, responsible use of data, fairness and accountability in credit decisions utilising alternative data

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