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Review

A Review of Different Approaches to Measure the Gig Economy: Lessons for Sri Lanka

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Abstract

Although a limited number of studies has investigated the matters pertaining to gig work in Sri Lanka, investigating the gig economy has become necessary as it is an emerging sector especially during the current Covid-19 pandemic. Ascertaining the size, value and characteristics of the gig economy is indeed crucial for the accurate measurement of macroeconomic indicators, such as economic growth, employment and income, and for the implementation of necessary rules and regulations in the labour market. Given the fact that the gig economy is not yet fully captured by the existing censuses and surveys conducted by the statistical agencies in Sri Lanka, the two objectives of this study were first to evaluate various approaches used by countries worldwide to measure the gig economy, and second to draw lessons for Sri Lanka. To this end, the study conducted an integrative review of literature. Findings indicate that there is a huge potential for Sri Lanka to improve the existing censuses and surveys of the National Statistical Office of the country, and produce useful measures of gig work. The main reason is that while initiatives to measure gig work have already been taken, the existing censuses and surveys already have a wide scope which covers self-employment, secondary employment and informal employment, which are three main characteristics of most of the gig work.

Keywords:
gig economy, lessons, measurement, Sri Lanka

Introduction

Background

Although there is no exact definition for the term "gig economy", it generally refers to labour market activities which are coordinated via digital platforms (Hunt and Samman, 2019). These platforms enable individuals and organizations (buyers) to hire a suitable worker (seller) to perform a timed and monetized task virtually. Workers can advertise themselves in these platforms through a profile which lists their skills, experience, price, ratings, and other details, and the companies who operate these platforms (intermediaries) charge a fee or a commission when the task is completed and paid for by the purchaser. Platform economy, collaborative or sharing economy are some other terms used interchangeably to refer to gig economy.

After buyers and sellers of gig work find each other through a particular digital platform, the buyer sources the work from the seller of service, and makes the payment upon completion of the work. Moreover, they communicate with each other over the course of the task (Galpaya, Perampalam and Senanayake, 2019). The distinctive feature of gig work is that once the task ordered by the buyer is

completed, there is no guarantee of further employment. Hence, gig workers are not considered by companies as employees, but as independent contractors or freelancers engaged in part-time, temporary, or flexible jobs (informally known as gigs).

Although without a special and full focus on the gig economy, some attempts have been made by the National Statistical office of the country,the Department of Census and Statistics (DCS), to measure the share and value of gig work in total production and employment in Sri Lanka. The trends in the internet usage in the country indicate a high possibility that gig work has become a source of employment and income for the digital-literate people who comprise 50 percent of the household population aged 5-69 years. DCS (2021a) reveals that the percentage of the household population (aged 5-69 years) using internet facilities has increased from 30.3 percent in 2019 to 36 percent in 2020. It is noteworthy that this increase has taken place in the context of the Covid-19 pandemic which increased unemployment of the country from 4.8 percent in 2019 to 5.5 percent in 2020 (DCS, 2021b). Therefore, special focus on measuring the gig economy is necessary, especially during the COVID-19 pandemic which has led to a huge loss of jobs, job insecurity, increasing adaptation to remote work and a growing demand for online services.

Literature review

Components of gig economy

As mentioned earlier, there is no clear definition for gig economy or gig work. Nevertheless, various studies have developed various definitions for various components of the gig economy. Identifying these definitions is important when attempting to measure the gig economy.

Galpaya and Senanayake (2018) distinguish between two types of digital labour platforms in the gig economy as cloud work (web-based digital labour) and gig work (location-based digital labour). Whereas cloud work comprises micro tasking, freelancing, and content-based creative work etc., gig work comprises providing household and personal services such as accommodation, transportation, and delivery etc. Although only location-based digital labour is considered as gig work in this study, both location-based and web-based digital labour are considered as gig work in ,most of the other studies in the literature.

Hunt and Samman (2019) classify the gig economic platforms into two types of operating models. First is crowdwork which refers to the situation whereby specific tasks are advertised by purchasers (crowdsourcer) on online platforms, and thereby workers with the required skills (crowdworkers) are located from around the world and hired to perform those tasks via internet. There will be hardly any face-to-face contact between the crowdsourcer and crowdworker. Hence, this model accounts for the web-based digital labour outlined in Galpaya and Senanayake (2018). Second operating model is, on-demand work which refers to the situation whereby specific tasks, which are carried out locally, are organized via mobile platforms by companies. On-demand workers should live in the physical proximity of the purchaser and the work mostly involves low-skilled physical tasks and lower requirements for digital access and capacity. Moreover, there are fewer barriers to entry. Therefore, this sector of the gig economy is more suitable for less-skilled workers. Hence, this model accounts for the location-based digital labour outlined in Galpaya and Senanayake (2018). Although workers can set their own charges and other terms of service to a great extent in crowdwork, the terms of service in on-demand work are set by the companies. As a matter of fact, on-demand workers are likely to be relatively more disadvantaged than crowdworkers.

Galpaya, Perampalam and Senanayake (2019) focus on web-based digital labour in the gig economy and identify two types of online platforms as microwork and freelancing, which offer digitized ways for business process outsourcing. Microwork is defined as the practice of dividing a large piece of work into small tasks (micro tasks) and allocating those micro tasks to workers via the internet. Entering and verifying data, clicking advertisements, and media tagging etc. are some examples for micro work. Online freelancing is a form of online self-employment where organizations hire skilled professionals for different assignments. Market research, translation, web designing and development, graphic designing, and proof reading, etc. are some examples for freelance work. These two types of platforms allow organizations to outsource the required business tasks to short term gig workers, thereby reducing costs and improving efficiency.

Why is it difficult to ascertain the size and value of the gig economy?

Bajwa et al (2018) highlight several challenges in measuring the gig economy. First is that the access to user data is restricted in digital platforms of the gig economy and therefore, big data on the sector is hardly available. Second is that the gig work remains largely invisible and the number of gig workers remains uncertain as all gig workers may not report their activities or pay income tax on their gigs. Third challenge is the definitional issues in economic indicators and labour market statistics which make them unsuitable to measure the size of the gig economy. For example, in labour statistics, employment is often defined as those who have worked for at least an hour in a week or day. The particular definition fails to accurately measure the value of digital activities and earnings. Forth challenge is general tax underreporting and the widespread informal economy especially in low and middle-income countries. Fifth is that the transactions in the gig economy can take place across national borders and sixth is that people can engage in multiple gigs, or they can engage in gig work as their secondary employment (when primary employment is not gig work).

Gig work is often the secondary or supplementary income source of the participating workers and therefore, is not reported to tax authorities consistently. Buyers of gig work do not enter into employment contracts with the sellers and therefore, systematic documentation of workers is not needed. Moreover, the gig economic platforms are mostly operated worldwide and therefore is difficult to control locally. As most of the digital platforms are owned by foreign companies, there can be significant barriers in terms of the access to data. In fact, this has led to the argument that the Sri Lankan gig platforms are at a disadvantage over the foreign platforms operating in the country, as they are subjected to regulatory scrutiny and local tax laws while the foreign platforms are not. There is also a higher chance of duplication or multiplication errors when measuring gig economy, as the majority of workers is engaged in gig work in addition to their primary employment (CBSL, 2019). Moreover, it is difficult to identify the work arrangements that come under gig work as there are different ways to organize work in an economy and a person could work under multiple arrangements.

Importance of measuring the gig economy in Sri Lanka

Gig economic activities in Sri Lanka range from providing access to vehicles and accommodation facilities on demand, to providing professional services on global freelancing platforms. In fact, ride-hailing and delivery platforms are the most popular gig economic activities in the country (CBSL, 2019).

Through an island wide survey, Galpaya, Perampalam and Senanayake (2019) have come up with some useful findings about online freelancing in the country. The findings of the survey indicate that 26 percent of Sri Lankans (32 percent of males and 21 percent of females) aged 16-40 years are aware about online freelancing. However, only 11 percent have expressed willingness to engage in online freelancing (14 percent of males and 8 percent of females). While 23 percent of them were willing for a full time commitment, 77 percent of them were willing for a part-time commitment to online freelancing. Furthermore, it is found that the districts of Kurunegala, Anuradhapura, and Puttalam have higher awareness about online freelancing while there is a poor awareness in the districts of Kilinochchi, Mannar and Mullaitivu. Hence, it is clear that Sri Lanka's gig economy is still growing and it serves mainly as a secondary income source for people.

Gig economic activities can influence many economic and social indicators of a country by providing opportunities for workers. In fact, the gig economy offers solutions not only for the unemployed but also for the underemployed and informal sector employees as it is a vital source of income for those who intend to work on a part-time basis. It allows the freedom for workers to take up work that effectively match their skills, undertake an optimal number of tasks at competitive rates and thereby work at their own pace. Gig economy can also provide solutions for problems related to work-life balance which are often faced by women.

It should be noted that the gig economy can also have negative impacts on the economy and people. International Labour Organization (ILO, 2019) points out that although the 'gig-economy' offers new job opportunities to part-time and casual workers, it could also lead to inefficiencies and inequities, new forms of precarious work, and the eroding of workers' livelihoods and rights in significant ways.

Therefore, measuring the gig economy is of utmost importance due to several reasons. Firstly, such measurement is essential to produce correct and reliable official statistics on macroeconomic indicators which provide the basis for policy decisions of the country. Lack of data on the magnitude of gig economic activities can lead to overestimation or underestimation of economic indicators. Secondly, it is important to ensure workers' rights and other labour market regulations as gig workers are not sufficiently covered under the existing set-up. Thirdly, it is important for the government to collect tax revenue by correctly identifying their tax base. Fourthly, measuring the gig economy is important to track the labour force dynamics for policy making. In other words, it helps assessing the potential of non-traditional avenues to increase labour force participation in the country. If this remains unexplored in a situation where an increasing share of labour embodied in work is supplied by non-employees of a firm, it can lead to distortions in measures of labour productivity or the output per hour worked. Therefore, continuous experiments should be carried out to find better ways to measure the gig economy using reliable sources of data and indicators that best capture the impact and contribution of the gig economy.

Research problem, questions & objectives

Measuring the gig economy is worthwhile as it is one of the fastest-growing areas in the digitalised world today, and as any failure of the existing system to fully capture the output produced by gig workers could lead to distortions in the estimates and forecasts of socio-economic variables. However, there is a dearth of studies which have investigated matters pertaining to the measurement of the gig economy in Sri Lanka. Even the current systems of economic measurement do not adequately cover this sector. Hence, it is important to analyze the approaches used by other countries which have already started measuring the gig economy as they will provide a guideline for statistical agencies in Sri Lanka to start the process.

Hence, the two research questions that this study addresses are,

i. what are the approaches used by different countries in the world to measure the gig economy?
ii. what are the approaches that could be followed to measure the size and value of the gig economy in Sri Lanka?

In line with those research questions, the two objectives of the study are, first, to evaluate various approaches used by countries in the world to measure the size and value of the gig economy, and second, to draw lessons for Sri Lanka.

The next section of this paper outlines the methodology of the study, followed by a detailed discussion of the findings, and finally the conclusions and way forward.

Methodology

ONS (2016) well explains the importance of a literature review when initiating procedures to measure the gig economy (also referred to as 'sharing economy') due to the fact that it is an emerging sector without exact definitions. The report highlights that due to the existence of alternative definitions for various aspects of the gig economy, a literature review on the characteristics of the "known" sharing economy will help derive a list of criteria to identify and describe further the sharing economy businesses.

Hence, this study adopts a qualitative approach to achieve the stated research objectives. It basically conducts an integrative review of literature on the various approaches used by countries in the world to measure gig economy, and thereby outlines the possible approaches that could be adopted to measure the gig economy in Sri Lanka.

Snyder (2019) outlines the phases of a literature review, stating that an integrative review is the best approach to a literature review which present a critique or a synthesis of research articles, books and other published texts on a narrow or broad set of research questions requiring a qualitative analysis on new and emerging topics. The purpose of conducting an integrative review for an emerging topic is, "not to cover all articles ever published on the topic but rather to combine perspectives and insights from different fields or research traditions" (Snyder, 2019).

Search strategy

As the concept of the gig economy became popular only recently, it was not needed to select a specific range of years when searching for relevant articles. From a sample of around 50 scholarly texts relevant to the research topic which were identified through a web search using key words, (e.g. measure/ gig/ digital/ platform/ sharing economy), 20 articles were chosen for the review as they specifically focus on the 'measurement' of the gig economy (the unit of analysis is a single document). These texts covered the methods used to measure the gig economy in five countries only (United States of America (USA), United Kingdom (UK), Australia, New Zealand and Canada). The literature sample was checked for possible bias. It was ensured that the articles were not written by the same group of authors, so that there is no overrepresentation of certain subjects.

Conceptual Framework

The conceptual framework of the study is illustrated below. To achieve the stated objectives, the different approaches used by the selected countries to measure their gig economy were identified first.

Secondly, they were evaluated by identifying the strengths and weaknesses as well as the applicability for the Sri Lankan context. Finally, the best approach to measure the gig economy of Sri Lanka was identified.

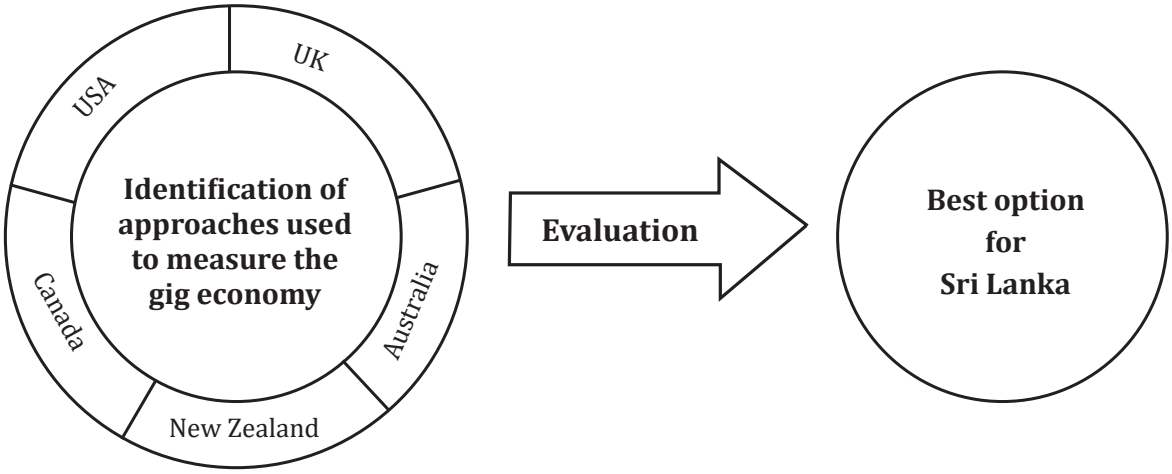

Figure 1: Conceptual framework

Findings and discussion

The findings of the study indicate that despite the challenges, countries around the world, mainly the developed countries, have made various attempts to come up with various approaches to measure the economy. Those approaches are outlined in the following sections, along with their pros and cons.

Household surveys

Before collecting data to measure the gig economy, existing literature highlights the importance of stating the definitions first and thereby capturing different work arrangements in the gig economy which are already covered by the existing household surveys of a country. This is because when planning to measure the gig economy, indicators could be developed within the existing surveys itself. In fact, according to Riggs and Hyslop (2019), the first step to be followed in the process of measuring gig work is building up the work arrangements to define gig work and thereby develop a taxonomy. The particular taxonomy could then be used to develop measures of the gig economy. Moreover, Abraham et al. (2018) and Schultz (2020) mention the importance of breaking down the gig economy into various categories of workers depending on their work arrangement.

The household surveys in the USA generally distinguish among three types of workers in the economy which are, wages and salary workers, the incorporated self-employed and the unincorporated self-employed. Work arrangements that come under wages and salary workers are, traditional employees, on-call workers, direct hire temporaries, temporary help agency workers, PEO workers and other contract company workers. In household survey statistics that have been published, the incorporated self-employed have also been treated as wages and salary workers. Hence, work arrangements which do not come under wages and salary workers fall under the unincorporated self-employed group. These are the workers whose primary source of income is generated from an unincorporated business such as partnerships, sole proprietorships, independent contractors, freelancers, day labourers, and

on-demand platform workers (Abraham et al. 2018). Therefore, in household survey data of the USA, technically, gig workers fall under the category of the unincorporated self-employed. As suggested by Schultz (2020), the work arrangements that often involve gig work are, independent contractors, on-call workers, employees placed by temporary agencies, employees of contract firms, and digital platform workers.

According to Riggs and Hyslop (2019), after developing a taxonomy to define gig work, the next step is analysing microdata from the existing surveys as well as administrative data, instead of using publicly available aggregate data. When conducting the analysis using existing data, it is said that the statistical agencies should think about changing existing surveys or implementing new ones using the literature as a guide. In fact, with some additional improvements, the data collected from existing surveys would be helpful in measuring gig work.

Census Bureau of the USA conducts a number of surveys which could be used to gauge the number of gig workers in the country. One of them is the monthly Current Population Survey (CPS), which is an interviewer-administered survey, consisting of questions asking about labour market activities of around 60,000 households (Abraham et al. 2018). Data gathered through this survey is used to identify the people whose main job during the reference week was self-employment, given the fact that web-based digital labour in gig work often comes under self-employment. However, one of the limitations in this survey is that it does not gather adequate information on secondary employment activities. Given the fact that the gig economy by its nature is a source of part-time work for people who already have a main occupation, data on secondary employment activities is essential to capture the exact size of the gig economy.

The Annual Social and Economic Supplement (CPS-ASEC) which is a supplement to the CPS, as well as the American Community Survey (ACS) are two other surveys considered as sources of self-employment estimates. CPS-ASEC is conducted in each spring in the USA to collect information on income and employment. The questions in the survey mainly ask about the longest job and self-employment earnings during the prior calendar year. ACS is conducted in the USA on a rolling basis throughout each year since 2005. CPS-ASEC captures both primary and secondary self-employment activity to a great extent by collecting information on self-employment income, whereas ACS mainly focuses on the main job during the reference week (Abraham et al. 2018).

Abraham et al. (2018) highlight some measures of self-employment rate in the household surveys of the USA which could also be useful measures of the gig economy. For example, the monthly CPS calculates the percentage of the employed whose main job during the reference week was self-employment in an unincorporated business. ACS data also produces a measure which is conceptually comparable to the measure produced by monthly CPS. The annual CPS-ASEC produces two measures. The first is the percentage of the employed whose longest job during the year was self-employment in an unincorporated business and whose self-employment earnings were positive. The second is the percentage of the employed whose longest job during the year was not unincorporated self-employment, but had positive self-employment income from work other than their longest job. As mentioned before, measures of CPS-ASEC captures both primary and secondary self-employment activity to a great extent by collecting information on self-employment income. But the measures produced by CPS and ACS do not focus adequately on self-employment among the secondary employment activities of people. However, the common weakness in all these measures is that the calculated percentages of the self-employed include both gig workers and non-gig workers.

Therefore, it is suggested that improving the existing surveys by adding survey questions which directly identify the work arrangement to which an individual belongs, and asking more detailed questions about secondary and informal work can reveal a great deal of information about the magnitude of the gig economy. As gig work is often the respondent's secondary source of income, additional probing for secondary and informal employment in the current surveys can uncover gig work that would have gone unobserved (Abraham et al., 2018, Riggs and Hyslop, 2019).

However, Riggs and Hyslop (2019) state that simple measures of self-employment and aggregate data series can show little movement in gig economic activities, although the underlying components could change substantially. As most gig work is intermittent, the surveys which ask about employment in the reference week could result in some gig economic activities to go unnoticed. Therefore, it is stated that the measures of gig work should go beyond simply counting the number of gig workers. The inclusion of more than one timeframe in survey questions (e.g. current month, previous month, previous year) as well as various questions to measure the extent to which people engage in gig work (e.g. number of hours, income, transaction volume) is therefore important.

Although workers using alternative work arrangements as a secondary source of income are not sufficiently captured in the above mentioned surveys in the USA, some significant developments have been made in some other surveys in the USA. The Contingent Worker Supplement (CWS) which is periodically conducted by the Bureau of Labour Statistics (BLS) in the USA asks a series of questions related to contingent and alternative employment arrangements. In fact, the 2017 CWS has asked four questions on electronically mediated employment. These questions have focused on primary as well as secondary employment activities of the respondent, jobs found through websites or mobile apps, and also about additional work-for-pay (Schultz, 2020). Similarly, two other additional federally sponsored surveys which have recently incorporated questions related to alternative work arrangements are, the General Social Survey and Survey of Household Economics and Decision Making.

Apart from the federally sponsored surveys, private organizations also have commissioned household surveys to gather information on the rise of gig work as a secondary source of income. It is said that even with a small sample size, surveys could provide useful insights on part-time gig work (Schultz, 2020). The experience of the USA also suggests that the national statistical office of a country could develop elaborate and reliable measures of gig work with the participation of the interested parties in the private sector. From the information obtained from such surveys, some useful measurements produced regarding the magnitude of the gig economy are, the number of workers participated in alternative employment arrangements, the number of those who earned income from a firm through a non-employee relationship, the number of those who get primary income from gig work and those who supplement their full-time work with gig work, the number of people who participated in gig work in the past month, the number of freelancers, and the number of people who participate in the gig economy in some capacity (including part-timers and multiple jobs holders) etc. Hence, the recent, new surveys in the USA include better questions for better measurement of the gig economy.

Pointing out the possibility of capturing the gig economic activities in the existing GDP and labour market statistics, even if standalone statistics are not available, the UK Office of National Statistics (ONS, 2016) publishes a report periodically, providing an update on their progress in measuring the sharing economy. Progress has been made in terms of introducing new survey questions, identifying platforms in the samples of existing surveys and attempting to access relevant administrative sources as well as big data sources, to achieve the ultimate objective of obtaining data on the value of the sharing economy and its impact on the labour market. Furthermore, the report suggests some measures to be

taken when initiating the process of measuring the gig economy: establishing an agreed definition of the sharing economy, defining the coverage of the statistics, conducting literature reviews to identify definitions, collaborating with local and international stakeholders throughout the process to meet stakeholder needs, identifying the potentials in existing surveys to measure the gig economy and introducing additional questions where necessary, collaborating with businesses in the gig economy to understand their business models and gain access to their platform data as well as administrative data, and conducting research to investigate the potential of obtaining data using other methods such as web scraping. These steps are feasible and appropriate ways to initiate the production of standalone official statistics of the gig economy in Sri Lanka as well. In addition to the survey conducted by ONS, Huws and Joyce (2016) show how the the number of gig workers in the UK, nature of their employment (primary or secondary), period of employment, earnings and expectations etc. have been estimated by the University of Hertfordshire through an online survey (named Crowd Working Survey) of 2,238 UK adults in the age group of 16-75 years.

Some survey experiences of Canada also show the possibility of using household surveys to measure the gig economy. Based on a survey conducted by Environics Research, involving 2,304 households in the Greater Toronto Area (GTA), Block & Hennessy (2017) identify the size of the sharing economy as well as the characteristics and views of those who are engaged in the sector. The participants of the survey include both consumers and workers in the sharing economy. Furthermore, Kostyshyna and Luu (2019) documents the findings of a special survey of households conducted by the Bank of Canada, to assess the size and characteristics of informal gig work in Canada. The bank has introduced special questions related to informal work into the Canadian Survey of Consumer Expectations (CSCE), which is a nationally representative, online quarterly survey of Canadian households. Questions in the survey have directly asked respondents if they are currently or have engaged in certain side jobs or informal activities for pay over the past two years, and allowed them to cite other activities not listed.

Similar to CPS and ACS in the USA, in Australia, the number of self-employed individuals could be identified from the Labour Force Survey and the HILDA (Household, Income and Labour Dynamics in Australia) Survey conducted by the Australian Bureau of Statistics (ABS). These surveys produce labour market statistics, segmenting the workforce by industry, occupation and the employment classification (whether permanent employees or independent contractors). However, Actuaries Institute of Australia (2020) finds that the trends in the number of self-employed may not necessarily indicate the trends in the number of gig workers for two reasons. A rise in the number of self-employed individuals will not indicate a rise in the number of gig workers if workers have substituted a particular type of other self-employment for gig work, and also if gig work is mainly chosen as a secondary source of income.

Furthermore, calculating the average number of hours spent on gig economic activities is equally important as calculating the number of gig workers in a country. For instance, it can reveal whether the gig economy is mostly a source of primary employment or secondary employment for its people, and also its potential to improve the wellbeing of people. For example, a national survey research conducted in Australia revealed that in 2019, almost one half of the country's gig workforce spends less than five hours per week on gig economic activities. Moreover, only a small share of 15.4 percent of the gig workers have stated that income from gig work is essential to meet their basic needs (Actuaries Institute of Australia, 2020). Due to this secondary nature of gig work, it is declared that measuring the size of the gig economy from traditional labour force statistics is difficult.

Piasna (2020) finds that the labour market statistics risk overlooking a large chunk of platform work due to the way national statistical offices define work and employment, and also due to their major

focus on primary employment. Moreover, as the employed persons are generally assigned to sectors and occupational classes in the surveys, there is also a problem in identifying where to position platform work. However, it is suggested that the size of the platform workforce could be measured using the existing official labour market statistics only if there are dedicated questions on platform work in the surveys. To this end, ensuring conceptual clarity and shared definitions of concepts, correct formulation of questions, and the correct sampling of respondents are considered the three steps in the process of a successful designing of a survey. It is emphasized that the conveying of definitions to respondents should be done by moulding them into simple survey questions which are easy to understand for non-specialist audiences.

As the changing of existing surveys to properly account for gig work is a long-term solution which takes time, a short-term solution is suggested by Riggs and Hyslop (2019). They suggest that some measures of alternative or informal work should be developed as proxies for gig work, while recognising their limitations. In their study, they analyse how to use the Household Labour Force Survey (HLFS) and Household Economic Survey (HES) conducted by the Statistics New Zealand to measure gig work. Along with some other weaknesses, it is stated that HLFS fails to capture informal activity when it is not the respondent's main job. However, HES is able to provide measures of alternative or informal work as it asks questions about all kinds of jobs or businesses of the respondent as well as the type of employment in each of them, number of hours worked, the date on which the job or business started, measures of hobby and casual job income, other regular and irregular income, and whether their employers contribute to their KiwiSaver scheme (a voluntary savings scheme). Although the survey can uncover a great deal of information on informal work, it is stated that the main limitations of using the HES are, being too broad to accurately distinguish gig work from other employment activities and the small sample size in historical data.

The Survey of Working Life in New Zealand is a supplement of the HLFS which includes questions that could help distinguish gig work from other employment activities. These questions cover various topics such as written employment agreements and contracts associated with the main job, nature of the work and work schedule, income from all jobs, annual leave entitlements, provisions for on-the-job training, job security etc. It is said that even with these more detailed questions, there is a chance that the survey would miss informal work activity due to people not equating these activities with a job or paid income.

Piasna (2020) outlines some general guidelines as to how the questions should be formulated in a survey, such as administering the questionnaires to platform workers and testing whether they understood the questions while analysing what guided their responses, directly asking the respondents whether they work in a particular platform by citing its name, adapting the survey questions over time etc. It is expected that providing a list of names of platforms would avoid any issues of misclassification. Furthermore, rather than web-based surveys which involve non-probability online samples, random probability sampling where everyone has an equal and known chance of being selected, is considered to be the most appropriate sampling method which can ensure that the sample of respondents is a close representation of the general population.

From all these experiences of the USA, UK, Australia, New Zealand and Canada, it is quite clear that improving the definitions and questionnaires and practices of the existing surveys in a country, and designing some new surveys specifically focusing on digital labour (may be through public-private partnerships) are good approaches to measure the gig economy for a developing country like Sri Lanka.

Administrative data

Administrative data or tax records can reveal a lot of information on the prevalence and nature of gig work. For example, apart from household surveys, tax records are also used as a source of data on the self-employment activities or non-employee work arrangements in the USA In this scenario, it is important to identify the different tax records used in the USA for this purpose, in order to assess the ability of tax records to serve as such a data source in Sri Lanka.

As mentioned in Abraham et al. (2018), the Internal Revenue Service (IRS) of the USA requires the following groups to file a certain tax schedule. Sole proprietors and general partners with net earnings of $433 or above should file a schedule for Self-Employment Tax (Schedule SE). Self-employment information from those schedules is incorporated in a database called Master Earnings File (MEF) maintained by the Social Security Administration. The database also contains information on the wage earnings received during the year. The Census Bureau receives MEF records for each CPS respondent in the form of an extract called the Detailed Earnings Record (DER). The number of self-employed people is thus estimated from the number of people filing a self-employment schedule each year. Census Bureau also maintains another master list of non-employer businesses using information taken from another tax schedule (Schedule C) that should be filed by those with a gross non-farm self-employment income earned as an unincorporated sole proprietor, i.e. independent contractors or freelancers, day labourers, or on-demand or platform workers. In the meantime, there is another form, filed by businesses which make payments of non-employee income of $600 or more to any entity or individual during the calendar year. Counting the number of people who have received one or more of the particular form during the year, is another way of investigating the trends in self-employment, although with certain complications (Abraham et al. 2018).

Abraham et al. (2018) outlines five self-employment measures that could be produced using these tax records in the USA and these are quite similar to CPS-ASEC measures. Basically, the five measures express the number of individuals with a particular kind of self-employment earnings as a proportion of the total number of individuals with earnings from any source during the year. In other words, the five measures calculate, the number of non-employers, sole-proprietor non-employers, individuals and businesses receiving non-employee compensation, and the number of individuals for whom such compensation reported are currently available.

One of the weaknesses of the measures produced by administrative records is that they miss out the self-employment income which are not reported or under-reported to the tax authorities. And similar to the case in household surveys, the counted numbers of self-employed people do not identify gig workers and non-gig workers separately. For example, the same schedules and forms might be used to report the payments to gig workers as well as the payments to others who are self-employed but not gig workers. In fact, all the self-employed individuals who file Schedule SE or Schedule C are not gig workers. Therefore, the reason why a payment was received should also be investigated.

Tax data are used to measure alternative or informal work in New Zealand as well. Riggs and Hyslop (2019) provides examples from literature where administrative microdata is used to identify working proprietors or the self-employed. The numbers of sole proprietors who pay themselves PAYE (Pay-As-You-Earn) income, sole proprietors receiving positive self-employment income, partners receiving partnership income (excluding passive investor partners), company owners receiving income with no PAYE deducted are calculated from the microdata collected from the Inland Revenue documents to measure the overall number of self-employed. It is said that the gig workers could be finely separated

from the self-employed with some additional information. However, it is problematic whether this tax data reveal information about gig workers who do not report to tax authorities.

Using administrative sources including the records of individual and corporate income tax returns, Jeon, Liu and Ostrovsky (2019) attempt to identify the share of gig workers among all workers in Canada. To this end, they introduce a definition of gig work according to the work arrangements reported in the Canadian tax system. The statistical agency of Canada (Statistics Canada) receives T1 and schedule 50[1] files from the Canada Revenue Agency (CRA). The T1 files or the annual individual tax return files include detailed and complete information on each and every individual's income from all sources, government transfers, benefits and taxes, while the schedule 50 files include records of corporate tax returns reported by private corporations. A significant feature of the Canadian approach is that the administrative data are linked to 2016 Census microdata, to account for various information gaps in tax data. Apart from the Census micro data, the administrative data can also be compared with the unincorporated self-employment trends revealed through the monthly Labour Force Survey to which responding is mandatory for the public under the Statistics Act. Following Abraham et al. (2018), Jeon, Liu and Ostrovsky (2019) view gig workers as unincorporated self-employed workers (sole proprietors excluding those who operate an established business with a certain degree of continuity and predictability in their work arrangements). This group of workers is supposed to comprise the self-employed freelancers, platform workers and day labourers who report their business, professional or commission self-employment income to the tax authority.

Given that gig work can be only a part of an individual's overall labour market activities, Jeon, Liu and Ostrovsky (2019) consider that tax data is more appropriate than survey data to capture the gig economy. The reason is that tax data contain information about an individual's income from all sources, whereas survey data usually focus on an individual's main labour market activity. Furthermore, it is said that the definition of gig work in survey questions could be ambiguous and uncertain as the respondents can have different interpretations of gig work.

Other approaches

Piasna (2020) provides a critical assessment of the different approaches to estimating the scale of engagement in platform work. If there is access to the administrative records of each digital platform providing gig work opportunities, the precise number of workers on that particular platform could be counted and used as a basis for estimates of the size of the platform economy at national level. However, researches that have used the data provided by digital platforms to estimate the engagement in gig economy are scarce as digital platforms are generally highly protective of their internal databases. In the case of Sri Lanka, local platforms are often subjected to regulatory scrutiny and local tax laws while the foreign platforms operating in the country are not (CBSL, 2019). Other problems in this approach are that information from all platforms would be required to create a complete picture of the platform workforce, and there is also a possibility for errors as one person could be registered on more than one platform.

[1] The T1 General or T1 (entitled Income Tax and Benefit Return) is the form used in Canada by individuals to file their personal income tax return.

All private corporations in Canada must complete schedule 50 for any shareholder who holds 10% or more of the corporation's common and/or preferred shares.

Although with these problems, Piasna (2020) finds that some earlier researches have followed various approaches to gather data produced by digital platforms. Some studies have used publicly available data disclosed by online labour platforms with expert interview. For example, focusing only on the online outsourcing industry, Kuek et al. (2015) follows a bottom-up approach to assess the size of the online outsourcing market.

Relying on public data if available, and using data collected through interviews with industry experts and online outsourcing firms when public data are not available, the study estimates the gross service revenue as well as the number of registered workers in the online outsourcing industry. Abraham et al., (2018) also state that the publicly available data from multiple sources, such as employer surveys, anonymized individual-level financial records, other tax records and associated data repositories, and information held by private firms can help measure the gig economy.

When ascertaining the number of gig workers, some researchers have focused on only one digital platform for gig work, while some others have counted the number of workers from the frequency of Google searches for the names of selected labour platforms. The latter is done assuming that the number of workers providing services through a platform is proportionate to the frequency of its Google searches. But such an assumption may not be valid as Google searches may also be led by media interest, litigation and academic research etc.

There are researches where a full database of the clients of a major bank has been used to count the number of accounts that have received any payments from each of the available online platforms. However, such studies will miss payments which do not come directly from platforms' accounts and sometimes the bank records may not provide data at an individual level as families may have joint bank accounts. For example, using J.P. Morgan bank data, Farrel and Gregg (2016) estimate monthly earnings, turnover and employment in the online platform economy. Their samples of platform participants include more than 240,000 anonymized customers who have received platform income from one or more of 42 different platforms. However, the findings may not be applicable to the entire economy as they are based on the customers from a single bank in the economy and also as they do not cover the non-bank transactions. Actuaries Institute of Australia (2020) also takes a non-traditional approach of measuring the gig economic activities by using transaction data, i.e. expenditure data. Transaction data can reveal a lot of information on the growth of gig economy's share in consumer spending. Collecting data on the electronic bank transactions for a sample of over three million Australians for a period of five years, it is identified that in 2019, the Australian gig economy has captured $6.3 billion of consumer spending. However, measuring the gig economy from this kind of an expenditure approach is quite problematic as payments do not always come directly from platforms' accounts (Piasna, 2020). The study further identifies and analyse two cohorts, which are gig economy consumers and gig workers, and thereby attempts to quantify the impact of gig economy. To this end, a sample of approximately 1,000,000 gig economy consumers, 8,008 gig workers and five digital platform owners is used.

As highlighted by Piasna (2020), another approach to gather data from digital platforms is web 'scraping', which means automatically accessing and downloading publicly available data from the platform's web user interface. The Online Labour Index (OLI) produced by the Oxford Internet Institute is widely used for this.

Kässi, and Lehdonvirta (2016) defines the Online Labour Index as an index that measures the utilization of online labour platforms over time and across countries and occupations. Here, online labour platforms refer to the websites and apps through which buyers and sellers of labour and services

transact fully digitally. Although the index covers online freelancing and microwork platforms, the platforms for location-based local digital labour (e.g. Uber) are not taken into account. This is due to the belief that the measuring of online gig economy and the local gig economy should involve different methodologies. The activity of five largest English-language online labour platforms is tracked by OLI using API access and web scraping. These platforms have been selected as per the information given in Alexa, which is a website providing commercial web traffic data and analytics. Data collection for the index takes place in the form of periodical crawling and saving of the lists of open vacancies on each of the sample platforms. Thereby, the number of new vacancies between two crawls are calculated. A random sample of 1,172 vacancies are taken from the set of vacancies and are manually classified into the six occupations classes. Then, a normalized index number is compiled. The changes in the index is supposed to measure the changes in new vacancies, given the assumption that the share of unobserved to observed vacancies remains constant.

However, Piasna (2020) states that as this index counts the posted job offers instead of the number of workers who complete those jobs, causing a confusion due to the increasing fragmentation of tasks enabled by the platform economy. Estimation of the actual extent of platform work also requires information on compensation for the posted tasks. This is due to the fact that the tasks can vary according to the amount of labour input required. The index also fails to capture all new vacancies. Therefore, it is said that the OLI is incomplete. Hence, Piasna (2020) suggests that although the secondary data generated by platforms appears to be a good source of data to sketch the contours of the platform economy, it would not be ideal for estimation of the prevalence of platform work at an individual level. According to this study, the best way to investigate the extent to which individuals engage in platform work is the collection of primary data through social surveys. It is suggested that the survey designers should first experiment with new methods of data collection. Secondly, they should re-use and further test the vast library of questions used in the independent and ad hoc surveys, ultimately developing a harmonised instrument to be implemented in official, regularly repeated labour force surveys. Moreover, it is highlighted that there should be agreed definitions and clear methodological guidance from international institutions.

Challenges when using multiple data sources

It has been found that the survey data and tax data indicate quite different levels and trends of self-employment in the USA economy, and that there are divergences between specific series. In fact, household surveys have consistently shown lower levels of self-employment than tax data (Abraham et al. 2018). This problem can lead to various reporting errors, which could become more serious over time. However, to address this issue in the USA, a data file is prepared which links the administrative information based on tax records and household survey information for the same individual. But such a process would be complex and time consuming for Sri Lanka, as two different authorities are involved to collect tax and conduct censuses and surveys.

The discrepancies between the trends in the survey data and tax data are also observed in New Zealand. Riggs and Hyslop (2019) find that the reasons for such discrepancies can be due to differences in coverage or definitions. For instance, the fact that the surveys categorise respondents using their main job only, indicates that the trends in those series do not reflect the real trends in gig work. Therefore, it is stated that microdata is needed to better understand the gig economy. Nevertheless, if the household survey data or tax data enables the identification of people who are full time or part-time unincorporated self-employed workers, it would provide an upper limit for the number of employees in the gig economy of the country (Abraham et al. 2018).

Considering the nature of coordination between the tax authority of Sri Lanka, Inland Revenue Department (IRD) and DCS, IRD facilitates DCS to calculate the value added generated by the formal industries in the services sector by providing a database of Value Added Tax (VAT) payments. However, IRD sends only the industry-level tax figures (ISIC 5-digit level only) without revealing firm-level tax details. Moreover, the database covers only the formal industries and therefore does not contribute significantly to capture the gig economy.

Attempts to measure gig work in Sri Lanka

Following Galpaya and Senanayake (2018), Hunt and Samman (2019) and Galpaya, Perampalam and Senanayake (2019), the essential components that should be covered when measuring the gig economy in Sri Lanka could be identified as shown in Figure 2. It is important to check how many of the components of the gig economy shown in the particular figure are captured by current censuses and surveys conducted by the statistical agencies in Sri Lanka and what improvements should be done in those censuses and surveys in order to measure the size and contribution of the gig economy.

All housing units, collective living quarters, institutions and non-housing units of the country are listed and mapped by DCS during the decennial Census of Population and Housing (CPH). Hence, DCS has a list of all households as well as formal and informal establishments in the economy. In fact, the census maps prepared for CPH are used to locate the census units or sample units in other censuses and surveys that follow. Although without a specific focus on measuring the gig economy, DCS recently has made various attempts to measure the economic contribution of various components of the gig economy and incorporate the data in the national accounts.

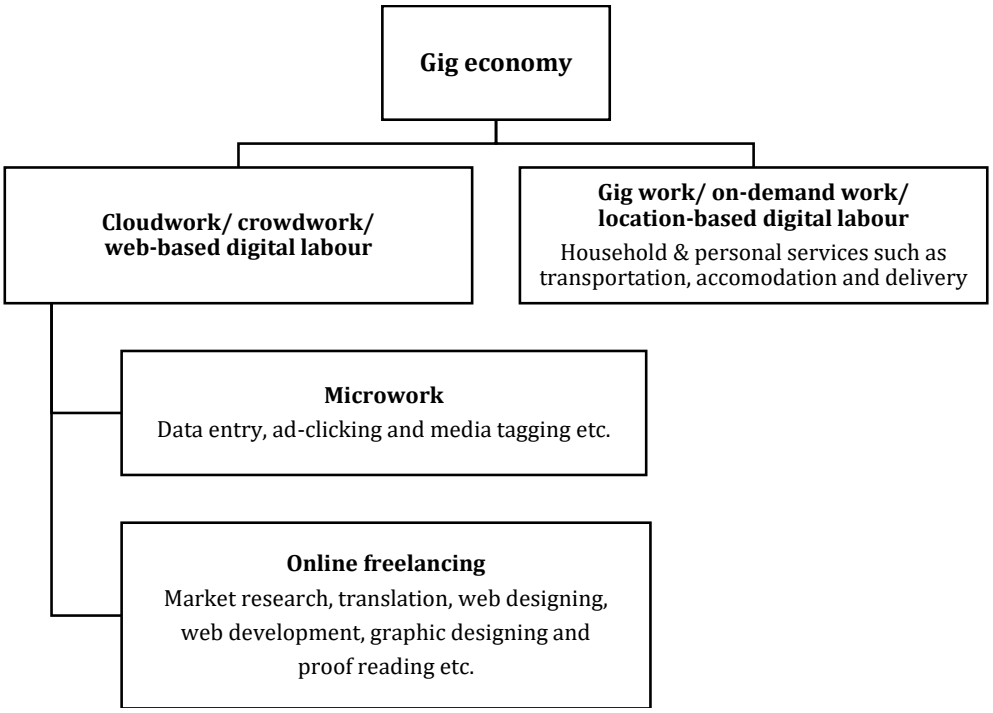

Figure 2: Components of the gig economy

Economic Census 2013/14 is one of the notable recent censuses which came up with some important measures of informal economic activities in the services sector that are related to the gig economy. As per the International Recommendation for Industrial Statistics 2008, the Economic Census 2013/14 defined a statistical unit of the informal sector as a production unit that do not maintain a complete set

of accounts or, a production unit that is unincorporated and have ten or lesser number of employees. The particular census measured the total output, value added as well as the number of establishments and persons engaged in information service activities such as activities of web search portals, data processing and hosting activities, as well as other activities that primarily supply information, separately for formal and informal sectors. It is found that services sector accounts for 33 percent of the informal establishments of the country and 36 percent of persons engaged in informal economic activities in the country. Moreover, 376 informal establishments and 579 individuals are engaged in informal information services activities (0.02 percent of the total value added of the services sector) (DCS, 2017). DCS also conducts an Annual Survey of Trade and Services (last report in 2018) which also have published estimates on the number of establishments and persons engaged in information services activities as well as the value added, covering entities with five or more persons engaged.

Although the number of establishments and persons engaged in information service activities provides an indicator of the gig economy by covering a vast amount of employment activities under web-based digital labour, a much larger amount of gig economic activities could remain hidden among other service activities such as accommodation, transportation, advertising and market research, accounting and book keeping, consultancy etc. which can be performed online.

As an initiative to measure the platform economy, DCS has started measuring the economic contribution of one of the leading, local online transportation and delivery service providers in Sri Lanka. This was a part of the Information Technology and Information Technology Enabled Services Survey 2016/17 (although the figures are not published). The IT and IT Enabled Services Survey 2016/17 was the first-ever survey in Sri Lanka to estimate the real gross value added by the Information Technology (IT) and Business Process Management (BPM) industry to the GDP. The survey collected statistics on the revenue and expenditure from formal level IT and BPM firms in the country, covering both local and export market, and therefore, did not specifically contribute to measure the gig economy. However, survey revealed that in 2017, Sri Lanka's IT and BPM industry has generated a high value added to output ratio of 75 percent. As it is the IT sector which facilitates the gig economic activities, this provides indications of a widespread gig economy in the country.

The measures produced by the above mentioned surveys are not yet used to compile the national accounts (although they are referred to when making adjustments to estimates at present) as they are currently being prepared with the base year of 2010. Nevertheless, as DCS is on its way towards a new base year which is 2015, the estimates produced by the recent censuses and surveys will soon be incorporated to the national accounts.

However, it should be noted that most gig economic activities, especially web-based digital labour (e.g. freelancing) take place at household level without a proper establishment. In that case, economic censuses and establishment surveys will not fully capture the entire gig economy. Therefore, they should be accompanied by household surveys.

Labour Force Survey (LFS) is a quarterly survey conducted by DCS since 1990, to obtain data on the structure and characteristics of the country's labour force, employment and unemployment. A sample of 20,000-25,000 housing units are enumerated in the survey and the field work is carried out throughout the year. The LFS classifies employed population by status of employment (based on working behavior and conditions of work) into two categories as waged and salaried workers (those who work for wages/salaries) and the self-employed. The group of the self-employed is further categorized into three groups as employers (entrepreneurs with at least one paid employee under them), own account workers

(entrepreneurs with no paid employees) and contributing family workers (individuals contributing to the economic activities carried out by someone in their household without wages/salaries). Hence, it is likely that own account workers will comprise the majority of the gig workers in the economy. With some additional questions which specifically focus on gig work, the survey has a huge potential to accurately extract the number of gig workers. However, it is questionable whether the sample of 25,000 housing units would be able to provide accurate estimates of the number of gig workers scattered all over the country, mainly because the possibility of having a considerable amount of freelancers in the sample could be very low.

Spending 35 hours per week on the job is the criteria for an employment to be considered as primary employment in the LFS (this condition is not applicable to government teachers). If a respondent has worked less than 35 hours, further questioning will be done to identify whether the person is under-employed, i.e. the person is ready and available for another work if provided. A distinctive feature of the survey is that since 2013, the time spent on both primary and secondary jobs are taken into account when deciding on the time limit. While the respondents who have engaged in a secondary employment apart from their main employment during the reference period are defined as secondary job holders, those who have worked in more than one job during the reference period are defined as multiple job holders.

In 2019, 26 percent of the employed who were engaged in secondary jobs were in the services sector. However, despite the fact that there is a significant amount of self-employed people in Sri Lanka, a high proportion of them are engaged not in the services sector, but in the agriculture sector (DCS, 2020). Hence, further information will be needed to obtain the exact number of self-employed people who are primarily or secondarily engaged in the gig economy.

The LFS also collects data on the informal economy. If the institute of any particular employed person is not officially registered, and if the institute does not keep formal accounts and if the institute has less than 10 regular employees, then the particular institute is defined as an informal sector institute. Although these two series of self-employed population and the population in informal employment cannot cover all gig workers or identify the exact number of gig workers among the total employed, they can lead to some important suggestions as to what kind of improvements could be made in the survey, so as to come up with measures of the gig economy.

In the existing literature, except for one extensive research documented by Galpaya, Perampalam and Senanayake (2019), it was hard to find any other studies aimed to measure the gig economy in Sri Lanka. This study follows a two-fold approach to estimate the number of online freelancers in Sri Lanka, through a nationally representative survey. Using a sample of 5,377 individuals covering the population aged 16-40 years in urban and rural areas of all 9 provinces and all 25 districts of Sri Lanka, they quantify the number of freelancers in the country as 22,000. The two main questions asked in the survey are, “are you aware of online work (yes/no)?” and “are you involved in online freelancing (yes/no)”. There are specific questions to understand the skill levels as well. The age limit is set as 16-40 as it is the young and computer-literate crowd who are mostly engaged in online freelancing. Fieldwork has been carried out from November 2015 to January 2016.

The number of registered Sri Lankans in some online freelancing platforms is also calculated in the study manually. It is mentioned that Alexa ranking has been used to estimate the number of registered freelancers in one platform which does not show public data on the number of registered workers. Alexa ranking has helped to validate the estimates derived from the answers obtained for survey

questions regarding the platform in which the respondents are registered and their date of registration. Using this approach, the study estimates 17,000 - 22,000 online freelancers in Sri Lanka in mid-2017.

To validate their estimates on the number of online freelancers and their earnings, and also to understand the people's attitudes towards microwork as well as their experience, a series of focus group discussions and in-depth interviews have also been conducted with 84 current freelancers at a public gathering of freelancers in Sri Lanka. The results indicate that most of the freelancers are involved in online work only 2-3 hours a day, as a part-time job. It is revealed that while full-time online freelancers earn around $350 per month, these part-time online freelancers earn around $140 per month from freelancing. Moreover, a few freelancers have stated that they earn more than their full time job through part-time online freelancing. Their earnings are reported to range from $1,000 to $1,300 per month. Thus, Galpaya, Perampalam and Senanayake (2019) provides a head start for the measurement of the gig economy in Sri Lanka. While proving the effectiveness of various methods, the study also suggests that both private and public sectors can work together, sharing their knowledge for better outcomes.

The final note of this literature review is that given the scope of existing censuses and surveys and the sources of knowledge, Sri Lanka has the potential to produce useful measures of gig work in the country. However, there should be a significant improvement, especially in the household survey questions in such a way that they could address specific questions, such as in which sectors and in what type of work are the gig workers engaged in?, to what extent is gig work a primary source of earnings?, to what extent it is a source of supplementary income?, are the earnings of gig workers adequate to meet their needs?, and what are the factors causing individuals to engage in gig work? etc.

The findings of the study are illustrated below in line with the conceptual framework.

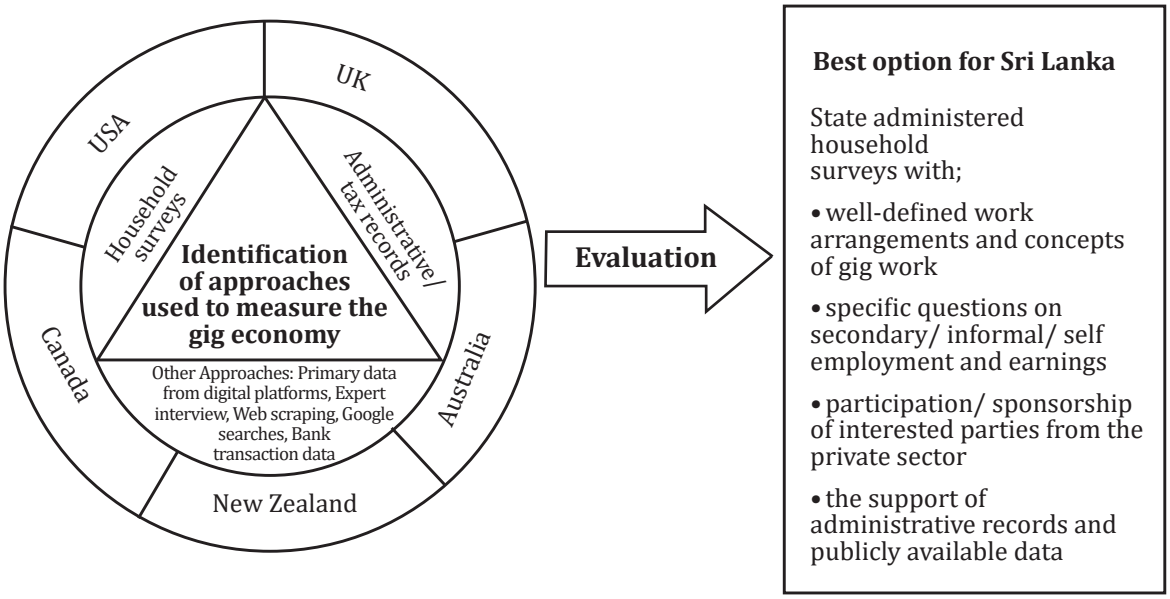

Figure 3: Findings

Conclusion and way forward for Sri Lanka

The greatest challenge faced when measuring the gig economy is the lack of internationally accepted definitions and standards for measurement. In fact, the definition of gig work seems to vary not

only across countries but also across studies. However, until the development of such international definitions and standards takes place, Sri Lanka can come up with its own set of well-defined concepts and measures of gig work by looking at international experience.

The two main data sources used by countries to measure the prevalence and nature of gig work are, survey data and administrative records. The largest weakness in the surveys conducted by the national statistical offices is that only a limited information is collected on secondary employment activities. Moreover, there is no exact method of separating gig work arrangements from other work arrangements that fall under unincorporated self-employed group. When it comes to administrative or tax records, it cannot be expected that all gig workers are reporting their self-employment income to the tax authorities. The literature review conducted in this study shows that without specific focus on gig work, these two data sources will not perfectly capture the magnitude and value of the gig economy.

However, evidence from all the countries considered indicate that improvements in the existing household and establishment surveys can make them the best data sources using which the measures of gig economy could be produced effectively within a short period of time.

The implication of this study is that the national statistics office of Sri Lanka has a strong potential to improve the existing surveys, so as to produce useful measures of gig work. The main reason is that it already has a wide scope which covers many areas of secondary-employment and informal employment. As highlighted in literature, certain measures should be taken such as, analysing the questions in existing surveys; adding questions that probe more directly regarding the work arrangements, earnings, type of work and factors causing individuals to engage in gig work; using more detailed questions about informal work; focusing on more than one timeframe in survey questions; including questions to measure the extent to which people engage in gig work etc. Moreover, increasing the coverage of existing surveys making use of publicly available data and getting the participation of the interested parties in the private sector in survey activities are also important. Further, a better coordination between the statistical office and the tax authorities would also make it possible to produce most accurate measures by comparing and contrasting the measures of gig work computed from multiple sources.

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