



Getting a grip on the platform economy in the Netherlands

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¹ The views expressed in this paper are those of the authors and do not necessarily reflect the policies of Statistics Netherlands.

1. Introduction

1.1 Background

After the turn of the century, all kinds of activities in society are digitized at an ever-increasing pace. One of those areas is the phenomenon of online platforms. Online platforms purely intermediate in a multi-sided way between supply and demand of goods, services and/or information.

An important characteristic of online platforms is that they do not produce or own the goods, services and/or information that are mediated. Digital enterprises that do produce or own the products they sell are commonly referred to as e-commerce.

Intermediation is not a new phenomenon, but these services existed long before the internet. Consider, for example, markets for second-hand goods, mediation in real estate, notice boards in public spaces or dating services. However, due to the rise of ICT and the internet, and in its wake globalization, this phenomenon of intermediation services through digital platforms has grown enormously in both scale and scope.

Nowadays online platforms can be found in almost every sector of the economy. Some of these platforms, such as Facebook, Alibaba and Google are among the largest and most influential companies in the world.

For consumers online platforms bring more convenience, offer more choice and information and therefore put pressure on prices. For example, it has become quite easy to book an apartment with Booking.com using your computer in Amsterdam for a trip to NY, order an Uber taxi to the airport and have a quick meal delivered by Deliveroo before you leave, all while talking to your friends on Facebook. Another effect of online platforms that from an economic perspective should not be underestimated, is that they have made it much easier for consumers to offer their own goods, services and/or information, to others and thus act as producers.

For businesses, online platforms have made it much easier to directly enter (major) markets, to use new business models and to reduce costs² (Oxera, 2015). Online platforms also stimulate innovation because they bring together businesses in one virtual environment.

On the other hand, online platforms raise questions about the way they operate. For example, the larger online platforms often have the tendency to disrupt and monopolize their

² On the one side costs are reduced when it concerns, for example, marketing, feedback of customers and finding new markets (acquisition of new customers). On the other side online platforms can increase costs, for example, through commission fees and building and protection costs of specific assets. See, for example, The role of marketing in digital business platforms, by Rangaswamy, A. et al, in Journal of Interactive Marketing, number 51, pg. 72-90.

market³, it is not always clear how online platforms use the user data they collect and what the effects are of the algorithms and rating systems they use. Furthermore, there is continuous debate about the working conditions of people who work for or through online platforms (so called platform workers)⁴.

So, in general, online platforms are changing the way we interact and work. From an economic perspective, they are transforming markets, shifting market power, creating value by using new business models and modifying the distribution of economic value within sectors and between economic agents.

As a result of these social and economic impacts, policy makers have an increasing interest in online platforms. It is important for them to get better insights in the way online platforms operate and to see which positive and negative effects they generate for society and economy. To get these insights, statistical evidence is required.

That is the reason why the last three years the Ministry of Economic Affairs and Climate in the Netherlands has commissioned Statistics Netherlands (SN) to research online platforms more closely. During this time SN conducted, amongst others, two surveys among online platforms.

In addition, research within SN on online platforms is performed in the context of measuring the economy of the Netherlands in a more comprehensive way. Next to online platforms, this research focusses, among others, on the value of data, free services and the production of households (de Bondt, 2021, van Elp, 2019).

1.2 Measurement challenges

Practice has shown that it is not easy to quantify the different aspects of online platforms, especially their specific role in the economy. For example, to get a clear economic picture, one has to distinguish between the economic operation of online platforms themselves (e.g. their turnover), other income sources based on their business model (placing of advertisements, selling of data etc.) and, in particular, the economic value of the transactions which take place through the platform.

Even though SN tried to collect information through their surveys and used auxiliary data sources, it has not succeeded so far in providing a reliable, let alone a complete picture of the economic role of online platforms. This is also because it is unclear to what extent the methodology developed to identify online platforms has resulted in a complete or representative sample of online platforms in the population. An additional measurement challenge in this context are the international online platforms which are active in the

³ See, for example, the rise of Uber in Los Angeles: <https://www.nytimes.com/2020/01/12/business/los-angeles-taxis-uber-lyft.html>

⁴ See, for example, The role of digital labour platforms in transforming the world of work, ILO, 2021.

Netherlands, but have no residential address here. These platforms are not included in the population.

1.3 Research question and content of paper

The main research question discussed in this paper is if we can produce useful and complete (experimental) statistics on online platforms in the Netherlands in terms of what, how and why?

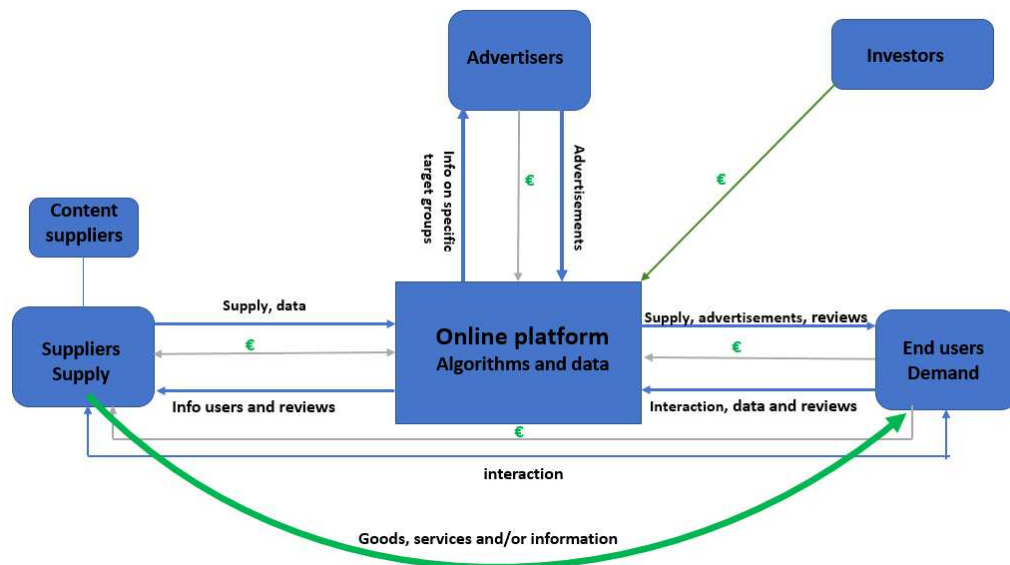
This paper discusses some of the features of online platforms, mainly based on the results of the two surveys which were carried out by SN in the last three years.

Before a selection of results of the research of SN is presented in chapter 4, we first describe the way online platforms were defined by SN (chapter 2) and the way the population was compiled in the context of the design of the two surveys executed (chapter 3). The paper concludes with some conclusions and recommendations (chapter 5).

2. Definition of online platforms

SN has defined an online platform as *an open digital service, which facilitates interactions and possibly transactions between two or more different but dependent groups of users of goods, services and/or information and where this digital service does not offer or own these products itself.*

2.1 Actors and interactions in the ecosystem of an online platform.



Source: Statistics Netherlands

Both providers and end-users of online platforms can be businesses and institutions as well as individuals, households and governments. Online platforms are often referred to as multi-sided digital markets. However, online platforms are more than just a market with mostly paid transactions. Think, for example, about the more social oriented platforms, such as social media and neighborhood and healthcare platforms. These kinds of online platforms often pursue goals other than making a profit only.

According to the definition, the characteristics of online platforms are:

- The main activity is purely about the intermediation service. In order to attract more users to their online platform, it could be that the intermediation service of the platform is supported with other services like logistics, communication facilities and payment services. That makes it sometimes difficult to determine what the main activity of the online platform is. A complicating factor in obtaining the right data arises if the mediation service is the secondary and not the main activity of a company. Then, it becomes, for example, difficult to separate the (financial) data of the entire company from the data which are related only to the platform activities.
- It is a digital service, as a webpage or app. That means that intermediation through other channels (telephone, by paper, physical etc.) are not taken into account here.
- In the first place, it is about interactions between groups of providers and groups of end-users (multi-sided). These interactions can, but not necessarily lead to transactions. In their operation online platforms use all kinds of different business models. Often the use of the platform is free, but income can also be generated by placing advertisements or selling data or they are heavily dependent on yearly investments. In other cases, providers and/or end-users have to pay a percentage or fixed amount per transaction or a freemium model⁵ is used. The payment conditions can differ between providers and end-users.
- Online platforms do not produce or own the products which they intermediate. Online businesses that do own the products they sell are commonly defined as e-commerce.
- It must be an open platform. 'Open' means the situation that any person or organization – if they meet the conditions of the platform - can approach and use the platform itself as both provider or end-user and that in principle one is not dependent for the use on the permission and help of the platform itself.

For the most part this definition follows the definition of the OECD (see OECD, 2019). To demarcate online platforms, often also the criterion 'responsibility' or 'liability' is used. This means that an intermediation activity is only an online platform when the provider and not the online platform takes all the responsibility for the consequences of the transaction with

⁵ Freemium means that the initial use is free, but if the user wants extra services then he or she has to pay.

an end-user. It is debatable if this is (also in the future) a conclusive criterion. Therefore, we use the extra criterion 'open'. If the online platform is not 'open' in most cases it is e-commerce.

What has become quite clear throughout all the (international) discussions⁶ on the definition of online platforms is that there are grey areas. Until now SN included: social media, comparison sites, search engines, app development sites, open business partnerships, neighborhood and health sites, open markets, open streaming services, open labor and crowd funding services and online platforms for the intermediation of underused goods such as rooms and cars (the so-called sharing or collaborative economy).

The term 'online platform economy' is often used in conjunction with terms such as the internet economy, the sharing or collaborative economy and the circular economy. The online platform economy is part of the internet economy. The sharing economy is foremost based on online platforms that make it possible to broker underused goods and services, such as rooms and cars (see for example Airbnb and Blablacar). There is no transfer of ownership. However, the demarcation of online platforms used by SN is broader. Therefore, SN sees the digital part of the sharing economy as a subset of the platform economy⁷. In the circular economy online platforms are used (e.g. for second hand goods), but that does not have to be the case in every aspect. Therefore, the circular economy overlaps with the platform economy, but is not synonymous with it.

Other borderline cases concern so-called hybrid platforms. These are online platforms where only a part of the activities concern mediation. Amazon is such an example. One part of Amazon offers products from their own stock (e-commerce). Another part of Amazon offers the same products but from third parties (intermediation services).

This also relates to the situation where an online platform is just a small part of all the activities of a business. The main activity of that business could be something totally different. Finally, there are online platforms that intermediate in more than one product (mixed), or that exploit not only one but a large number of similar online platforms (e.g. dating services).

3. Identification of the population and the survey design

As explained in the introduction, a major statistical challenge is to compile a reliable population of online platforms for the Netherlands. Unfortunately, there is no database or register available with information on such a population. A population of online platforms had to be built from scratch.

⁶ See the papers of the working groups of OECD and Eurostat.

⁷ Although the sharing economy could also exist in a physical form outside the online platform economy.

In preparation of the first survey in 2019, a start was made with merging a number of incomplete lists with online platforms from the sharing economy. Afterwards, text mining was applied on the webpages of this list of online platforms. Subsequently, the major keywords of the text mining exercise were used to search the other webpages of the Dutch internet domain⁸ as well the descriptive information of the units in the Business Register of SN. A questionnaire was then sent out to the resulting population.

Due to a considerable amount of non-response, which was partly related to the fact that some of the units approached where no online platform, only a relatively small number of 200 cases remained to be analyzed. Because a reference frame with the total number of online platforms in the population is missing, it is unknown what part of the online platforms are not included in the study population.

In preparation of the second survey in 2020, all platforms that where part of the population approached for the survey in 2019 where manually checked, i.e. the webpages where visited and it was verified whether or not the webpage was an online platform. This effort resulted in a list of more than 600 verified online platforms.

This list was used as input to train a machine learning classifier model that estimates a probability that corresponds to the likelihood a webpage is an online platform (in the Dutch internet domain). Although these efforts resulted in a larger set of online platforms, we are unable to verify the extent to which the platforms identified are a complete and representative population of online platforms. Beside that we also had to deal with false positives.

SN tries to ensure that the largest online platforms are included in the population. The difference between the two surveys is that for the first survey, the population was identified in a rather ad-hoc way, while for the second survey, a more systematic approach was taken.

The questionnaire was sent to the online platforms in an electronic form. The questions asked, in both surveys, had a rather broad spectrum. Among others, the following subjects were included; location, date of establishment, goods and services intermediated, number of employees, turnover, legal form, scope of their market (Netherlands, Europe and World), type of users (professional – non-professional), number of providers and end-users (also by origin), number of transactions, total value of the transactions, business models, turnover, operating results (loss, win or neutral), algorithms, rating systems, supporting services and the way collected personal data was used.

The item non-response was especially high and the quality of the answers was relatively low for the items on the number of transactions and the total value of these transactions. That made it impossible to produce reliable results on these important indicators. In the second

⁸ The Dutch Internet domain was defined as web pages with the extension .nl or which use the Dutch language.

survey, the results were also merged with other available data sources, like the business register, ICT-usage surveys of persons and businesses and business statistics.

So, the compiled population refers only to online platforms that have a resident address in the Netherlands. Otherwise, it was difficult to send a questionnaire. International online platforms which are active in the Netherlands, but have no address here were therefore excluded. Obviously, resident businesses and households use non-resident online platforms.

4. Results of the 2020 survey

This chapter presents some specific results of the second survey (2020; see Klijs, B., 2021) among online platforms, which are a resident in the Netherlands. Circa 700 units identified themselves as an online platform. These results presented here are especially directed to economic variables, although the results of the complete survey are much broader.

The following topics are presented in succession: in which markets are the online platforms active (according to the respondent), their business models (who pays for the intermediation service and what is the most important source of income), their financial results and their operating results and value added. These last two indicators are based on a much smaller sample than the first group of indicators.

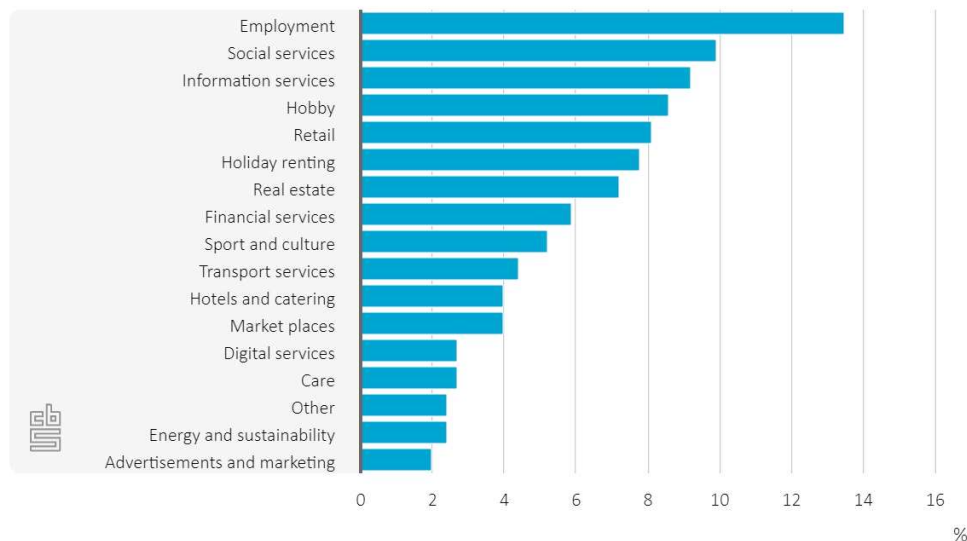
4.1 Most online platforms in the domain of Employment intermediation, most users in the domain of Holiday renting

Figure 4.1.1 provides an indication of the breakdown by the domain of the goods and services that are intermediated by the online platform (reported by the respondents) (survey 2020; N=706). In this case, most intermediation through online platforms can be found in the domains of Employment and Social services.

Furthermore, it is clear that the way online platforms are classified in the international system of the NACE does not align very well with the domains where they are active and the way the respondents classify their platform. They are often classified as tech-companies (section J:Information and communication), rather than a business which is part of a certain market.

The number of online platforms does not say much about the importance of these platforms in a market. If one looks at the number of users of the platforms than Holiday renting is the biggest industry with 998 thousand users (providers 33 thousand and end-users 966 thousand), followed by Retail with 801 thousand users (providers 286 thousand and end-users 515 thousand) and Market places with 382 thousand users (providers 188 thousand and end-users 194 thousand).

4.1.1 Breakdown by the domains of goods and services intermediated (reported by the respondent) of online platforms in the Netherlands, (N=706, all respondents), 2020



4.2 Most online platforms in the Netherlands are micro-enterprises

Most platforms in our study population are affiliated with enterprises that only have a few persons employed. More specifically, about half of the online platforms studied employ one person only. A minority of the platforms (12 percent) are affiliated with enterprises that have 20 persons employed or more. To summarize, the general view is that the largest part of online platforms in the Netherlands is a micro-enterprise.

4.3 Business model: who pays for the intermediation services?

About a third of all the online platforms offer their intermediation services for free for both provider and end-user. About one fifth of the online platforms let both provider as end-user pay commission for using the online platform. With the rest of the online platforms (42 percent) the providers are subsidizing the end-users or vice versa, that is: in 33 percent of the cases only the provider pays and in 8 percent of the cases only the end-user pays. In general, the provider must pay more often than the end-user, 59 percent against 42 percent.

4.3.1 Business model: who pays for the intermediation services by domains of product or service intermediated, (N=706, all respondents), 2020

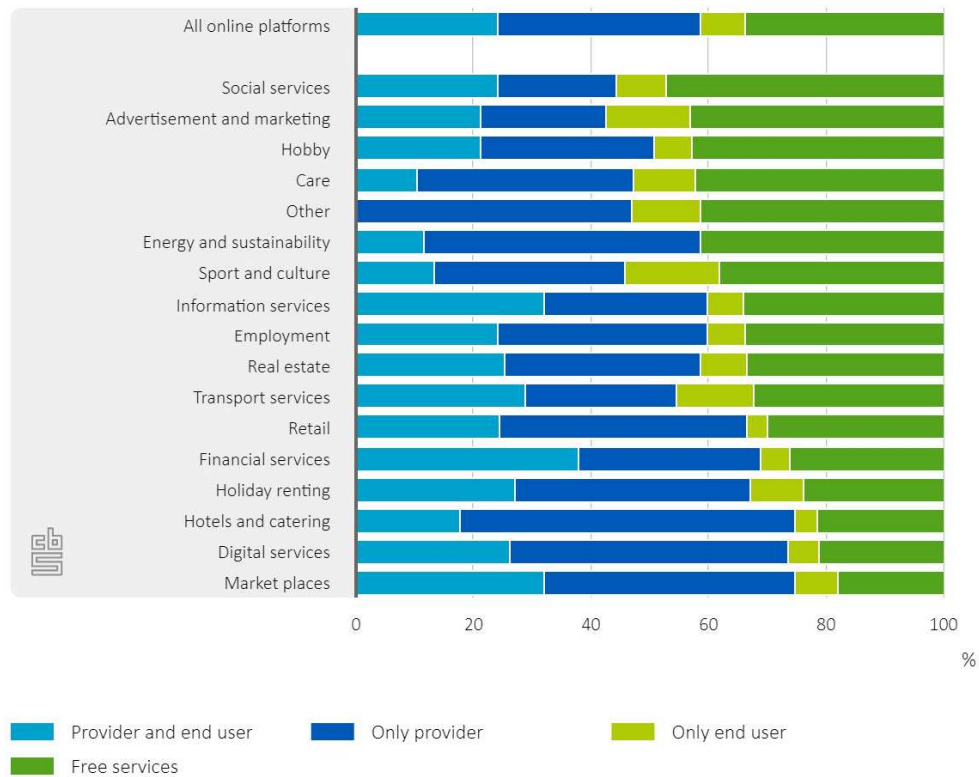


Figure 4.3.1 shows the breakdowns per domain of goods or services intermediated reported by the respondents. Most free services for both groups of users can be found within the domain of Social services. In the domain of Financial services provider and end-user must pay the most (around 40 percent).

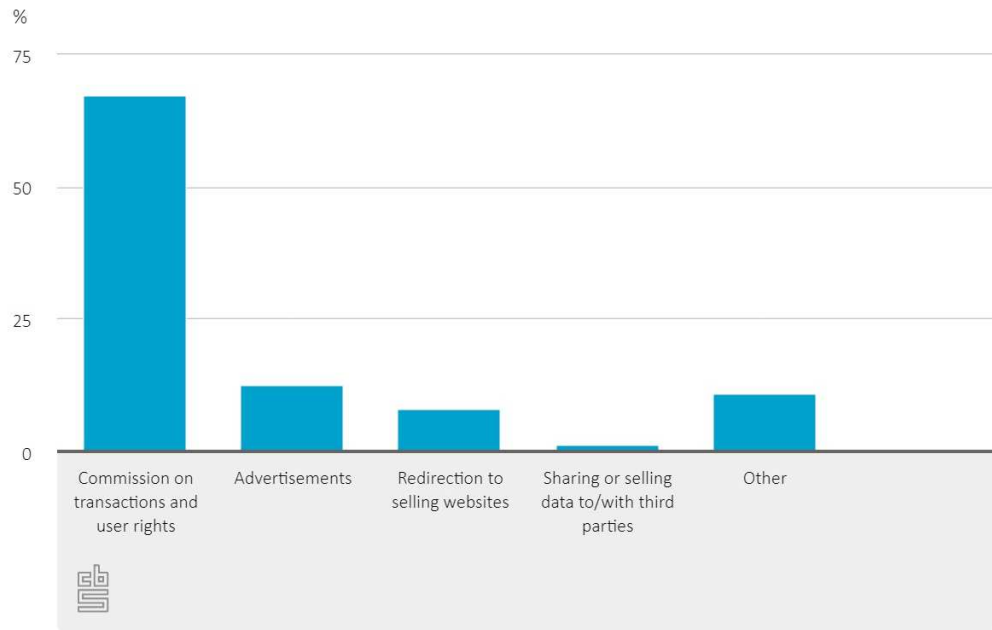
4.4 Business model: what is the main source of income?

Online platforms do not only generate income from commissions paid by providers and end-users. Their business model can also be based on, for example, income by placing advertisements or sharing and selling data. Figure 4.4.1 shows a breakdown according to the most important source of income of online platforms.

For two-thirds of the online platforms the commission for their intermediation service is the most important source of income. Other sources of income seem only most important for a smaller number of online platforms. After the source Redirection end-users to other websites (around 8 percent of the platforms), the Sharing and reselling of data is only for 1.3 percent of the online platforms the most important source of income. The latter percentage

maybe somewhat underestimated because the sharing or reselling of data is often seen by the outside world as something negative.

4.4.1 Business model: what is the main source of income, (N=706, all respondents), 2019



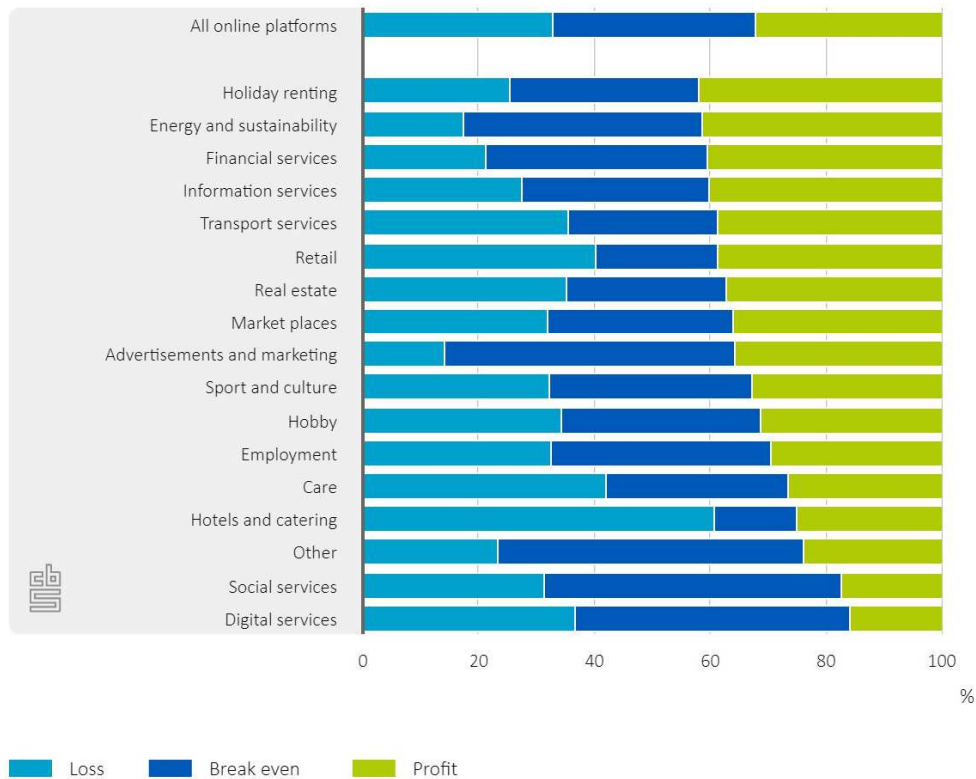
4.5 About one third of the online platforms is at a loss (2019).

The questionnaire also included a question whether the online platform is making a loss or profit or is breaking even in 2019? Of all the online platforms, 32 percent said they made a profit, 33 percent said they made a loss and 35 percent said that they made neither profit nor loss.

When a distinction is made by the domains of goods and services intermediated (reported by the respondents), most online platforms make a profit in the domain Holiday renting, followed by Information services. Most often a loss is reported in the domain of Hotels and catering. See figure 4.5.1. Online platforms that are more profitable, could be characterized, with some care, as:

- Employs more than one person (instead of one person);
- Intermediates goods and information (instead of services);
- The provider and/or end-user pay for their use (instead of free services);
- Uses a rating system (instead of no rating system);
- Has no extra supporting services (instead of extra supporting services); and
- Has a longer lifespan (instead of a short lifespan).

4.5.1 Financial result of online platforms: loss, profit or break even, by product or service intermediated, (N=706, all respondents), 2019



4.6 Turnover, operating result and value added

In the study in 2020 an attempt was made to look at the turnover, operating result and value added of online platforms. To make this possible, the list of online platforms was matched with the Business statistics of SN (reporting year 2018). These Business statistics provide information on different economic variables among which turnover, operating result and value added.

Not all the online platforms matched to units in the Business statistics. But more important, the Business statistics do not make the distinction between the platform activities of a business and the other activities of that business. Therefore, it is difficult to isolate the turnover, operation result and value added that is directly linked to the platform activities of these business.

So, only businesses with intermediation as their main activity were used. Also, a few sizable platforms that did not respond were added. All these activities reduced the number of online platforms to be used for analysis rather drastically to 47. The information on turnover was available for a larger set of platforms (N=358) than the information on the operating result

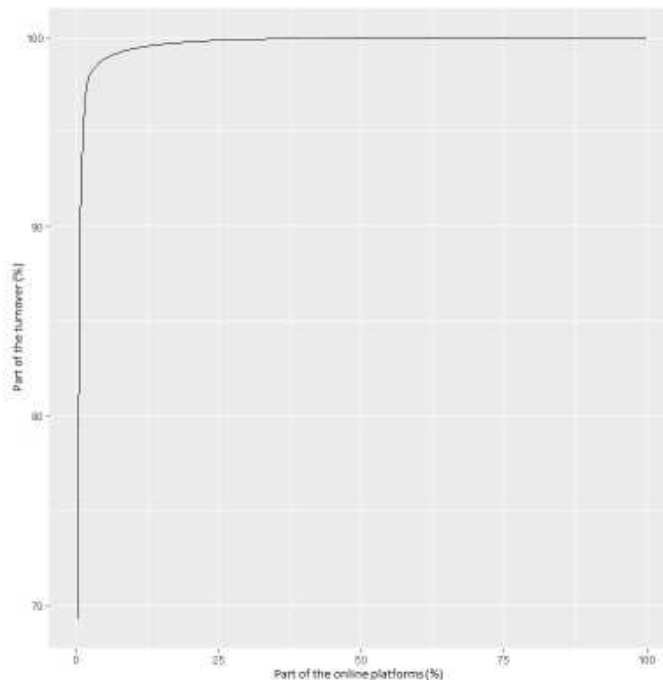
and the value added (N=47). These latter 47 online platforms, however, represent a set of (very) large enterprises that cover most (99 percent) of the total turnover of the businesses included in the turnover analysis. For the results see table 4.6.1.

4.6.1 Operating result and value added of businesses in the Netherlands with online platform services as their main activity, (N=47), 2018.

	Operating result	Value added
Number of businesses	47	47
Average (x1,000 euro)	87,740	111,470
Median (x1,000 euro)	60	1,145
Total (x1,000,000 euro)	4,125	5,240

Source: Statistics Netherlands

4.6.2 How the turnover of online platforms is distributed, survey 2020 (N=358), 2018



Source: Statistics Netherlands

This exercise results in a total of operating result of about 4.1 billion euro and a value added of about 5.2 billion euro. If this figure of value added is – with the necessary caution - compared to GDP of the Netherlands in 2018 (693 billion euro, current prices) it is a relatively small part, that is: 0,8 percent of total value added. This ratio is of course not all-

important in determining the economic importance of platforms. The transactions via platforms play a key role as well.

The impact of online platforms on the economy can and should be analyzed from different angles, depending on the exact question you want to answer. If one has the simple question how large the direct contribution of platforms to GDP is, then the abovementioned ratio can be used. However, it is also important to monitor transactions over time. If one is, for example, interested in shifts between market channels and possible market power within specific market channels, this kind of information is extremely relevant.

Finally, the analysis showed that the turnover of online platforms is very skewed across companies. About 99 percent of the turnover can be attributed to about 6 percent of the online platforms. See figure 4.6.2. Although there is some variation, this skewed revenue distribution is visible in virtually all domains.

5. Conclusions and recommendations

To summarize, the most striking results of the current research on online platforms so far are:

- that SN has made good progress to compile a population of (domestic) online platforms. However, more work on for example machine learning and classifier techniques has to be done to reach a reasonably good population of online platforms. Adding international online platforms, which are active in the Netherlands, but have no residence here (import of intermediation services), will be a much more arduous task. This omission in the data makes it for the time being difficult to assess the consequences of online platforms for the total Dutch economy, including all the cross-border flows;
- that extra data collection measures have to be taken to obtain better and more reliable information from online platforms on especially economic-related variables such as the number of users, the number of transactions and the value of these transactions (part of the broader ecosystem of online platforms);
- that online platforms should not be treated as one group as they are heterogeneous in, for example, their markets and business models (see figures 4.3.1 and 4.5.1). It is therefore unwise to lump all online platforms together and produce indicators on the total number of platforms;
- that commissions on transactions are the most important income source for Dutch resident online platforms (see figure 4.4.1);
- that in terms of employment, with a few exceptions, most online platforms in the Netherlands are micro-enterprises or at least small and medium sized enterprises (SME's);

- that the direct contribution of resident online platforms, in terms of value added, to the total GDP seems relatively small (0,8 percent);
- that the market power of online platforms should primarily be viewed from (the value of) the transactions between providers and end-users of these platforms and not from their turnover or from the number of persons employed. As said, SN has not been able to obtain reliable figures on this part of the ecosystem of online platforms;
- that it seems that in some markets only a few Dutch resident online platforms generate almost all the turnover (see figure 4.6.2). International online platforms, that are active in the Netherlands but have no address there are not included;
- that if there are only a few online platforms that dominate a market, statistical problems can arise with the disclosure of the results.

5.1 Answer to the research question

The prospect of producing useful yearly descriptive statistics about the way online platforms are operating in the Netherlands is promising. Think of indicators such as turnover, employment, what kind of good, service and / or information they intermediate, type of suppliers and end-users, scope of markets, business models, and other non-economic characteristics.

Some of these statistics are, however, still limited in scope and we are definitely not yet where we want to be. Statistics are so far mainly aimed at the world of the online platforms themselves, but not at the total ecosystem surrounding online platforms. For example, there are hardly any reliable figures available on the number of providers and end-users of these platforms, where they originate, their transactions and the economic value of these transactions.

In addition, international active online platforms with no business registered in the Netherlands are missing from the population, while they may well represent a great part of the flows in terms of transactions.

However, this kind of information is crucial to get a good picture of the economic dynamics of online platforms in the market where they are active and their effects on the economy. Therefore, at this moment it is not possible to draw a complete macroeconomic picture of the platform economy within the Netherlands. That also accounts for the magnitude of imports and exports of these intermediation services or, for example, the indirect contribution of online platforms on the productivity of other industries. See for example the transportation of goods that are bought on online platforms. Getting a full picture of this is not realistic in the short run. This requires also the use of and linking to other available data sources and registers, as well as more complex estimation models.

So different dimensions, different markets, and different business models advocate the development of a set of indicators for the platform economy, including both indicators for the

supply side as well as for the use side of the market. The OECD's digital Supply and Use Tables (SUT) can be a helpful and useful framework to structure all relevant platform transactions.

As macro-figures only are not satisfactory here, the OECD-framework facilitates the incorporation of details as well. Interesting details on business models and markets are incorporated in this framework to understand the complete picture.

5.2 Supply-Use tables for the digital economy (DSUT)

In 2021, SN started to work on the compilation of a DSUT. This is done according to the guidelines provided by the OECD.⁹ This project is largely financed by Eurostat. The main objective of the DSUT-framework is to increase the visibility of digital economic activities in the national accounts. There is a strong focus on online platforms along two dimensions:

1. The standard industries according the NACE-classification¹⁰ are expanded with seven digital industries. Two of these industries are online platforms: 'Digital intermediary platforms charging a fee' and 'Data and advertising driven digital platforms'. A third digital industry, 'Firms dependent on intermediary platforms', contains the suppliers of these online platforms. The majority of sales, that are made, should go through online platforms (e.g. accommodations like hotels);
2. The standard products according the CPA-classification¹¹ are expanded with four digital products in the scope of the current regulations for the national accounts (SNA 2008). One of these products are 'Priced digital intermediary services'. These are the fees generated by the platforms or, in case the platform activity is not the main activity, other industries. The import and exports of fees are included as well.

For each product of these two dimensions or combination of NACE and CPA, the DSUT aims to provide the value of sales via a digital intermediary platform.

The two surveys discussed in this paper provide useful information mostly for populating the two platform-industries (fees versus ads) as well as the value of the product 'priced digital intermediary services'. For the products sold via platforms and the firms dependent on platforms the survey has to be supplemented by other data sources, like Structural Business --statistics (SBS) and the statistics on ICT-usage by businesses.

5.3 Recommendations for further research

Recommendations can be made on various aspects of the research.

9

[https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPNA\(2019\)1/REV1&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPNA(2019)1/REV1&docLanguage=En)

¹⁰ The NACE is a European industry standard classification to classify economic units.

¹¹ The CPA (Classification of Products by Activity) provides a European framework on goods and services. A combination of NACE and CPA indicates which goods and services are produced in which industry.

Definition of 'online platforms'

More consensus is still needed on the (international) definition of online platforms' or intermediation services. Internationally there is still an ongoing discussion about what should be understood by 'online platforms'. There are still many border cases or mixed forms of online platforms.

Compilation of a reliable population of online platforms

Although good steps have been taken, it is necessary to continue with new statistical solutions which are used (e.g. machine learning, classifiers and web scraping) and complement these with clever ways of old fashion statistics to validate the results. For the compilation of international active online platforms a possible way to go is to work in co-operation with foreign NSI's (mirror statistics) and organizations like Eurostat, OECD and the UN. Furthermore, it could be a good idea to intensify the statistical effort on large online platforms, and focusing less on the smaller ones. The problem here is that you do not know which online platforms you are missing from the population.

Improvement of the survey on online platforms

There are several possible ways of improvement here. One could, at least for one year, limit the questionnaire drastically and focus only on the economic important variables. One could ask for help from others to collect data, such as the existing relationships of the department which handles the large case units (LCU) at SN and, again, share¹² data with foreign NSI's or international organizations. A good example of the latter is the data collection on Airbnb-like rentals which is done now by Eurostat for all member states of the EU.

Include relevant questions on the use of online platforms in other surveys or link the data to other data sources

The best way to collect data on the suppliers and end-users of online platforms is to add relevant questions to surveys that target these groups directly. For businesses that operate as suppliers on platforms the Structural Business Statistics (SBS) and the ICT-usage survey on businesses could provide relevant data if some changes can be made to the surveys. In industries, such as accommodation and retail, online platforms are a common sales channel. The SBS-survey can be used to include a question on the sales through online platforms.

The ICT- usage survey includes this question already. However, at this moment this survey has some drawbacks, that is: the survey does not include the businesses with only one employed person (many online platforms are micro-enterprises); financial figures have a lower quality than the SBS-survey, because the sample is smaller; and until the 2021-survey information over what the statistical unit represents, or so should report, was not provided.

¹² Privacy and confidentiality are issues here.

Other potential data sources, that were not yet used, are the statistics on Corporate Finance, VAT-data, financial transaction data, specific employment data and, further away, data that may be collected in the future at a European level about the tax to be paid on digital activities, even if the business is not based in a country.

Collecting data from users may be more challenging. The household budget survey differentiates between online and offline purchases. A further differentiation between direct online purchases and purchases via a platform may not be feasible, due to a lack of distinction from a consumer's perspective. Another possibility is provided by including questions in the ICT-usage survey of persons and households. This survey now includes a small set of questions on the use side of the sharing economy. Businesses purchasing via an online platform (b2b and c2b) is an uncovered subject as well.

Finally, for better employment figures on (the working condition of) platform workers questions could be added to the Labor Force Survey (LFS). Both the EU and the International Labour Organization (ILO) are taking steps in that direction.

From segregated figures to integrated accounts

The production of online platform services by resident businesses is very interesting to monitor. However, to have a complete picture of the supply of intermediation services in the Netherlands, it is also necessary to monitor the imports of these services produced by foreign businesses (non-residents). This kind of information would be a step in the right direction in order to be able to confront supply of intermediation services with the use of intermediation services in a supply and use framework.

Different information elements in this framework can be helpful to answer the question about the 'true impact' of online platforms in the Dutch economy. Assuming a rather complete population, to estimate the direct contribution of online platforms to GDP is a straightforward exercise once the numbers on value added of the producers of online platform are gathered.

This is only one part of the story. More complete and coherent information is needed to understand the full picture of the platform economy. Providing some insights into the impact of online platforms on the standard economic supply and use figures can be very useful for researchers and policy makers. The existence of different dimensions, different markets, and different business models advocates the development of a set of indicators for the platform economy, including both economic indicators for the supply side as well as for the use side of the market.

The OECD's digital Supply and Use Tables (DSUT) can, in this context, be a helpful and useful framework by structuring all relevant online platform transactions using international harmonized concepts and definitions. As already said, macro figures on online platforms only are not satisfactory. Fortunately, the OECD-framework facilitates the incorporation of

some details as well. By using the details, interesting aspects of business models and markets can be differentiated in this framework helping to understand the complete picture.

The availability of basic economic statistics on online platforms are key to filling parts of this framework. The digital SUT can then be used to integrate these basic statistics, helping users to understand the full and complete picture of the platform economy, benefiting from the possibility of international comparability. These supply and use accounts for online platforms complement the already existing information on platforms.

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