



Gender Equality in Virtual Work I.: Risks

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This article focuses on gender equality in virtual work, taking special account of the regulatory challenges. It contributes to broader debates on the workers' situation in the sharing economy in two ways. Firstly, it makes an inaugural attempt to evaluate the implications of the new forms of work in the sharing economy for female virtual workers, looking at the issue of equal treatment. Secondly, it offers preliminary suggestions regarding a future regulation to improve equality between genders in virtual work.

The paper is divided into four main parts. The first section defines 'virtual work', classifies its two basic forms and emphasises the specific traits of this form of work to demonstrate the need of special protection against discrimination. Secondly, the paper identifies the possible beneficial and adverse implications of virtual work for female workers and gender equality. Thirdly, the paper provides a summary of the gender equality law of the European Union that serves as a point of reference when speaking about antidiscrimination law. Section 4 offers three normative perspectives and suggestions as to how to enhance gender equality in virtual work. Finally, the paper concludes.

This first part of this two-part paper concentrates on the risks of virtual work for equal treatment, while the second part is going to address the regulatory options and suggestions.

1. Virtual work

1.1. Introduction and Definition of Virtual Work

New forms of work in the 'gig/sharing economy' have attracted great attention in the last couple of years. While several excellent papers addressed the issue of the qualification of the legal status of

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workers, little attention has been paid to the influence of these new forms of work on the situation of women in the workforce and on the issue of gender equality. This article explores the implications of the new forms of work for gender equality and provides suggestions for future regulation.

As the gender dimension of virtual work has not been in the focus of research until recently, reliable data on gender aspects of crowdwork and work on-demand are rarely available.¹ Therefore, this paper does not intend to provide a comprehensive analysis of the impacts of virtual work on female workforce and gender equality. This article is rather a cautious first attempt to evaluate the situation of female virtual workers and to identify some major perils of gender equality in virtual forms of work.

Scholars use various expressions to describe the new forms of work, such as crowdwork, digital work, call-on-demand work, platform-based work² etc. The generic term ‘virtual work’ defined by Valenduc and Vendramin is used to refer to “all forms of work carried out either at home, in public spaces, or in non-traditional working environments using the Internet, computers, or other IT-based tools”.³ This expression was used earlier by Cherry to allude to work taking place online.⁴ The major common feature of all forms of virtual work is a digital platform that serves as an intermediary to connect workers as service providers with clients/users. In the following, I will use the expression ‘virtual workers’ for those persons who are connected to the clients/users through an online platform.

The article limits itself to labour-based platforms and leaves aside asset-based platforms.⁵ The choice to divide between the provision of labour and the provision of assets might seem artificial, since both services belong to the sharing economy. Therefore, on demand work and asset-based platforms share similarities, particularly, that the performance of the service can affect the intimate sphere of either the client/user or the service provider. Work is either carried out at home of one of the parties such as it is the case for cleaning, handyman activities, babysitting, etc. Or, at least, work is performed by the workers’ own tools such as their cars or tools. Naomi Schoenbaum denoted therefore jobs in the sharing economy as ‘intimate work’.⁶ While I do not deny the significance of this common trait of work for asset-based and several labour-based platforms, I emphasise that not all forms of virtual work show this intimacy. While it is a significant characteristic of most work on-demand jobs, crowdwork has little intimate trait. Even if workers perform their tasks at home, clients do not gain insight into the workers’ intimate sphere. Furthermore, the priority of this article is to analyse relationships, which address work performance and

¹ A. R. BARZILAY – A. BEN-DAVID: Platform Inequality: Gender in the Gig-Economy. *Seton Hall L. Rev.*, 2017. 393., 398.

² J. PRASSL – M. RISAK: The Legal Protection of Crowdworkers: Four Avenues for Workers’ Rights in the Virtual Realm. In: P. MEIL – V. KIROV (eds.): *Policy Implications of Virtual Work*. Palgrave Macmillan, 2017. 274.; cf. P. MEIL – V. KIROV: *Introduction: The Policy Implications of Virtual Work*. In: MEIL–KIROV (eds.) op. cit. 5–7.

³ G. VALENDUC – R. VENDRAMIN: Work in the digital economy: sorting the old from the new. *ETUI Working Paper*, 2016/03. 29.; see also J. WEBSTER – K. RANDLE: Positioning Virtual Workers Within Space, Time, and Social Dynamics. In: J. WEBSTER – K. RANDLE: *Virtual Workers and the Global Labour Market*. London, Palgrave Macmillan, 2016. 3–34.

⁴ M. A. CHERRY: A Taxonomy of Virtual Work. *GA. L. Rev.*, Vol. 45., (2011) 951., 954.

⁵ This classification see: B. BALARAM – J. WARDEN – F. WALLACE-STEPHENS: *Good Gigs*. RSA, 2017. 10. Subject of the transaction through the platform can be labour, services, or sharing of assets, see: Jesnes and Nesheim’s definition of sharing economy: cited by J. DØLVIK – K. JENSEN: *Nordic labour markets and the sharing economy*. Nordic Council of Ministers, 2017. 12.

⁶ N. SCHOENBAUM: Gender and the Sharing Economy. *Fordham Urban Law Journal*, Vol. 43., N. 4. (2016) 1. ff, 7. Available at SSRN: <https://ssrn.com/abstract=2865710>.

have the exchange of labour as main subject matter. Its focus is on people who provide their workforce and leaves relationships aside, which have the object to provide assets.

The paper does not address all discriminatory behaviours related to labour-based platform, but limits itself to the possible discriminatory treatment of virtual workers by the service recipients and the platform. Vice versa, it neglects the possible discrimination of clients/users by platforms and virtual workers. This narrow focus allows the author to analyse the situation of virtual workers more in-depth.

1.2. Classification of Virtual Work from a Gender Equality Perspective

I adopted a simplified classification of the various forms of virtual work based on the criterion whether there is a direct personal contact between the client/user and the service provider or not.⁷ This distinction seems to be the most instructive from the gender perspective, as it makes a difference whether the service recipient has any information on the person of the worker. Accordingly, I differentiate between two major forms of virtual work based on the fact, whether work is only organized or organized and performed virtually through an online platform.

In the first category, the work is organised by apps and websites, but performed offline. In such cases, called '*work on demand via apps*' by De Stefano, the platform places workers or service providers to clients/users, where they provide normal local services, such as food delivery, cleaning, driving, babysitting, or handyman activities. Contrary to the global scope of crowdwork, work on-demand via apps is territorially bound. The novelty here is the connection between service providers and clients through mobile apps or online platforms. Platform firms are very different; while some online service provider like Uber can be regarded as an employer, others like TaskRabbit show a strong fragmentation of employer functions among customers, the platform, and even the person performing virtual work.⁸

Under the second category falls *crowdwork*, where the whole work is performed in cyberspace, thus there is no personal connection between the service provider and the client/user. In crowdwork it is often possible to guarantee the anonymity of the workers.⁹ On the other hand, crowdwork shows specific features that exacerbate the application of the classical instruments to hinder gender-based discrimination. Such characteristics are particularly the possible cross-border relationships and the multiplicity of parties providing work that creates multi-party relationships and causes the fragmentation of employer functions. The three-party (triangular) relationship with the involvement

⁷ This categorization mainly follows De Stefano's classification who differentiates in the 'gig economy' between crowdwork and 'work on demand via apps', see V. DE STEFANO: The rise of the «just-in-time workforce»: On-demand work, crowdwork and labour protection in the «gig-economy». *ILO, Conditions of Work and Employment Series*, No. 71. (2016) 2–3.

⁸ PRASSL–RISAK op. cit. 282–283.; see also DE STEFANO op. cit.

⁹ Cf. DØLVIK–JESNES op. cit. 12.

of a platform as an intermediary exacerbates the recognition of virtual workers as workers within the realm of labour law and calls for equal treatment beyond this field of law.¹⁰

My assumption is that due to their diverging traits, especially regarding the personal connection to the workers, crowdwork and work on-demand via apps have different implications for female workers and gender equality. This disparity is attributable to the difference in the closeness of the relationship between the client/user and the service provider. In this regard, crowdwork and work on-demand take place at the two extreme ends of the scale. On the one hand, the absence of any personal connection in crowdwork can efficiently hinder discriminatory behaviour. The two parties actually never meet and the only link between them is utmost the service provider's online profile. On the other hand, work on-demand often affects the privacy of the service provider or even the client/user. Handyman activities, babysitting and cleaning are necessarily performed at the clients' home, as well as food is delivered there. Therefore, the possibility and likelihood of a discrimination differ in the two kinds of virtual work. Crowdwork rises less concerns regarding biased behaviour as long as the anonymity of the parties is guaranteed. It can even support the labour market participation of female workers. To the contrary, work on-demand entails specific risks for women.

1.3. The Specific Traits of Virtual Work From the Gender Perspective

This section concentrates on the question what is unique about virtual work from the gender perspective and how these specialities influence gender equality. The specific features of virtual work are not necessarily gender neutral, but they can have multifaceted implications for gender equality, including both beneficial and adverse consequences.

In my opinion, the consequences of the new forms of work for gender can be classified into *two groups*. Firstly, virtual forms of work bring about the usual advantages and drawbacks attached to *flexible, non-standard forms of work* and to self-employment. In this regard, virtual world is not an optimal realm without any bias,¹¹ but rather the reproduction of the risks attributed to the real world of work. Regarding these traits one can make use of the existing discussions on similar problems of equal treatment in other flexible forms of work and self-employment. Secondly, however, virtual work can have specific implications for gender equality arising from the special nature of work performance. Particularly, *the anonymity of ratings and algorithmic management* are under suspicion that they give more room for biased behaviour than traditional and usually more transparent forms of work performance. In the following, I will emphasise the mentioned four traits in virtual work, namely flexibility, self-employment, algorithmic management and anonymity.

¹⁰ PRASSL–RISAK op. cit. 278–279.

¹¹ BARZILAY–BEN-DAVID op. cit. 401–402.

Flexibility of work is a double-edged sword for women.¹² *Flexible organisation of work* can contribute to a better reconciliation of work and family life by providing a larger degree of self-determination of the working time. The rise in virtual work entrenches existing gender roles in the private sphere by allowing women to work while taking on caring responsibilities. On the other hand, constant availability and work performed from home necessarily bring about the dissolution of spatial and temporal boundaries between work and private life.¹³ Decoupling the tasks from working time means that performance is measured independently from the time spent carrying out this work, which can lead to excessive working hours.¹⁴

Numerical flexibility, namely the ability to adjust the workforce to the fluctuating demand for labour,¹⁵ characterizes virtual work. Virtual work creates flexible work in a numerical sense meaning also the proliferation of precarious work with the overrepresentation of women, as well as the continuation of the segregation of men and women into different occupations.¹⁶ Work on-demand and crowdwork are associated with a particularly high level of flexibility. It is argued that virtual workers reveal less personal dependency on the service provider than employees on their employers do. The irregularity of the work-performance, as well as the low level of personal dependency through little instruction regarding working time and working place characterise both crowdwork and work on-demand via apps. However, appearances are deceptive. Platforms usually set strong incentives to perform work in peak time in order to make use most efficiently of the workers. For example, the Viennese riders of the food delivery service, Foodora, cannot determine unilaterally, in which predetermined shift they want to work, but the firm decides on it based on the riders' offers.¹⁷ Flexibility regarding the rejection of an agreed work is also reduced since refusal is only allowed for a limited number of 'just causes'.

To sum it up, flexibility shows not only its bright sides for workers. Firstly, it brings also pitfalls in the course of the reconciliation of family and private life and secondly, the organization of working time and working place is more rigid than they seem to be *prima facie*.

Another explanatory factor for the special situation of female virtual workers could be the *special traits of female self-employment*. As Judy Fudge pointed out, self-employment shows a gender segregation,

¹² Especially elaborated by Sandra Fredman, see S. FREDMAN: Women at Work: The Broken Promise of Flexicurity. *Ind. L. J.*, Vol. 33., No. 4. (2004) 299–319.

¹³ See e.g., É. GENIN: Proposal for a Theoretical Framework for the Analysis of Time Porosity. *Int'l. J. Comp. Lab. Law & Indus. Rel.*, Vol. 32., No. 3. (2016) 280., 289–293.

¹⁴ C. BARNARD – A. BLACKHAM: Self-Employment in EU Member States: The Role for Equality Law. European Commission, *European Equality Law Review*, 2015/2. 3. On the situation in the European countries see: EUROPEAN COMMISSION: *European Employment Observatory Review: Self-employment in Europe*. 2010. 26.

¹⁵ Definition of Atkinson, see J. ATKINSON: Manpower Strategies for Flexible Organisations. *Personnel Management*, 1984. 28–29.

¹⁶ S. FREDMAN: Precarious Norms for Precarious Workers. In: J. FUDGE – R. OWENS (eds.): *Precarious Work, Women, and the New Economy*. Hart Publishing, 2006. 177–178.

¹⁷ See T. DULLINGER: Kapitel 7 – Essenzustellung: foodora. In: M. RISAK – D. LUTZ (eds.): *Arbeit in der Gig-Economy*. 2017. 186., 189.

meaning that women are underrepresented in self-employment, most of them do not employ other workers, they have smaller earnings, and thus the majority of women's self-employment is precarious.¹⁸

Flexibility and self-employment are not new phenomena. Literature exists on the effect of this way of work performance on gender equality, which can be mainly adopted to virtual workers. However, virtual work brings along two major specific features, namely algorithmic management and the users' anonymity that bear a risk to amplify discriminatory behaviour.

The new way of management and control by data and through the fully automated process by algorithm, also called '*algorithmic management*,' differ from the traditional way of supervision.¹⁹ However, instructions and control have not disappeared but are present in new manifestations such as user ratings and algorithms learning from users' behaviour. Clients act as managers over virtual workers through the possibility to rate their performance.²⁰ The results of the ratings influence their promotion, employability, indirectly their payment, and sometimes even the legal status or the continuation of the relationship. Thus, platforms create new forms of monitoring and control over workers.²¹ Ratings constitute a very high level of quality control, which is actually far more intensive than the usual control over most employees.

The *anonymity of the user* can result in more discriminatory ratings, since people tend to be more biased in cyberspace through anonymity and freedom,²² than they would be in the real world. Psychological studies prove that anonymity in various contexts leads to breaking the rules more often and, in general, socially worse behaviour (such as aggressive driving²³). In addition, anonym ratings are highly overvalued in virtual work, as due to default of other traditional forms of control, this is nearly the only way to evaluate the workers' performance. Therefore, platforms make extensively use of this possibility. I have a strong assumption that anonymous ratings on virtual workers show a higher level of discrimination than other forms of performance evaluation.

The special form of subordination and personal dependency is not a new phenomenon, but could already be noticed in case of telework. As telework is rather the domain of highly skilled employees and teleworkers outclass their managers in technical and professional know-how, the scope of the

¹⁸ J. FUDGE: Self-employment, Women, and Precarious Work: The Scope of Labour Protection. In: FUDGE–OWENS op. cit. 201–222., 209–210., 214–215. Also BARNARD–BLACKHAM op. cit. 1–6.; also Catherine BARNARD – Alysia BLACKHAM: Discrimination and the Self-Employed – The Scope of Protection in an Interconnected Age. In: Hugh COLLINS (ed.): *European Contract Law and the Charter of Fundamental Rights*. 2017. 197., 199.

¹⁹ M. K. LEE – D. KUSBIT – E. METSKY – L. DABBISH: *Working with Machines: The Impact of Algorithmic and Data-Driven Management on Human Workers*. CHI, 2015.

²⁰ A. ROSENBLAT – L. STARK: Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers. *Int'l J. Comm.*, (10) 2016. 3772.

²¹ E.g., Uber creates weekly performance metrics over the performance of workers, see *ibid.* 3772.

²² E.g. K. B. KAHN – K. SPENCER – J. GLASER: Online Prejudice and Discrimination: From Dating to Hating. In: Y. AMICHAÏ-HAMBERGER (ed.): *The Social Net: Understanding our online behaviour*. 2nd ed. Oxford, OUP, 2013. 201–219.; M. E. KITE – B. E. WHITLEY: *Psychology of Prejudice and Discrimination*. 3rd ed. New York, Routledge, 2016. 326.

²³ See L. J. STRAHILEVITZ: "How's my driving?" For everyone (and everything?). *New York Univ. L. Rev.*, Vol. 81. (2006) 1699., 1705–1706. and his reference to other studies in footnote No 13.

managerial prerogatives is necessarily reduced to the assignment of work and delivery deadlines.²⁴ This fact has already led, in case of telework, to the ‘depersonalisation of subordination,’ limiting the employer’s power of command.²⁵ However, in case of virtual work, the same depersonalisation of dependency led to the opposite result, namely to the intensification of the control over virtual workers.

Having scrutinized the impact of the clients’ anonymity on discriminatory behaviour, now I turn to the other side of the coin and concentrate on the gender implications of the *anonymity of the worker*. Apparently, it can strengthen gender parity since it can prevent clients from discriminatory behaviour.²⁶ Discrimination based on gender can only occur if the client recognises the gender of the worker via personal contact or by the name used. However, complete anonymity and thus inclusiveness can be guaranteed only in case of crowdwork, where workers are free to choose a name and determine their identity. Crowdworkers with only a nickname can be faceless, although even a name can invoke discriminatory reactions. In case of work-on-demand, clients meet workers, so they perceive them in the exact same way they perceive genuine workers. Platforms often require the workers to create profiles that include their names, some additional personal or professional information, and sometimes even a photograph or a video.²⁷

In sum, flexibility, self-employment, and particularly anonymity as well as algorithmic management are the major issues that influence the equal treatment of virtual workers. Clients’ anonymity especially during ratings and algorithmic management are unique traits of virtual work that create special risks for gender parity. These certainly justify the examination of gender implications of virtual work.

In the following, gender disparity will be analysed in three specific contexts, namely regarding female participation rate, possible discrimination through ratings and algorithms, and, finally, the gender pay-gap in virtual work.

2. Three Possible Fields of Gender Discrimination in Virtual Work

2.1. Female Participation Rate in Virtual Work

There are very few data available on the female participation rate in virtual work, so it is impossible to make any definitive statement on this issue. However, the available data indicate a difference between the female participation rates among crowdworkers and work on-demand workers. What can be instructive is to attempt to compare, firstly, the rates of female to male participation in virtual work

²⁴ See B. VENEZIANI: The Employment Relationship. In: B. HEPPLER and B. VENEZIANI (eds.): The Transformation of Labour Law in Europe – A Comparative Study of 15 Countries 1945–2004. Oxford, Hart Publishing, 2009. 120–121.

²⁵ Ibid. 126.

²⁶ DE STEFANO op. cit. 11.; BARZILAY–BEN-DAVID op. cit. 397–398., 400.

²⁷ For example, Taskrabbit strongly suggest “taskers” to add a photo and a video to the personal profile in order to present and advertize themselves better.

and, secondly, the rate of female participation in virtual work to the rate of female participation in real (offline) world of work.

Regarding *crowdwork*, I scrutinized the gendered participation rate in Mechanical Turk, where some data are available.²⁸ The data indicate that the *female participation rate* in crowdwork is at least *not lower* than that in traditional forms of work. This statement is equally true for the United States and India. When comparing the Indian female labour force participation rate in traditional and virtual forms of work, we can notice that the rate is even higher among the crowdworkers than in the real (offline) labour market (data from the Worldbank).²⁹ The ratio of female to male labour force participation rate in the USA has been about 81% for the last five years, meaning that usually five men worked next to four women.³⁰ On the contrary, more women than men in the USA participated in Mechanical Turk.³¹

The picture is completely different regarding work on-demand. The *ratio of women among on-demand workers* seems to be *significantly low*. The British RSA undertook a large survey on the gig economy in Britain. The survey found that gig economy is predominantly male, since 69% of gig workers are men.³² For example, women are underrepresented among cab drivers and this is equally true for traditional cab drivers and for Uber drivers.³³ This strongly indicates that the gender imbalance in some virtual platforms just reflects the traditional underrepresentation of women in certain occupations in offline work. The major explanatory factor for the low rate of female participation in work on-demand could be the traditional gender split in self-employment.³⁴ According to the RSA study, only sectors traditionally occupied mainly by women, such as cleaning, create exemptions from the male dominance in sharing economy.³⁵ Of Hassle's (cleaning company) workers 86% are women, but only 6% of Deliveroo's (delivery company) workers.³⁶

²⁸ <http://demographics.mturk-tracker.com/#/gender/us>

²⁹ The ratio of female to male labour force participation rate in India for the last five years has been about 34%, see <http://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?end=2016&locations=IN&start=1990>. The ratio of female to male Indian workers among Mechanical Turk workers is usually slightly over this rate, but is in general definitely not lower, see <http://demographics.mturk-tracker.com/#/gender/in>.

³⁰ <http://data.worldbank.org/indicator/SL.TLF.CACT.FM.ZS?end=2016&locations=IN-US&start=1990>

³¹ <http://demographics.mturk-tracker.com/#/gender/us>

³² BALARAM at al. op. cit. 16.

³³ In the USA, only 20% of Uber drivers are women, but the ratio of female drivers is rising: <https://newsroom.uber.com/driver-partner-survey/>. In the UK, only 5% of Uber drivers are women, see: <http://demographics.mturk-tracker.com/#/gender/us>

³⁴ BARNARD-BLACKHAM op. cit. 4–5.

³⁵ BALARAM at al. op. cit. 16–18.

³⁶ Ibid. 17–18.

2.2. Discrimination Through Ratings and Self-Learning Algorithms

Client-sourced ratings systems and *algorithmic management* are commonplace in the sharing economy. Following the service provision, clients evaluate the worker's performance and very often vice versa, workers give feedback on the clients' behaviour as well. The ratings create the basis for worker evaluation and are part of an automated management through a data driven algorithm.³⁷ There are only a few studies on whether ratings actually contain bias, since platform-based companies do not provide access to data on ratings.³⁸ This opacity and unavailability of data on the possible discriminatory effect of the ratings and the general huge information asymmetry regarding the function of algorithms constitute a real hurdle for the enforcement of the equality principle.³⁹

Ratings have serious consequences as managerial decisions are based on the result of this feedback.⁴⁰ Ratings are used in many ways to monitor and evaluate workers' performance and even to discipline workers.⁴¹ The scores create the reputation of the worker that directly influences their payments and chances to get new assignments or higher-paid jobs, and can even cause the termination of their contract.⁴² Rating systems reallocate the employers' traditional controlling and managerial tasks to clients/users, bringing about a kind of outsourcing of workers' performance evaluation onto the service providers.⁴³ Through the empowerment of clients with managerial rights, they become the second boss of the workers, as Wang puts it.⁴⁴

Employees' automated management through client-sourced ratings is not a new phenomenon. Applying customer feedback in the management of workers in service work has been a common practice for a long time.⁴⁵ In the service sector, companies have used it to seek detailed information about their employees' work performance, including the clients' subjective impressions on the employees' behaviour. They make use of customer feedback to monitor, evaluate, promote, and discipline their employees.⁴⁶ The specialty in virtual work is the exclusiveness of ratings for the assessment of the workers' performance. Platforms often act as placeholders for the employers and are

³⁷ See in detail A. ROSENBLAT – K. LEVY – S. BAROCAS – T. HWANG: *Discriminating Tastes: Customer Ratings as Vehicles for Bias. Intelligence and Autonomy*, October 19, 2016. Available at SSRN: <https://ssrn.com/abstract=2858946>

³⁸ As also Rosenblat and his colleagues complain, see ROSENBLAT et al. op. cit. 7. To the sparse exception see: Anikó HANNÁK – Claudia WAGNER – David GARCIA – Alan MISLOVE – Markus STROHMAIER – Christo WILSON: *Bias in Online Freelance Marketplaces: Evidence from TaskRabbit and Fiverr*. Proceedings of the 20th ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2017), Portland, OR, February, 2017. 1914–1933.

³⁹ ROSENBLAT et al. op. cit. 11.

⁴⁰ L. WANG: *When the Customer is King: Employment Discrimination as Customer Service*. *Va. J. Soc. Pol'y & L.*, Vol. 23., N. 249. (2016) 255–256.; *ibid.* 5–8.

⁴¹ *Ibid.* 279.; L. FULLER – V. SMITH: *Consumers' Reports: Management by Customers in a Changing Economy*. *Work, Employment & Society*, Vol. 5., No 1. 1991. 11.

⁴² ROSENBLAT et al. op. cit. 6.

⁴³ *Ibid.* 2–3.

⁴⁴ WANG op. cit. 255–277.

⁴⁵ FULLER–SMITH op. cit. 1–16.

⁴⁶ *Ibid.* 249–292.

substantially interested in the clients' satisfaction in order to maximize their profit. However, in lack of any personal connection between the platform and the worker, the only way to get an impression on the work done is to assign the evaluation to the clients. In addition, this kind of assessment is a low-priced, but efficient method to push worker's performance. Therefore, ratings play an extraordinary huge role in the workers' supervision.

Social science studies on the customer evaluation of service workers strongly indicate that customer feedback includes racial and gender bias.⁴⁷ The customers' ratings reflect real life discriminatory preferences.⁴⁸ Studies emphasize that customers' ratings have the potential to be more biased than the behaviour of the colleagues or supervisors since they are quick, spontaneous, and, first of all, anonymous.⁴⁹ Anonymity plays an important role, as clients are more like to write harsh reviews about workers they never meet personally.⁵⁰ Consequently, crowdworkers, who make their gender or race public, are even more often hit by linguistic biases based on these traits than on-demand workers.⁵¹ In addition, customers often do not need to justify their ratings and do not know the consequences of their ratings for the workers.⁵² Due to this intimate nature of the ratings, they are more often discriminatory than other forms of interaction between clients and workers or even between employers and workers.

Another hotbed of discrimination are the self-learning algorithms.⁵³ Virtual workers have algorithmic identities⁵⁴ based on data given by themselves and gathered by the platform about their activities as well as the results from the clients' ratings. *Algorithms learn* from the users' behaviour and base their decisions on historical trends, that is, the past customers' ratings. Consequently, how a platform operates and manages the workers depends on the data it gets, that is, it learns from its experiences. By this way, algorithms reproduce widespread biases and perpetuate existing discrimination.⁵⁵ In addition, if a platform makes matches between users and clients, its recommendation is based on the demonstrated interests of similar earlier users (which evidently mirror their bias).⁵⁶

To sum it up, *neither algorithms nor ratings are gender-blind*. Rating systems build on the behaviour of clients/users and necessarily reflect their prejudices.⁵⁷ The possibility of discrimination is amplified by the private nature of choices and rankings. Ratings are done virtually without the pressure to

⁴⁷ HEKMAN et al.: An Examination of Whether and How Racial and Gender Biases Influence Customer Satisfaction. *Acad. Man. J.*, Vol. 53., No. 2., 238, 240–243.; WANG op. cit. 270–276.; ROSENBLAT et al. op. cit. 7–8.

⁴⁸ WANG op. cit. 252–254.

⁴⁹ HEKMAN op. cit. 240.; WANG op. cit. 282.

⁵⁰ HANNÁK et al. op. cit.

⁵¹ Ibid. 12.

⁵² HEKMAN op. cit. 240.

⁵³ See the detailed analysis of algorithmic discrimination M. KULLMANN: Platform Work, Algorithmic Decision-Making, and EU Gender Equality Law. *Intl. J. Comp. Lab. L. & Indus. Rel.*, Vol. 34., no. 1 (2018) 1–22., 7–13.

⁵⁴ J. CHENEY-LIPPOLD: *We Are Data – Algorithms and the Making of our Digital Selves*. New York University Press, 2017. 26–32.

⁵⁵ See dazu S. BAROCAS – A. D. SELBST: Big Data's Disparate Impact. *Calif. L. Rev.*, Vol. 104., N. 671. (2016) 671–674.

⁵⁶ Ibid. 683.

⁵⁷ Ibid. 682.

observe expected social norms, which particularly benefits discriminatory behaviour. Self-learning algorithms reproduce and thus perpetuate bias existing in the society. By making the employer's decisions based on ratings, platform-based firms adopt the potentially biased opinion of their clients/users.⁵⁸ Furthermore, the method of operation of algorithms and platforms is often not transparent and difficult to control. The client-driven rating system is therefore a hotbed for discriminatory behaviour.

These statements apply particularly to work on-demand. Crowdwork is less under the suspicion of such discriminatory ratings, since there is no personal contact between the client and the worker, which usually amplifies discriminatory behaviour. However, biased ratings cannot be ruled out completely, if the client knows the worker's profile.

2.3. Gender Pay Gap

Low wages are a general problem in virtual work.⁵⁹ Do women earn even less money in virtual work than their male rivals? It is easily conceivable that virtual work can replicate the gender pay gap prevalent in other sectors. Currently there are very few studies based on empirical research delivering an analysis of the possible gender pay gap of virtual work. Here is certainly need for further survey and the examination of the findings.

The study of Barzilay–Ben-David is an exception and calls attention to a dramatic gender pay-gap in virtual work. Their study analysed the requested hourly rate of 4,600 online taskers, who were connected through a platform with potential work-providers. They discovered a huge *gender pay gap of 37%* even after controlling for educational level, length of experience, and feedback score.⁶⁰ A statistically significant pay gap in the requested hourly rate of women compared to men existed in nine out of twelve occupational categories.⁶¹ Although there were no data available on the actual rates paid, but even if negotiation takes place, gender differences in pay are likely to remain.⁶²

There is a strong assumption that the gender pay gap in work on-demand is higher than in other, traditional forms of work. This could arise as a direct result of the discriminatory ratings and algorithms that often determine or at least significantly influence the payment of the workers. Studies confirm that sex discrimination remains a possible explanation of the unexplained gender pay gap in the labour market.⁶³ An analysis of the task workers and their ratings of two on-demand platforms (TaskRabbit

⁵⁸ WANG op. cit. 268–276.; ROSENBLAT et al. op. cit. 9.

⁵⁹ PRASSL–RISAK op. cit. 277.

⁶⁰ BARZILAY–BEN-DAVID op. cit. 407–420.

⁶¹ Ibid. 414.

⁶² Ibid. 421.

⁶³ J. HERSCH: Sex Discrimination in the Labor Market. *Foundations and Trends in Microeconomics*, Vol. 2. No. 4., 2007. 281–361.; F. D. BLAU – L. M. KAHN: The Gender Wage Gap: Extent, Trends, and Explanations. *IZA DP*, No. 9656, January 2016. 29–35. Available at SSRN: <https://ssrn.com/abstract=2716597>

and Fiverr) proved that the perceived gender and race significantly correlate with the amount and nature of the ratings workers receive.⁶⁴ Furthermore, Hannák and their colleagues found algorithmic bias in search results of one of the platforms.⁶⁵ Having a lower search rank due to gender (or race) makes workers less visible and causes directly the reduction of their job opportunities and income.

An additional difficulty is how to fight against the inequality of treatment, particularly if it arises from the fact that women charge significantly lower prices for the same activities than men do. According to Blau and Kahn, psychological attributes and non-cognitive skills comprise explanations for this difference. Studies show that women are less willing than men to negotiate, while men are more self-confident and less risk averse.⁶⁶ Another important trait is that men are more attracted to competitive environments than women are.⁶⁷ This could be a significant factor both for the lower participation rate of women in certain segments of sharing economy as well as for lower wages, since activities in sharing economy are more competitive and risky than in the traditional economy. A further study found evidence that setting the gender to female resulted in getting fewer ads for high paying jobs than setting it to male.⁶⁸ At the same time, the study admitted that due to the lack of transparency it is not possible to determine who is responsible for this finding. It could be the searching machine, the advertisers, websites or the users. In spite of the uncertainty regarding the responsible person, this could strengthen gender pay gap.

3. Preliminary Conclusion

This article provides a first evaluation of the implications of new forms of work in the sharing economy for women in general and gender equality more specifically. Virtual work features the typical traits of flexible, non-standard work that can be detrimental to women. In addition, the anonymity of the user during ratings increases the chances of discriminatory treatment through the widespread use of automated management of workers.

The article addresses three issues in particular, namely the rate of female participation in sharing economy, the discrimination through ratings and algorithms, as well as the gender pay gap in virtual work. In the light of the fact that data on these topics are rarely available, the article makes cautious, preliminary statements. What seems to be clear is that the existing ratings systems and algorithms are a hotbed of discrimination and need an appropriate regulation.

⁶⁴ HANNÁK at al. op. cit.

⁶⁵ Ibid. 1915.

⁶⁶ Blau and Kahn with references to further studies, see BLAU–KAHN op. cit. 35–36.

⁶⁷ Ibid. 41–42.

⁶⁸ A. DATTA – M. C. TSCHANTZ – A. DATTA: Automated Experiments on Ad Privacy Settings. *Proceedings on Privacy Enhancing Technologies*, 2015/1. 92–112.

The second part of this paper will continue with the analysis of normative perspectives and suggestions to tackle the presented concerns and risks for female virtual workers.