

DISCUSSION PAPER

# THE DIGITAL REVOLUTION: Implications for Gender Equality and Women's Rights 25 Years after Beijing



No. 36, August 2020

**JUDY WAJCMAN, ERIN YOUNG AND ANNA FITZMAURICE**

The UN Women discussion paper series is led by the Research and Data section. The series features research commissioned as background papers for publications by leading researchers from different national and regional contexts. Each paper benefits from an anonymous external peer review process before being published in this series.

© 2020 UN Women. All rights reserved.

The views expressed in this publication are those of the author(s) and do not necessarily represent the views of UN Women, the United Nations or any of its affiliated organizations.

Produced by the Research and Data Section  
Editor: Tina Johnson

DISCUSSION PAPER

# THE DIGITAL REVOLUTION: Implications for Gender Equality and Women's Rights 25 Years after Beijing



No. 36, August 2020

**JUDY WAJCMAN, ERIN YOUNG AND ANNA FITZMAURICE**  
**(THE ALAN TURING INSTITUTE)**



# TABLE OF CONTENTS

|         |    |
|---------|----|
| SUMMARY | iv |
|---------|----|

|                 |   |
|-----------------|---|
| 1. INTRODUCTION | 1 |
|-----------------|---|

|                                                         |   |
|---------------------------------------------------------|---|
| 2. THE DIGITAL REVOLUTION AFTER THE BEIJING DECLARATION | 2 |
|---------------------------------------------------------|---|

|                                                              |   |
|--------------------------------------------------------------|---|
| 3. THE DIGITAL REVOLUTION AND GENDER: A CONCEPTUAL FRAMEWORK | 4 |
|--------------------------------------------------------------|---|

|                                    |   |
|------------------------------------|---|
| 4. EDUCATION AND LIFELONG LEARNING | 6 |
|------------------------------------|---|

|                                                                                    |   |
|------------------------------------------------------------------------------------|---|
| 4.1 The digital skills gap can lead to the encoding of gender biases in technology | 6 |
|------------------------------------------------------------------------------------|---|

|                            |   |
|----------------------------|---|
| 4.2 Education technologies | 8 |
|----------------------------|---|

|                                                         |   |
|---------------------------------------------------------|---|
| 4.3 Masculine associations with STEM and digital fields | 9 |
|---------------------------------------------------------|---|

|         |    |
|---------|----|
| 5. WORK | 11 |
|---------|----|

|                   |    |
|-------------------|----|
| 5.1 The workplace | 11 |
|-------------------|----|

|                                   |    |
|-----------------------------------|----|
| 5.2 The changing contours of work | 13 |
|-----------------------------------|----|

|                                                         |    |
|---------------------------------------------------------|----|
| 5.3 AI feedback loops: The amplification of gender bias | 15 |
|---------------------------------------------------------|----|

|                                |    |
|--------------------------------|----|
| 6. SOCIAL AND WELFARE SERVICES | 19 |
|--------------------------------|----|

|                                                                                                  |    |
|--------------------------------------------------------------------------------------------------|----|
| 6.1 Potential benefits of digitalization and automation for gender equality in social protection | 19 |
|--------------------------------------------------------------------------------------------------|----|

|                                                                         |    |
|-------------------------------------------------------------------------|----|
| 6.2 Risks and challenges in implementation of the digital welfare state | 20 |
|-------------------------------------------------------------------------|----|

|                                                                                  |    |
|----------------------------------------------------------------------------------|----|
| 6.3 Pathways for ensuring gender equality in digital social and welfare services | 20 |
|----------------------------------------------------------------------------------|----|

|                                                                                        |    |
|----------------------------------------------------------------------------------------|----|
| 7. POLICY RECOMMENDATIONS FOR LEVERAGING DIGITAL TECHNOLOGY TO ADVANCE GENDER EQUALITY | 22 |
|----------------------------------------------------------------------------------------|----|

|              |    |
|--------------|----|
| BIBLIOGRAPHY | 24 |
|--------------|----|

# SUMMARY

The digital revolution brings immense potential to improve social and economic outcomes for women. Yet, it also poses the risk of perpetuating existing patterns of gender inequality. Despite a number of important initiatives, a significant digital gender gap remains, limiting the equitable realization of the benefits of digital transformation across high, low and middle-income countries. This report begins by outlining a conceptual framework for understanding the mutual shaping relationship between gender and technology. It then focuses on three areas in order to identify opportunities and risks in the digital revolution: education, work, and social/welfare services.

First, we examine the ways in which the digital skills gap in the education sector can lead to the encoding of gender biases in technology, how education

technologies might help or hinder the situation, and the masculine stereotypes within STEM fields. Second, we consider the implications for women of the changing world of work, such as the increasing precarity of jobs and ‘masculine defaults’ within tech workplace climates. We show how the underrepresentation of women in technical fields partakes in a feedback loop, amplifying gender bias in AI and machine learning systems. Third, we look at the benefits and risks of the implementation of automated decision-making in social and welfare services. The human rights of the most vulnerable are especially at risk in the digital welfare state and we present pathways for ensuring gender equality, such as establishing external accountability mechanisms. The report concludes by offering concrete policy recommendations to advance progress for women’s rights within the digital society.

# RÉSUMÉ

La révolution numérique peut considérablement améliorer la situation sociale et économique des femmes. Elle risque néanmoins également de perpétuer les schémas actuels d’inégalités entre les sexes. Malgré un certain nombre d’initiatives importantes, un écart numérique important subsiste entre les sexes, ce qui entrave l’apport équitable de bénéfices liés à la transformation numérique dans les pays à revenus moyens, élevés et faibles. Ce rapport commence par définir un cadre conceptuel permettant de comprendre la relation interdépendante entre le genre et la technologie. Il se concentre ensuite sur trois domaines afin d’identifier les possibilités et les risques posés par la révolution numérique : éducation, travail, et services sociaux/d’aide sociale.

Premièrement, nous examinons les différentes manières par lesquelles l’écart des compétences numériques dans le secteur de l’éducation peut

contribuer au renforcement des discriminations sexistes dans le domaine de la technologie ; comment les technologies de l’éducation peuvent aider ou entraver la situation ; et les stéréotypes masculins dans les domaines des sciences, de la technologie, de l’ingénierie et des mathématiques (STIM). Deuxièmement, nous envisageons les conséquences pour les femmes qui évoluent dans un monde du travail fluctuant, compte tenu notamment de la précarité croissante de l’emploi et des « négligences masculines » dans les environnements professionnels technologiques. Nous montrons comment la sous-représentation des femmes dans les domaines techniques alimente une boucle de rétroaction, qui accroît la discrimination sexuelle dans les systèmes d’intelligence artificielle et d’apprentissage automatique. Troisièmement, nous considérons les bénéfices et les risques liés aux prises de décision automatisées dans les services sociaux et d’aide sociale. Les droits

humains des plus vulnérables sont fragilisés dans l'État providence numérique et nous proposons des pistes pour garantir l'égalité des sexes telles que la création de mécanismes de responsabilisation

externes. Ce rapport se termine en proposant des recommandations politiques concrètes afin d'enregistrer des progrès pour les droits des femmes au sein de la société numérique.

## RESUMEN

La revolución digital ofrece un potencial inmenso para mejorar los resultados sociales y económicos para las mujeres. No obstante, también plantea el riesgo de perpetuar los patrones de desigualdad de género actuales. Si bien existe un importante número de iniciativas, todavía persiste una considerable brecha digital de género que limita el logro igualitario de los beneficios de la transformación digital en todos los países, ya sean de ingreso bajo, mediano o alto. El informe comienza con la descripción de un marco conceptual para comprender la relación de configuración mutua entre las cuestiones de género y la tecnología. Luego se centra en tres áreas con el fin de determinar las oportunidades y los riesgos de la revolución digital en los campos de la educación, el trabajo y los servicios sociales o de bienestar.

En primer lugar, examinamos de qué manera la brecha en las competencias digitales en el sector de la educación puede producir la codificación de los sesgos de género en la tecnología; de qué manera las tecnologías educativas podrían fomentar o prevenir dicha situación, y los estereotipos masculinos en los

campos de la ciencia, la tecnología, la ingeniería y las matemáticas. En segundo término, analizamos las implicaciones para las mujeres en el cambiante mundo del trabajo, como son la creciente precariedad laboral y la prevalencia de varones 'por defecto' en los entornos de trabajo tecnológicos. Mostramos de qué forma la subrepresentación de las mujeres en los ámbitos tecnológicos interactúa en un circuito de retroalimentación, lo que aumenta los sesgos de género en los sistemas de inteligencia artificial y de aprendizaje automáticos. En tercer lugar, examinamos los beneficios y los riesgos de la implementación de los procesos de toma de decisiones automatizadas en los servicios sociales y de bienestar. Los derechos humanos de las personas en situación de mayor vulnerabilidad corren especial riesgo en el estado de bienestar digital. Presentamos asimismo una serie de alternativas para garantizar la igualdad de género, como por ejemplo, el establecimiento de mecanismos externos de rendición de cuentas. En el informe se concluye con una serie de recomendaciones sobre políticas concretas para promover el progreso de los derechos de las mujeres en la sociedad digital.

1.

# INTRODUCTION

The digital revolution brings immense potential to improve social and economic outcomes and enhance productivity growth and population well-being globally. However, despite a number of important research initiatives, interventions and policies aimed at furthering women's empowerment and gender equality within this 'revolution', a significant digital gender gap still exists, limiting the equitable realization of the benefits of digital transformation.<sup>1</sup> Analysis from the EQUALS Research Group, led by the United Nations University (UNU), shows that "a gender digital divide persists irrespective of a country's overall ICT [information and communication technology] access levels, economic performance, income levels, or geographic location".<sup>2</sup> Women are thus under-represented in the digital revolution across high-, low- and middle-income countries despite the possibilities for marshalling greater equality.

To address this digital gender divide, and harness the potential benefits of the digital revolution, much more attention needs to be paid to the social, political and economic factors that underpin the development, design and use of digital technologies, including emerging data-driven technologies such as artificial intelligence (AI) and machine learning. While the digital transformation holds out the promise of greater gender equality, at the same time it poses the risk of encoding, repeating and amplifying existing patterns of gender

inequality. This paper illustrates, through an intersectional lens, how digital technologies shape, and are shaped by, gender relations and gendered power structures. Many systemic risks (and opportunities) exist for women's equality today, as do specific educational, technological and policy solutions that would mitigate these problems. In this report, we examine three substantive areas: education, work and social/welfare services. Despite promising movements towards gender equality, there is much more to be done.

预览已结束，完整报告链接和二维码如下：

[https://www.yunbaogao.cn/report/index/report?reportId=5\\_21844](https://www.yunbaogao.cn/report/index/report?reportId=5_21844)

