GENDER EQUALITY AND WORK-LIFE BALANCE IN THE DIGITAL ERA: A BIBLIOMETRIC ANALYSIS

Evelyn Kumah Osei Owusu

Abstract. The impact of digitalisation on work-life balance stemming from flexible working arrangements, which have blurred the boundaries between one’s profession and personal space, has heightened in the face of modern technological advancements. Unlike males, females are the most disadvantaged when it comes to gender norms and formulation of institutional policies as most of the existing policies have been clearly oriented on men as compared to women. The study aims to conduct a bibliometric analysis of the relationship among evidence regarding gender equality and work-life balance in the era of digitalisation. VOSviewer is used to present data obtained from the Scopus database. Articles retrieved were critically appraised and presented in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart. The study finds that the number of publications on the topic of gender equality, work-life balance, and digitalisation has seen a steady increase (47 in 2023 from 4 in 2017). The West and Europe dominate when it comes to contributions made to publications on digitalisation, gender equality, and work-life balance, only one paper is from South Africa and there are no publications contributed from Ghana. The study further reveals that though Germany has the highest number of publications, the United Kingdom and the United States have the highest collaboration and impact (citations). This indicates the gap in literature requiring empirical research on the effect of digitalisation on gender equality and work-life balance in the Ghanaian and developing countries context.

Keywords: gender equality; work-life balance; bibliometric analysis, digitalisation, opportunities, career, women empowerment, flexibility.
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1. Introduction

Advances in digitalization have had profound impacts on the work-life balance of women most of which stem from flexible working arrangements brought about by technological advancements [1, 2]. The fundamental change in work-life balance resulting in the present-day digital era with its associated opportunities is not without challenges as it is becoming more difficult to distinguish between work and personal space due to the absence of physical boundaries [3, 5]. Women are more likely to encounter setbacks as a result of this phenomenon and organizations’ lack of awareness of how flexible work arrangements affect employees’ capacity to attain work-life balance [1, 5, 6]. In the present digital era, females happen to be the most disadvantaged when it comes to gender norms and institutional policy creation as most of the existing policies have been oriented toward men as compared to women [7]. Work experiences, career exploration, and initial career decision-making have shaped the work-life balance of individuals, as well as their family roles are concerned [8]. The intricate interplay between gender equality, work-life balance, and digitalization was examined in different studies, taking into account various socioeconomic factors including migration, education, globalization, economic growth, and environmental sustainability. A study highlights the interactions between migration and education, emphasizing their significance in achieving sustainable development [9-13]. Similarly, other studies discuss the role of globalization, economic growth, and natural resources in shaping ecological footprints, indirectly affecting work-life balance considerations [14-19]. Insights into sustainability efforts within the European Union, focusing on e-commerce, environmental technologies, and renewable energy, further enrich the discussion [20-25]. Furthermore, the convergence of energy policies between the EU and Ukraine and the utilization of green bonds for promoting cleaner production underscore the importance of environmental initiatives in fostering equitable work environments [26, 27]. Moreover, studies on economic convergence and investment attractiveness provide additional context for understanding the broader economic landscape influencing gender equality and work-life balance considerations [15, 28]. Overall, these sources collectively contribute to comprehending the multifaceted dynamics at play in achieving gender equality and work-life balance amidst the digital transformations of the contemporary era.

Gender Role Attitude (GRA) is very significant in the work-life balance analysis [29]. It is typically outlined on an axis with two extremes: egalitarian and traditional. The perspective of traditional GRA argues that there is a gendered division of family labour, concerning women as homemakers responsible for parenting and men who are wage earners. Egalitarian GRA, however, posits that there is an equal view on participation in both paid labour and household chores [30-33]. Disagreeing with the traditional GRA view, numerous studies on GRA development in adults have supported egalitarian GRA, and have argued that adults’ GRA shift as a result of changes in life situations, such as the transition to parenthood [33, 34] work experiences [35], career exploration and initial career decision making [36].

Work experiences, career exploration, and initial career decision-making have shaped the work-life balance of individuals, as well as their family roles are concerned [8, 37]. Consistent with the egalitarian GRA view, Lyness and Judiesch [8] suggested that work-life balance significantly and positively impacts employees’ personal life as well as their work outcomes and that glitches originating from home limit employee’s ability at the workplace [29, 30, 31].
Interestingly, the Gender Equality Bureau Cabinet Office [38] suggested that the percentage of people who support the traditional idea of the ‘Husband is expected to work outside the home, while the wife is expected to take on domestic duties,’ is decreasing. Nevertheless, there is a great difference between idea and reality. Alternative data provided by the OECD revealed that males spend an average of 471 minutes a day on work-related activities, the highest in the OECD countries, while they spend only 62 minutes on unpaid work. On the other hand, females spend 206 minutes a day on work-related activities, less than half that of males, but spend up to 299 minutes a day in unpaid work around the home (three times more than males) [39].

Digitalisation of working processes, the use of mobile devices and online communication allow more flexibility in where and when people work. Flexible working arrangements typically relate to how much, when and where employees can work [40, 41]. This flexibility in time and place is typically assumed to allow work to fit better around the home and family responsibilities [42]. There is indeed evidence that the use of ICT (smartphones, tablets, laptops, desktop computers) to work outside the employer’s premises can help to facilitate better work-life balance. Workers report shorter commuting times, greater working time autonomy, more flexibility in working time, better productivity, and improved overall work-life balance [2]. There is evidence that mothers using flexitime and teleworking are less likely to reduce their working hours after childbirth [43]. The use of technology promotes work-life balance only under certain conditions (e.g. when childcare is available) and it carries major drawbacks and risks. Flexible and non-standard working arrangements may have negative impacts, depending on the kind of flexibility and employees’ control over their working arrangements. Some studies show that working from home leads to more work-family conflict [44] and often goes hand in hand with working overtime [5–8]. Some evidence shows that working from home and flexible work schedules are more effective for single people, and less so for families with children [45].

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The objective of the study is to undertake a bibliographic/systematic review of current empirical evidence on gender equality and work-life balance in the digital era. The study made use of Preferred Reporting Items for Systematic Reviews and a Meta-Analysis-Protocol (PRISMA-P) framework to screen articles, critically appraise them, and present them in the PRISMA flowchart. The study finds that the number of publications on gender equality and work-life balance in the digital era has been on the rise over the years with the West and Europe dominating. No record was found for Ukraine or Africa, with Ghana, to be precise. The contribution of this study to literature can be seen in twofold. Firstly, gender equality in work life in a digital era is relative to not only the country’s technological development but also the domestic culture/family system. Secondly, the study indicates no records were found for countries such as Ukraine and Africa and, for that matter, Ghana. This brings to light the need for further research on the impact of gender equality on work-life balance in today’s digital era.

The remaining section is organized as follows: section 2 comprises the literature review,
followed by the methodology (section 3), the result and discussion (section 4), and finally the conclusion (section 5).

2. Literature Review

It has been argued that whereas sex is biologically determined, gender is socially created. Gender and feminism have been contested on different viewpoints, but the latter, together with masculinity can be discussed under the former [47, 48, 49]. Lockwood [50] argues that the recent increase in work-life balance among employers can be attributed to the following reasons; an aging workforce in the labour market, renewed interest in men's participation in family and personal lives, and the increasing global competition. Hence, firms in an attempt to make their organization the employer of choice have come out with work-life balance policies that seek to enable employees to have a fair balance between their work roles and family duties. Lyness et al. [8] argue that the benefits of work-life balance can be best realized when gender, gender role beliefs, and gender differences are acknowledged as important elements of work-life balance. Generally, work-life balance is aimed at improving employee and employer organisational outcomes in terms of better employee output and improved organisational performance.

State Services Commission argues organizational work-life balance policies should not be implemented in a vacuum but rather should take into cognisance the strategic directions and visions of the organization [51]. Again, policy implementation measures concerning work-life policy programmes should emphasize flexibility by enabling adjustments to be made particularly when the needs of employers and employees change when the needs of both partners (employees and organizations) change; it should also take into account some elements of human resource practices during its policy creation and implementation [51]. Organisation-level gender composition or the overall climate for gender inclusion influenced women’s turnover and performance and reward differences between men and women. They again emphasized that gender-based attributional and stereotyping-based processes at the individual level affect top-down contextual influences on gender inequality in organisations [52, 53].

Recognition of the multiple demands of work and family on men and women and the role of flexible work practices closes the gap between men and women [54, 55]. Similarly, Gornick & Meyers [37] did an investigation of the relationships between multiple life roles and managerial skills among female managers. Their studies showed that commitment to multiple roles enhanced both interpersonal and task-related managerial skills among women. Going forward, Mayya et al. [29] presented an in-depth examination of the motives and strategies of pregnant workers to maintain their professional images and the implications of these strategies for perceived discrimination, burnout and return to work [30]. Their studies found that work-family balance and pregnancy at work positively influence women’s social roles such as motherhood that are unique to women, and therefore have real consequences for their work lives. Solanki & Mandaviya [56] carried out a study on the relationship between work-life balance and professional commitment. The result showed a significant positive relationship. Similarly, Rodriguez-Modroño & López-Igual [57] found a significant positive relationship in their study on work-life balance and employee commitment. Another study by Snyder et al. [58] shows a significant positive relationship between work-life functions and employee affective
commitment. Interestingly, Fisher [48] argued that there is a positive and significant correlation between work-life balance and employee commitment among university teachers in Pakistan.

Sunderland [51] did a study on women's work-life balance and exposed that the implementation of work-life balance policies positively affects the social roles of women. In a similar vein, Waltman [59] examined women's flexible working hours and showed that the introduction of flexible working hours brought some benefits for both employees and employers. According to Lamolla et al. [3], the use of flexible work arrangements and their overall impact on work-life balance are highly gendered. For example, women are more likely than men to regularly combine work and domestic demands by working from home [2] and are likely to accommodate the disproportionate amount of work that women do for the household despite also working for pay [2]. One reason for this could be that the use of technology can make it difficult to distinguish between work and private life. Smartphone use can lead to increased pressure to be available after hours [5], make it difficult to mentally disengage from work during leisure time [2], and negatively affect stress levels and work-life balance [40]. When employees telecommute from home, family members may place personal expectations on them [2]. This can lead to a blurring of boundaries and an increased requirement for multitasking [3].

3. Methods

The use of bibliometric analysis in social science research has significantly increased in recent years [7, 60, 61]. Indicators of the popularity of bibliometric analysis include the development, accessibility, and availability of tools like VOSviewer, CiteSpace, Bibliometrix, CRExplorer, and databases like Scopus, PubMed, Web of Science, Microsoft Academic Search. Additionally, information science has replaced commercial research, and bibliometric analysis in scientific development is rapidly growing in this field [62]. The popularity of the bibliometric technique in social science research is not a reflection of a particular trend but rather demonstrates how successfully it can be applied to manage enormous volumes of scientific data to produce high-impact research [36, 62]. The scientific community has received the Scopus database favourably since it offers thorough coverage and is easy to use. The study employed the Scopus online database for the analysis since it offers the biggest database, the most well-known research papers, and a VOS viewer compatibility for visualization analysis. The analysis takes into account author performance, research subjects, productivity, and output performance. Performance analysis examines how elements of scholarly research have affected a certain field of study [63]. This approach fits the bibliometric research's reputation for naturally descriptive analyses [36, 62, 64]. The study applies the following criteria and filters for selecting papers:

- Publication period: 2017 to December 2023.
- Input terms for the search are gender equality, OR work-life balance, AND digitalisation. Document types include articles, conference papers, conference reviews, books, book chapters, and editorials.
- Subject categories comprise Arts and Humanities, Business Management and Accounting, Decision Sciences, Social Sciences, Earth and Planetary Sciences, Energy, Medicine, Multidisciplinary, Engineering, Environmental Science, Health Professions, Immunology and Microbiology, Materials Science, Neuroscience, Nursing, Economics, Psychology, Econometrics and Finance, Environmental Science, Computer Science, Agricultural and
Biological Science, Pharmacology, Toxicology and Pharmaceutics, Dentistry, Physics and Astronomy, Chemical Engineering, Veterinary, Biochemistry, Genetics and Molecular Biology and Mathematics.

- The language is limited to only English. The reason is that most metadata are in the English language.

The researchers inputted “gender equality” OR “work-life balance” AND “digitalization” and yielded 127 documents. After the filtering, 109 documents were exported to the VOS viewer for visualization analysis. The process of gathering data and selection criteria, etc., and the number of publications exported to the VOSviewer are shown in the PRISMA flow chart in Figure 1.

![Figure 1. Theoretical framework of the investigation based on PRISMA](source)

Source: developed by the author.

A total of 109 articles were used for the bibliometric analysis. Given the study objectives: the paper explored the pattern of publications and citations of the articles; identified which countries contributed most to the knowledge base on work-life balance over the years; identified and analysed the characteristics of major journals that have published the most-cited articles on gender equality and work-life balance and digitalization; identify key concepts that are explored in most-cited articles, carried out the bibliometric analysis using VOSviewer. VOSviewer is the dominant software used in viewing co-authorship, co-occurrence, and citations as well as bibliometric networks [4, 8]. VOSviewer can also be used to visualize similarities between different objects [65-68]. Similar bibliographic studies [4, 30, 37, 57, 68] have made use of VOSviewer.

4. Results and Discussion

The study presented the following results based on the study objectives. The first objective is to explore the pattern of publications and citations of the articles on gender equality, work-life balance, and digitalisation. Figure 2 shows the graphical illustrations of the distribution of the articles over the years from 2017 to 2023. The annual number of publications on gender
equality, work-life balance, and digitalisation (2017–2023) shows that the number of publications over the seven (7) years has seen a steady increase over the years. Starting with four (4) publications in 2017, the number of publications rose to as high as 47 publications in 2023. The increasing use of digital technologies has changed a variety of societal factors, including opportunities and job options. New disciplines and industries have emerged as a result of the digitalisation era, presenting opportunities and challenges for gendered career ambitions. Also, with the rise of the information economy, remote work, and flexible job options, the workforce dynamics have changed in the digital age. By modifying conventional career routes and providing for more flexibility in work-life balance, these changes have had an impact on gendered professional ambitions, which can have an impact on people's goals and decisions.

Figure 2. The dynamic of publications and citations
Source: developed by the author.

The best objective was to identify which countries contributed most to the knowledge base on gender equity, work-life balance, and digitalization over the years. The top 10 countries with most publications are identified and presented in Figure 3.

Figure 3. Top 10 countries with the most publications on gender equality, work-life balance, and digitalization
Source: developed by the author.

Figure 3 shows that Germany has contributed the highest number of (19) articles on work-life balance, gender equality, and digitalization. India is the second country with the highest number of publications (12 articles). The next significant country that has published articles on the subject matter is Italy with 8 publications, which is less than half of publications from Germany.
The Netherlands, Finland, and Norway have 9, 5, and 7 publications respectively. A closer look at the distribution reveals the dominance of Europe in highly published literature on the subject. Remarkably, it has been observed that no African country has published articles relating to gender equity, work-life balance, and digitalization. This observation brings to light the gap in research on gender equality, and work-life balance in an era of digitization in developing countries such as Ghana. Figure 4 shows the collaboration network among the top 20 countries with the most cited publications on gender equality, work-life balance, and digitalisation.

**Figure 4.** Collaboration network among countries with published papers on gender equality, work-life balance, and digitalisation and citations

*Source:* developed by the author.

VOSviewer visualization and mapping reveal 20 items and five (5) clusters. A total link strength of 62 was identified with countries with the most cited publications and their networking linkages. The first cluster consisted of 5 items (countries): Canada, the United States, the United Kingdom, Ukraine, and Latin America. It can be observed in cluster 1 that two countries (i.e. the United Kingdom and the United States) have the highest collaboration on the most cited publications on gender equality, work-life balance, and digitalisation based on the Scopus database as indicated by node sizes which are bigger than that of most countries in cluster 1. The second cluster also comprised five (5) countries, which are Finland, Japan, the Netherlands, Norway, and Switzerland. It has been observed that most of the countries (Finland, the Netherlands, Norway, and Switzerland) in cluster 4 are Scandinavian countries, which are accustomed to a similar cultural orientation, and for that matter may have increased collaboration. The cluster 3 comprises 4 countries: Australia, India, Malaysia, and South Africa. The geographical distribution of these countries is somewhat sparse. However, this was not a barrier to their collaborative efforts in the papers published. Cluster 4 is made up of three countries; Estonia, Germany, and Lithuania while Cluster 5 comprises Belgium, France, and Greece. It is noted that though Germany has the highest number of publications and citations (as shown by relatively bigger nodes), the United Kingdom and the United States have higher collaboration with other countries. The low collaboration between Germany and other countries could be attributed to language barriers since most German publications are in German [51].
Visualization mapping for keyword co-occurrence, 2017-2023 generated from Scopus and VOSviewer is shown in Figure 5. A total of 36 items of keywords co-occurring and associated with gender equality, work-life balance, and digitalisation have been identified. Digitalisation, work-life balance, and gender equality have been identified as the most frequently co-occurring keywords. Other frequently co-occurring keywords include COVID-19, digital transformation, working conditions, work environment, sustainable development, human, technology, workplace, and gender.

**Figure 5.** Visualization mapping for Keyword Co-occurrence, 2017–2023

*Source:* developed by the author.

Figure 5 provides the index of keywords. Two (2) clusters of keywords have been identified. The first cluster comprises three (3) items or words which include digitization, gender equality, and development. Cluster 1 brings to light the likely effect of the interaction between digitalisation and gender equality on development. This is because digitalisation brings flexibility to the work environment blurring the physical barriers that make work adaptable for women. The second cluster has two (2) keywords: job specialisation and work-life balance. While works relating to industry such as hospitality, may require the physical presence of the employee, work-life balance in a digital era is confined to specialized field or work that involves the use of information technology exclusively without the need for physical presence.

Visualization also known as ‘science mapping’ is a useful approach in analysing a large variety of bibliometric networks including networks of co-authorship, a network of co-occurrence between keywords, and a network of citation relations between journals and publications [7]. Figure 6 shows a visualization network of the keywords co-occurrence. The VOSviewer visualisation of a term co-occurrence network (i.e. minimum number of co-occurrences of a keyword = 5). The results of a co-occurrence analysis of keyword networks as shown in Figure 5 relate to the intersection of digitalization, gender equality, and co-occurrences of work-life

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balance. The analysis identified 36 items, four clusters, with a total link strength of 887, which reflect the main study streams in publications within this domain. Cluster one consists of twelve (12) items: attitude, Content analysis, COVID-19, Germany, job stress, knowledge, pandemic, psychology, questionnaire, remuneration, workload, and workplace. This cluster appears to focus on related fields. The inclusion of gender remuneration indicates likely research on how remuneration can affect employees’ lives both at work and home in this digital era. Understanding the relationship between gender work-life balance and digitalization.

Figure 6. The network overlay visualization of co-occurrence analysis
Source: developed by the author.

Cluster two consisted of eleven keywords like, career, digital information, digitalization, employment, job satisfaction, sustainable development, work environment gender equality, and work-life balance. This cluster seems to centre on the digital information and work environment of employees with a particular focus on gender equality and work-life balance. The inclusion of "job satisfaction and sustainable development" suggests an exploration of the gender imbalances and disparities that may exist in career choices and opportunities. Addressing gender disparities in career choices and opportunities is essential for creating a more equitable and inclusive workforce. Understanding factors that influence career decision-making can help develop targeted interventions and policies. Cluster three consisted of seven items such as job quality, occupation, skill, telecommuting, teleworking, working conditions, and working time. Cluster three appears to concentrate on the impact of Addressing the challenges posed by technology and social media is crucial to promoting inclusivity and reducing disparities. Cluster four consisted of six items such as article, female, human, and middle-aged physiological stress.
This cluster revolves around gender with a particular focus on physiological stress. The visualization links (Fig. 7) in the map demonstrate the direct and indirect roles gender equality and work-life balance play in the digital economy.

**Figure 7.** Overlay visualization of co-occurrence analysis of the papers focused on gender and digitalization

*Source:* developed by the author.

5. Conclusions

The influence of digitalisation on the work-life balance of women has attracted the attention of many researchers, and this interplay brings to the fore issues concerning gender equality. The bibliometric analysis of publications on digitalisation, gender equality, and work-life balance obtained from the Scopus database beginning from 2017 to January 2024 shows 109 publications in the English language. Ten (10) countries that contributed the most publications on digitalisation, gender equality, and work-life balance are Germany, India, Italy, Sweden, the United Kingdom, Norway, the Netherlands, Finland, Ukraine, and Hungary with Germany contributing 19 publications, followed by India. The results reveal that the subject of gender, work-life balance, and digitalisation started with 4 publications in 2017 and increased to as high as 47 in 2023. In terms of collaboration amongst authors and impact (citations), the study reveals that though Germany has the highest number of publications, the United Kingdom and

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the United States have the highest collaboration. Most of the publications were from Western and European countries, with Africa (South Africa and Nigeria) contributing only 2 publications. The index of keywords identified includes: digitalisation, gender equality, (sustainable) development, job specialization, and work-life balance. No publication is contributed by Ghana. This indicates the gap in literature requiring empirical research on the effect of digitalisation on gender equality and work-life balance in the Ghanaian and developing countries context.

6. Limitations and Further Direction of Research

Notwithstanding the wealth of insight provided by the present bibliometric analysis on gender equality, work-life balance, and digitalisation, it was conceded that there are a couple of limitations. Firstly, the selection criteria centred only on documents published in English, although it is acknowledged that English is not the only international language. There may be publications in French, Dutch, Spanish, etc. on digitalisation, work-life balance, and gender equality that the present bibliometric study fails to capture due to its selection criteria. And for that, the result may be biased toward only documents published in English. However, the impact of this limitation on our conclusion becomes insignificant taking into account that most top-ranking journals from which these documents are obtained translate most of their publications into English from other languages. Secondly, the bibliometric analysis reveals geographical bias in the literature available on the subject matter. The present bibliometric analysis has shown that most research on gender equality, and work-life balance in the context of the present digital environment has been carried out only in developed economies such as the US and the UK, and are very scarce in the developing world. It must be noted that as economies develop, the work of their citizens’ life changes due to the influence of digitalisation and innovation. Additionally, differences in economic and cultural settings may influence the effect of digitalisation on the work-life balance of women. Thus, the absence of research on this field implies the lack of effective regulations and policies that provide contextual, effective, and efficient working relation that maximises productivity. Hence, the present bibliometric analysis brings to light the need for research on gender equality and work-life balance in a digital era in developing economies like Ghana.

The present study did not extend specifically to the women's domestic requirement (extended maternity) and work-life balance in a digital environment. This is an important area of consideration since it is a significant consideration for most employers when engaging the services of women.

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References


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