Türkiye'deki Dijital Gıda Pazarlarının Sosyo-Teknik Birleşiminde Toplumsal Cinsiyet Eşitliği ve Adaleti[1]

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Öz

Bu çalışma, Covid-19 pandemisi sırasında dijital pazarlardaki kadın emeğinin artan rolüne özellikle odaklanarak Türkiye'de gıda pazarındaki kadın üreticilerin dijitalleşmenin etkisini incelemektedir. Çalışma, kadın emeğinin değeri ile ürün fiyatları arasındaki ilişkiyi ve kadınların maruz kalabileceği çevrimiçi şiddet araştırmaktadır. Çalışmada, Türkiye'nin çeşitli bölgelerinden 10 kadın üreticiyle derinlemesine görüşmeler yapılmış ve veriler MaxQDA yazılımı kullanılarak analiz edilmiştir. Makale, kadın üreticiler için dijital pazarın zorluklarına ve potansiyel faydalarına ışık tutmakta ve cinsiyet eşitliğini teşvik eden dijital araçların tasarımının önemini vurgulamaktadır. Dijital gıda pazarlarının cinsiyetli doğasını ortaya koyan çalışma, topluluk ekonomilerini teşvik eden feminist-sosyo-teknik bir gelecek savunmaktadır. Makale, cinsiyeti bir analitik kategori olarak yerleştirir ve dijital alanın üretimini keşfetmek için Lefebvre'in mekansal üçlüsünü teorik bir lens olarak kullanır. Çalışma, kadınların dijital pazardaki görünmez ve ücretli emeğini değerlendirmek için adalet ölçeklerinin ve feminist-sosyo-teknik araçların geliştirilmesini savunmaktadır.

Anahtar Kelimeler: dijitalleşme, kadın üreticiler, gıda üretimi, cinsiyet eşitliği ve adaleti, sosyo-teknik birleşimler

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Gender Equity and Fairness in Socio-Technical Assemblages of Digital Food Markets in Turkey

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Abstract

This study examines the impact of digitalization on women producers in the food market in Turkey, in relation to the increasing role of women's labor in digital markets during the Covid-19 pandemic. It explores the relationship between women's labor value and product prices, as well as the cyber-violence. The study used in-depth interviews with 10 female producers from various regions in Turkey and analyzed the data using MaxQDA software. The article highlights the challenges and potential benefits of the digital market for female producers and emphasizes the importance of designing digital tools that promote gender equality. The study reveals the gendered nature of digital food markets and advocates for a feminist-socio-technical future that promotes community economies. The paper situates gender as an analytical category and uses Lefebvre's spatial triad as a theoretical lens to explore the production of digital space in food markets. The study advocates for the development of justice scales and feminist-socio-technical tools to value the invisible and unpaid labor of women in the digital market.

Keywords: digitalization, women producers, food production, gender equity and fairness, socio-technical assemblages

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Introduction

Markets are "the result of the decisions and actions we take" (Gibson-Graham, Cameron and Healey 2013). The growing digitalization of markets brings together traditional methods of categorizing, pricing, and exploiting with new algorithmic tools and methods of production and consumption (Noble 2018; Broussard 2018). This research aims to examine the various forms of exploitation and injustice that women encounter in today's digital food markets, where both old and new market practices exist. The paper argues that the digital futures for empowering women are limited by the constraints of "market justice." Market justice operates by relying on property rights and wealth distribution, with minor consideration for non-valuable items, and the marketable diversity that stems from social injustices in market economies (Rivadeneria and Carton 2022). In Turkey, there is an increasing digital context for marketing women's products without utilizing digital tools for feminist empowerment in the markets.

In this research, we have uncovered many market tools, most of which are prices established by platform algorithms and those of platform discourses that are used by digitalizing markets. Constrained by market justice, women producers take and make use of these instruments and

discourses, which do not provide them with the empowerment they need. This highlights the conflict between technological progress in a market-driven society and the constraints on promoting empowerment and feminist transformation. We shed light on the details of how women are included in the "digital place," where conventional standards and practices are being implemented in a new commercial environment, and we emphasize the feminist and technological possibilities for their situations to be improved. One of the long-term consequences is that it will bring to light the failures of the market and undermine the patriarchal character of capitalism. We do so by putting into question the critical potentials of the technological progress in the digital food markets where women take part increasingly in building more inclusive and possibly radical futures.

Markets facilitate exchange of ideas, values, emotions, and things (Gibson-Graham, Cameron and Healey 2013). Feminist economics scholarship has made a significant contribution by introducing the concept of multiple economies, which recognizes the existence of various types of markets, including informal, care economies and alternative markets, often overlooked in traditional economic analyses (Gibson-Graham, Cameron and Healey 2013; for multiple economies Pavlovskaya 2004). The contingency of markets means that they have the potential for transformation. To facilitate this transformation, it is important to focus on several elements, including promoting well-being, distributing surplus to enrich social and environmental health, supporting community well-being through interactions, promoting sustainable consumption (including prosumerism), preserving natural and cultural commons, and investing in future generations (Gibson-Graham, Cameron and Healey 2013). Our study here is only beginning to look for new methods to facilitate this economic change.

Our research focuses on a group of women producers who are part of an autonomous food network that emerged in response to the COVID-19 pandemic. We aim to explore how the integration of women into both digital and non-digital food markets impacts their participation and well-being. One key area of inquiry is the extent to which women producers in online markets are subject to cyberbullying and other forms of online violence from other sellers. We also examine how women producers navigate pricing in severely unpredictable market conditions, and how this affects the value of their labor.

Our study highlights the challenges faced by women producers in terms of their digital future. With individual efforts and support coming from larger digital platforms like Amazon, Trendyol, and Hepsiburada, women producers are left to navigate these markets with limited reso-

urces. While platforms like Trendyol offer programs for women entrepreneurs, these programs typically only provide commission discounts and digital training, falling short of providing comprehensive support. Furthermore, informal sales through social media platforms like Instagram and Whatsapp have emerged as avenues for women producers to sell their products. However, the rule over pricing still largely depends on the power dynamics of the larger digital actors, leaving women producers vulnerable to exploitation.

In the following section, we first examine the gendered dimensions of the digital divide and its impact on the fair treatment of women in markets, drawing on examples from the COVID-19 pandemic and the growing digitalization of environmental sustainability efforts. Subsequently, we assess existing literature on digital food markets in Turkey, introducing our theoretical framework and methodology. Finally, we present research findings.

Digital Markets in Turkey

Due to COVID-19, internet access in Turkish households increased to 83.8%, resulting in a rise in online shopping from 8.4% to 36.5% since 2011 (TUİK 2020). The e-commerce market share was already at 35% between 2015 and 2019, and this has further increased during the pandemic. E-commerce's share in the gross domestic product reached 4.1% in 2020, a 51.8% increase from the previous year, with the e-commerce to general trade ratio increasing from 9.8% in 2019 to 15.7%. The textiles (by 67.2%.), travel (31.7%), and food (27.4%) sectors made the most significant contributions, with textiles leading (TUİK 2020).

Digital markets are an emerging research topic. Research about Turkish e-commerce focuses on market size and service typologies. This scholarship is dominated by macro-scale research focusing on the activities and initiatives of the big actor players in the market (Demi◎rdöğmez, Gültekin, and Taş 2018; TUBİSAD and Deloitte 2020). The prevalence of the marketplace model, where the platform is composed of various virtual shops, is around 50%, such as that we see in examples like Trendyol and Hepsiburada. Reports see the integration of SMEs and micro-enterprises into these marketplaces as an opportunity to overcome economic problems due to the pandemic (TUBİSAD and Deloitte 2020). There is almost no research on small players in the digital markets.

Another emerging area of research focuses on the question of labor and the informality that platform economies/e-commerce create. This is

also an emerging trend worldwide.[1] In Turkey, Demirkol's (2020) study analyzes the informality of women's labor in digital markets in the context of the Denizli textile industry. Women mostly use social media accounts (i.e., Instagram), and they have started selling their products on these accounts because they were not able to participate in non-digital labor markets. Demirkol's (2020) research results show 1) digital markets posit a somewhat limited degree of empowerment for women who cannot be active in the labor markets, 2) however, all transactions happen informally, which unfortunately fosters informality for women; 3) continues what Mezzadri (2021) and alongside with many other feminists, refer to as women's homework (also known as piecework) (Dedeoğlu and Adar Sahankaya 2020). The piecework, which was a major characteristic that dominated exploitative labor regimes of the 1990s, is now largely integrated with positioning the home and the home-worker in the context of a larger context of digital entrepreneurialism. Work in this new labor regime is such that the home is no longer an extension of a production site, such as a factory. We were not able to fully tackle this side of the debate since we had a small number of producers. However, in the long run, we would like to explore this area of research to see whether producers at different scales carry the risk of continuing as a homeworker and becoming objects of value extraction and exploitation under vast digital entrepreneurialism.

In the upcoming section, we delve deeper into the theoretical underpinnings informing our research questions. These theories are interwoven, as they help us to understand the complex dynamics at play in the digital market landscape in Turkey. Our larger theoretical framework has been developed based on our fieldwork and serves as a guide for our future research. We hope to expand our understanding of the digital markets in Turkey and gain deeper insights into the ways in which technology and labor intersect in this context. Ultimately, we aim to contribute to the existing scholarship on this topic and shed light on the broader implications of these issues for the global economy.

Gendering Digital Space

Our study integrates STS scholarship with feminist and urban theories in preparing the research questions, interview form, and analysis. In this paper, we aim to uncover the socio-technical assemblages and socio-technical imaginaries of digital food markets as gendered processes. However, as a larger goal, we seek possibilities for feminist socio-techni-

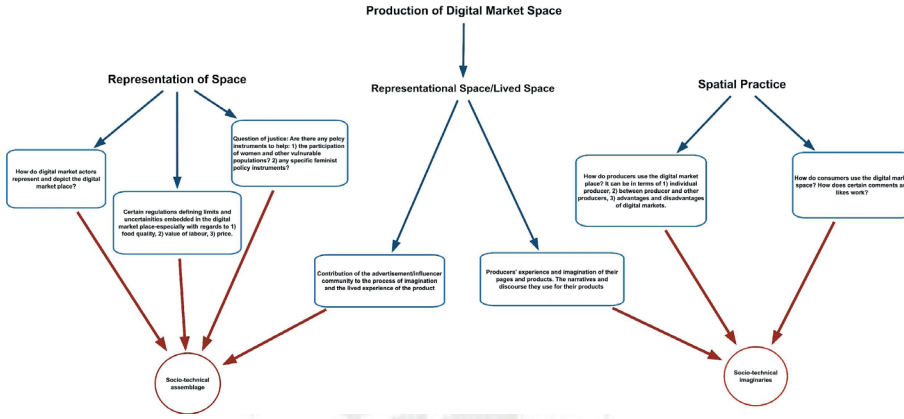
1 The gig economy project is particularly concerned with the idea of informality. See "Gig Economy Project," Brave New Europe, April 18, 2018, http://braveneweurope.com/the-gig-economy-project

cal futures that foster community economies. Finding, creating, and exploiting these possibilities requires focusing on non-capitalist relations as a crucial aspect of critical studies of markets and marketization (Berndt, Rantisi and Peck 2020). By situating gender as an analytical category, as Scott (1986) famously puts it, we hope to question and bring back these non-capitalistic relations to the process of production of digital market space, actors, relations, and networks.

We use Lefebvre's (1974 (1984)) spatial triad to explore the production of digital food market space. Figure 1 presents a framework based on Lefebvre's (1974 (1984)) spatial triad. In *The Production of Space*, the spatial triad that produces social space comprises 1) representation of space/conceived space, 2) representational space/lived space, and 3) spatial practice (Lefebvre, 1974 (1984)). Representation of space refers to abstract space produced by engineers, planners, or artists, representing ideological spatial configurations. In digital food markets, this refers to website narration by various actors (i.e., software developers, business developers of specific market networks), regulations defining the limits and extent of the digital space environment, and policy instruments impacting women's participation in the platform.

Lived space is the social space of symbols and images that attract, envelop, and accommodate users, and is more localized than representation of space (Lefebvre 1974 (1984)). In digital food market environments, this refers to the producers and/or influencers narrate their products. Spatial practice involves the ways in which societies perform and reshape the space they use and perceive. In the case of digital spatial practice, we ask questions such as: How do users (consumers and producers) use their web pages? Are there uses that would be beneficial across different producers (i.e., circular economy)? How do consumers use the digital market space? How does the 'like' icon work? Do producers communicate with each other? What are the advantages and disadvantages of different digital market environments for producers? In the long run, we aim to explore consumer practices and engagement with the markets and producers.

Figure 1. Conceptual framework, based on Lefebvre's spatial triad and research realms



In this article, our focus lies on the lived space and spatial practices that constitute women's food users' market repertoire. Although we aspire to continue working on this framework, we narrow our attention to the product in digital markets, seeking to comprehend the gendered, and classed ways in which markets unite platforms, producers, and other consumers. Through an exploration of the discursive narration of products, we aim to gain insight into the lived experience of women producers and their utilization of various outlets. Additionally, we examine the experience of pricing and how women producers value their labor as part of the spatial practice.

Price occurs through exchange interactions in markets (McMichael 2020). It is shaped by the capitalist market system and influenced by formal and informal social institutions (Polanyi 1968; Hann and Hart 2011). In many markets, the value of labor and the price of products are interconnected, and this interconnection is often based on gendered and racial/ethnic relations that underlie marketization processes (Cahill 2019). According to Moore (2016) from a world ecology perspective, the emergence of cheap commodities was not only due to the unpaid costs of land and raw materials, but also to the unpaid labor that kept the prices of highly produced and marketed goods low (e.g. sugar). The emergence of cheap food led to the emergence of cheap labor. Therefore, examining the extraction of value is crucial to understanding how prices are determined and experienced.

It is well-established by feminist literature that value extraction is possible through the disjuncture between social reproduction and pro-

duction realms. To better understand this, exploring spatial configurations, particularly how the space of production and social production realms support and creates oppression, invisibility, and devaluation via gender-racial division of labor and/or exclusion, is key. Massey (1979) is one of the first feminist geographers illustrating how production geographies are built on the gender division of labor on a regional scale. Other feminist political ecology scholars observe a similar gender division of labor occurring in agricultural and landscaping practices (Rocheleau 2015; Mies and Shiva 2014 (1993)), especially under capitalist agricultural systems. Thus, space is strategic and tactical for value extraction. Mezzadri (2021) argues that control of reproductive labor beyond the workplace, as in dormitories like seen in Foxconn, externalizing the costs of social reproduction to urban-rural migration, and persistently invisible labor of women homeworkers, all contribute to the process of value extraction and exploitation to sustain contemporary labor regimes. These spatial, social, and material contradictions do not suddenly disappear in digital platform economies and other digital environments. Contrarily, emerging accounts show that platform economies run by algorithms exacerbate invisibility, bias, oppression, and violence.

Platformization enables flexible, invisible, and undervalued labor by women. According to the ILO's 2022 global survey on platform workers, women in the developing world prefer platforms for their labor flexibility (Rani, Gobel, and Kumar Dhir 2022). This raises questions about whether platform economies sustain women as homeworkers, alienated from other workers in similar oppressive situations while using technology. The participants in this research perceive their products as an alternative to their experiences of psychological violence in previous labor histories, and as part of their empowerment in markets. While the majority use platforms directly or indirectly, they also sell products through other informal circuits, regional, and alternative digital networks that do not work with commissions. Our limited sample suggests that this membership variation across platforms and use of social media accounts bring economic resilience to producers, but labor conditions and environments remain informal, leading producers to sustain themselves with secondary income from partners or themselves.

At this point, since this is ongoing research, instead of promising a big theory, we aim to make the unpaid, invisible labor of women seen and counted, specifically in food provision and marketing. Socio-cultural components, such as the value of exploitation, highlight that price is more than a quantitative relationship between supply and demand (Guyer 2009). We reveal how value is indirectly shaped by platforms and that women's labor remains unseen because of market justice, which does not necessarily

build support systems of empowerment for women producers.

Methodology: Expect the Unexpected

Accessing producer information in digital market environments is difficult and requires careful consideration and planning. Initially, we had the support of another digital food network as a potential sample marketplace for our research project but, unfortunately, encountered unexpected challenges due to internal conflicts. Consequently, we had to search for another food market to work with.

This setback helped improving our digital research skills and incorporating them. Meanwhile, we learned automated data collection techniques and basic coding using Python. Through web scraping and using another Python-based program called Octoparse[2], and after acquiring consent from the digital food market owners, we managed to obtain information on all 650 producers, including their contact details, product types, and social media accounts. After the examination of their social media accounts, we identified 159 potential women producers. When identifying these producers, we paid attention to whether they defined themselves as women entrepreneurs or producers. We also examined videos and photographs to determine whether women were involved in the production and sales process. We conducted ten in-depth interviews lasting approximately two hours with women producers and used MaxQDA for the initial phase of analysis. Half of the interviews were face-to-face, four were online, and one was over the phone.

Introducing our participants briefly: five of them referred to themselves as women entrepreneurs. Seven were based in Istanbul, with three having production sites elsewhere. Additionally, we had one participant from Izmir, Denizli, and Balıkesir each. Only two were single-product producers. Six of the producers grew everything on their land, and two participants did not produce their products but simply helped to sell other women's products. The remaining two producers bought raw materials from supermarkets for their products. All producers except one had fewer than four household contributors to the production process, such as sisters, brothers, children, husbands, and mother-in-law, but were not necessarily formally employed.

2 "Easy Web Scraping for Anyone," Octaparse, accessed April 2, 2023, https://www.octoparse.com/

Some Preliminary Results

All producers, including those selling in local markets, (such as district bazaars), joined the digital network in 2019-2020, due to COVID-19. All of them continue to sell on digitalized markets, either through their Instagram accounts or other outlets, although sales have decreased post-lockdowns. Among all the outlets, as shown in Figure 2, Instagram is the most frequently used outlet for sales. This is mainly because Instagram accounts are free, and businesses only pay for advertisements. However, this was not a common practice among the ten producers; only two of them have advertised and/or paid an influencer for marketing over Instagram.

	1	2	3	4	5	6	7	8	9
Trendyol									
Komsubostan									
Instagram									
Shopier									
Açık Pazar Ağı									
Twitter									
Facebook									
Amazon									
Hepsiburada									
n11									
çiçeksepeti									
obadanal.com									
goood for trust									
pazardan.app									

Figure 2. Use of digital outlets by the producers

To understand the lived space experience of digitalization, a discourse analysis of dominant product narratives used by producers to challenge markets is crucial. During interviews, we asked when and how producers started selling their products and analyzed the ways in which they narrate their products. Producers often describe their products as healthy, organic, and authentic compared to those larger companies or platforms. The first producer emphasizes the absence of unhealthy additives in her products, while the second emphasizes the authenticity of her products, which often involves local ways of preparing food and/or local seeds. Additionally, some producers emphasize their ability to tailor their products to customers' health needs, which is another distinctive characteristic of women's products sold via digitalized economies. The last narrative blends motherhood with the health benefits of the product, specifically for children. This discursive linkage between food and motherhood frequently reoccurs, and women producers use it to narrate their products on their social media accounts.

> Since very large companies use additives, people turn to us because they actually avoid them. In other words, are your products natural, additive-free or do you use any additives? The big question is, do you

> use citric acid? For example, I do not use citric acid because citric acid used to be made from lemon, but now it is a chemical substance, it is harmful. So, as I said, they sell a two-kilogram jar for 50 liras. Thaw it, bring it to a small boil, there are no 5 or 10 fruits in it. It's a fat jar, all with the effect of pectin and glucose. But when we send our product and when women produce at home like I do, with our products you can see those fruits from the outside of the jar, you can see those fruits one by one. But when you look at the jam sold in the market, you can't even see the fruit (Istanbul)[3]

> We exist with our own products; we do not say organic because it is not organic. In other words, in order to be organic, it should not be in the city, rather than acquiring a few certificates. It shouldn't be close to the highway. We have it all. Here they are all close to the main road. That's why we market it as our own product. (Istanbul)[4]

> …there are not many women [who work in the specific food sector] in Turkey, that is, there are not more than five fingers on one hand. Well I am a female producer and a mother. I mean, I tell to think of everyone You know, I don't really sell what I don't feed my child. (Istanbul)[5]

Authenticity also includes reinventing recipes with cost-effective techniques, often stemming from the kitchen. One producer explained that she adapted her education and experience to handle specific food production processes (such as temperature measurement during production) using simple kitchen tools. Another producer offers private workshops to teach her unique techniques and promote her authentic products. These

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3 Çok büyük firmalar katkı maddeleri kullandığı için zaten insanlar da aslında bunlardan kaçındıkları için bize yöneliyorlar. Yani doğal mı ürünleriniz, katkısız mı, herhangi bir katkı maddesi kullanıyor musunuz? En büyük soru, limon tuzu kullanıyor musunuz. Limon tuzu kullanmıyorum mesela çünkü limon tuzu eskiden gerçekten limondan yapılırken şu an kimyasal bir madde, zararlı. Yani dediğim gibi iki kiloluk kavanozu 50 liraya satıyorlar. Çözdürün onu, ufaktan bir kaynatın, içinde 5 tane 10 tane meyve yok. Tamamen pektin ve glikozun verdiği etkiyle, şişirilme bir kavanoz. Ama biz gönderdiğimiz zaman ben ve benim gibi evde üretim yapan birçok kadın yaptığı zaman o kavanozun dışından o meyveleri görebiliyorsunuz zaten, tek tek o meyveleri görebiliyorsunuz. Ama markette satılan reçele baktığınızda meyveyi bile göremiyorsunuz. (Istanbul)

4 Kendi ürünlerimiz olarak varız, biz organik demiyoruz çünkü organik değil. Yani organik olabilmesi için yani birkaç sertifikandan ziyade yani şehrin içinde olmaması gerekiyor. Anayola yakın olmaması gerekiyor. Bizim hepsi var. Burada anayola da yakın hepsi. Onun için kendi ürünümüz diye pazarlamasını yapıyoruz. (Istanbul)

5 …[spesifik gıda sektöründe iş yapan] kadın Türkiye'de çok fazla yok, yani bir elin beş parmağını geçmeyecek kadar var. E kadın üretici ve anne oluşum. Hani herkesi düşün diyorum. Hani ben gerçekten çocuğuma yedirmediğim şeyleri kimseye satmıyorum.(Istanbul)

market tactics blending community building with authenticity, are creative practices that bridge digitalization, healthy diets, and food production.

> …something that even when creating a recipe, I always looked at the flowchart. I have never watched cheese recipes, even if it is from a foreign source. Maybe it is a lack, I don't know, but I looked at the flowchart and created what I can replace homemade with my knowledge. By throwing myself at the ball a little bit like this. No inspiration from anywhere. (Istanbul)[6]

It is striking to observe, in our interviews, the absence of support mechanisms in training, accounting, and management for women's businesses, as well as circular and/or sharing practices using technology. Commission discounts or offering virtual shops for free to women are the two gender-sensitive tools that participants encountered in the marketplaces, mainly with the main players. It is important to note that there are some programs by Hepsiburada and Trendyol for women entrepreneurs, women's NGOs, and cooperatives, which provide reduced commissions

To understand the spatial practice of digital market spaces, we explore the ways through which women producers determine the price of their products. Figure 3 below shows the code frequencies relating to price formation. While input prices lead to price decisions for small producers, looking at other websites for price determination is a second leading attribute. Besides, the recognition of women's labor and/or emphasizing and training courses on e-commerce for women.7 Although these are ongoing efforts, we did not encounter women taking advantage of these opportunities. Therefore, we think that the effectiveness and reach of these programs for women entrepreneurs need monitoring. In our interviews, we found that women are left alone to survive the digitalization process, from operating the whole platform and/or their Instagram account to managing accounting services and planning their start-up and scale-up processes. the value of labor as part of the price calculation is often absent. One of the participants says that she was astounded when one of her friends reminded her to add the value of time she spent preparing a product

6 …öyle bir şey ki tarif oluştururken bile ben hep akım şemasına baktım. Bu hani yabancı kaynaklı da olsa peynir tarifleri izlemedim hiç. Belki bu eksiktir, bilemem ama ben akım şemasına bakıp hani ev yapımı neyi neyin yerine koyabilirim bilgim dahilinde oluşturdum. Biraz böyle topa atarak kendimi. Hani hiçbir yerden esinlenmeden. (Istanbul)

7 See"Kadın Grişimciler Trendyol'un Destek Programlarıyla İşini Dijitalleştirerek Büyüyor," last modified June 14, 2022,https://webrazzi.com/2022/06/14/kadin-girisimciler-trendyolun-destek-programlariyla-isini-dijitallestirerek-buyutuyor/ and https://www.hepsiburada.com/staticpage/224306451888579

while calculating the final sale price. Some of the women producers who participated in this research think that their work is a blend of "social responsibility, business, and women entrepreneurship," which partially explains why they do not necessarily see their labor as having more value. Social responsibility hinders earning a sizeable income from their sales. It is also possible that women cannot reach large profits on their own, as expressed by some of the participants. Price volatility across input prices is a leading factor. Women's collective empowerment in the context of valuing their labor and the ways through which women producers can scale up their businesses become crucial.

Figure 3 Price formation determinants

Price formation/Producers	A	B	C	D	E	F	G	H	J	K	SUM
value of labor	0	0	0	0	1	0	0	0	0	0	1
transportation costs	0	0	0	1	0	0	0	0	0	0	1
input prices	0	1	0	1	0	1	1	0	1	0	5
the decision with the help of other digital market algorithms	0	0	1	0	1	1	0	1	0	0	4

Another important point worth exploring emerging from this research, is platform economies' indirect impact on price practices. During the interviews, Trendyol emerged as one of the most influential price markers for women producers. The visibility of a specific product on Trendyol during a web search is based on a specific algorithm that takes into account factors such as clicks per product view, sales per product visit, visit rate for the product, evaluation of customer's transaction history, product supply, number of clicks to view the product, price of the product, likes, number of evaluations, and many other features. However, these features do not necessarily reflect the true value of women's products.

Algorithms are a significant tool of market justice, but understanding their biased impacts on communities and people is crucial to ethical

AI discussions. By voicing Kandis' story, a small business owner for over 30 years, Noble (2018) illustrates how racial and gender bias operates via Yelp's algorithms, perpetuating already existing inequalities and making this small business invisible. In parallel, there is no research on how price determination tools on platforms like Trendyol regulate the larger market and impact small producers, especially women producers who are more vulnerable to price fluctuations and uncertainties in the market.

In our limited sample, we asked about women's previous and present experiences with platforms. We found that unexpected discount campaigns on products and commission rates pose significant obstacles for women who enter platforms and want to scale up using them. According to another participant we mention below, platforms not only burden the producer economically, with the platform extracting profits, but she also finds the algorithm-based pricing unfair as it considers only the "like" icon. Women use social media accounts to escape the platform's oppressive and gender-blind algorithms.

> In other words, unfortunately, I know a lot of companies that went bankrupt, especially in Trendyol… If you ask why, they put a product for ten liras, they (trendyol) do a free shipping campaign. The product is ten liras, the cargo man will pay twenty liras. The product went for free, and 10 liras went out of his pocket. They get commission, they get 12%-20% commission over that 10 lira. Commissions are also a big problem. Therefore, this is one of the reasons why I did not join trendyol... (Istanbul)[8]

> Because of Trendyol's system, because it is very oppressive, when you do not attend the trainings, when you don't do some of the things. They strike off points from your score as they wish, what if I can't go to the trainings or put up ads, I don't have the budget. The you look, you are from 9,9 to 8. I say unscrupulous, what did I do, you dropped me to 8. You must enter the campaign. You should get discounts on special days. This is how you should make your photo, you should do it like this or that is how you should do it. You need documents. they load the cargo with high commission rates to you. over their deal. Either pay commission, pay shipping and then, invoice when you sell on trendyol. Now you guys, look, it's something that didn't seem right to me either.

8 Yani şöyle, ne yazık ki özellikle Trendyol'da ben çok fazla batan firma biliyorum… Neden derseniz, on liraya bir ürün koyuyorlar, kargo ücretsiz kampanyası yapıyorlar. Ürün on lira, kargoya adam verecek yirmi lira. Ürün bedavaya gitti, cebinden de 10 lira gitti. Komisyon alıyorlar, o 10 lira üzerinden %12-%20'lere varan komisyon alıyorlar. Komisyonlar da çok büyük sıkıntı. Dolayısıyla aslında trendyola girmememin sebeplerinden bir tanesi bu… (Istanbul)

> I normally sell einkorn bulgur for 30 liras on Instagram, Trendyol has to sell it for 55 liras. Why, why tell me? Because to everyone, ooo here folks, 25 liras are already going to Trendyol. I'm not buying it, I'm giving it to them (trendyol). I opened a store in Trendyol, look, I said we are in Trendyol. It's not just about them, it includes all the others (platforms). Do you know what I said to my friends on whatsapp groups? I'm in Trendyol, but write to me from here (whatsapp) again because the price there (on trendyol) are different and I did not sell products to any of my friends there, to any of my friends. (Istanbul)[9]

Cyber violence against women is a reality on platforms, which areoften overlooked as issues. Recent research by the UN Economic and Social Commission for Asia and the Pacific on social media businesses run by women in Bangladesh shows the challenges faced by online businesses run by women (ESCAP 2021). In the start-up and scale-up stages, cyber violence and online abuse remain important limiting factors for women. The account below further illustrates the ways in which women producers are exposed to psychological and economic violence within platform environments.

> Yeah, believe me, I got attacked by so many men … [manufacturer] after I got this job, you wouldn't believe it. The attacks and questions from the Ask the trendyol seller section, including my Instagram address, including social media, are nonsense. They order my product, they give bad comments. In particular, he orders, buys the product, and perhaps does not even use the product yet. How do we know because as soon as you say your order has been delivered to this person, he comments. Indeed, they say that the tree that bears fruit is stoned, especially to the female producer…they do not want it." (Istanbul)[10]

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9 Trendyol'un sisteminden kaynaklı, çok baskıcı olmasından kaynaklı, eğitimlerine girmediğiniz bilmem ne yapmadığınız zaman, kafasına göre puanınızı düşürüyor, giremiyorum eğitimlere ya da reklam vermiyorum bütçem yok. Bir bakıyorsunuz 9.9'ken 8'e düşmüşsünüz. Vicdansız diyorum ya ne yaptım ben de 8'e düşürdü. Kampanyaya girmelisiniz. Özel günlerde indirime girmelisiniz. Fotoğrafınızı şöyle yapmalısınız onu böyle yapmalısınız. Bunu böyle yapmalısınız. Onun belgesi olmalı. komisyon oranları yüksek kargoyu size yüklüyorlar. Onların anlaşma üzerinden. Ya komisyon öde kargo öde, trendyolda sattığın zaman fatura kes. Şimdi siz zaten, bakın birde öyle bir şey ki bana şu da doğru gelmedi. Ben normalde siyez bulguru 30 liraya satıyorum instagramda, Trendyol 55 liraya satmak zorunda. Niye, niye söyleyin ya? Çünkü herkese, ooo işte millet, kardeşim onun 25 lirası zaten Trendyol'a gidiyor. Ben almıyorum, ben ona kazandırıyorum. Trendyol'da mağaza açtım, bakın Trendyol'da varız dedim. Bu sadece ona hitaben olmasın diğerlerini de kapsıyor. Arkadaşlarıma whatsapp gruplarıma ne dedim biliyor musunuz? Trendyol'da varım ama bana gene buradan yazın çünkü oradaki rakamlar değişiyordu ve ben hiçbir arkadaşıma oradan ürün satmadım, hiçbir arkadaşıma. (Istanbul)

10 "Evet, inanın şöyle şu işe girdikten sonra o kadar çok erkek …[üreticinin] saldırısına

Our research indicates that digital markets can provide a platform for women producers to showcase their products and services and feel empowered by the recognition they receive. The emphasis placed on the quality and uniqueness of their offerings in these markets can be a source of pride and motivation. However, despite this sense of empowerment, our findings indicate that women producers in digital markets face significant challenges that can undermine their efforts to succeed. One such challenge is the "market justice" where the value of women' products is defined by the market and not by the quality of their labor or the non-market relations that they rely on, such as their social networks or community support. This means that markets define the value of their products and undermine non-market relations (Rubiano Rivadeneira and Carton 2022), such as the value of their labor and their ability to cope with losses caused by cyber violence they may face in the markets. The pricing experience of women producers in digital markets further highlights the challenges they face. Increasingly, pricing is determined by algorithms that operate in the background (Gabriel 2022; 221), and women producers have little control over these processes. This situation is problematic because it can exacerbate existing inequalities in the market and limit the ability of women producers to earn a fair income from their work.

Given these challenges, it is crucial to consider how justice, AI systems, and alternative food markets can be realigned to support women producers and promote a feminist-community economy-policy interface. In the next section, we will present some preliminary ideas on how this can be achieved.

The Great Potential Of Justice And Feminist Ai: What If We Stole The Tools From The Master's House?

"In all this world, there is a no
heavier ***burden*** *than* ***great potential****"*
(Charlie Brown, Peanut character)

Politics lies at the core of the material and technical components that make up markets (Callon 2021). AI systems and algorithms are rapidly being developed and implemented in market environments. Howe-

uğradım ki, inanamazsın. Sosyal medya dahil instagram adresim dahil trendyol satıcısına sor bölümünden saldırılar, sorular saçma sapan işte. Ürünümü sipariş veriyorlar, kötü yorumlar yapıyorlar. Özellikle sipariş veriyor ürünü alıyor daha ürünü kullanmıyor bile belki de. Nereden anlıyoruz çünkü siparişiniz şu kişiye teslim edildi der demez yorum yapıyor. Gerçekten hani meyve veren ağaç taşlanır derler ya, özellikle kadın üreticiye … istemiyorlar." (Istanbul)

ver, many examples demonstrate that the underlying justice embedded in algorithms is often highly gendered, racial, and class-biased, and can reinforce existing inequalities with significant distributive consequences (Gabriel 2022; O'Neil 2016). There are many examples that illustrate how AI systems and algorithms can perpetuate systemic biases and inequalities in market environments. One example is the use of predictive policing algorithms, which are designed to identify high-crime areas and allocate police resources accordingly. However, studies have shown that these algorithms tend to over-represent communities of color, leading to disproportionate policing and surveillance in these neighborhoods (Alexander 2021). Another example is the use of automated resume screening software in the hiring process, which can introduce gender and racial biases into the hiring process. Studies have shown that these algorithms are more likely to reject resumes from women and people of color, even when their qualifications are identical to those of white male applicants (Dastin 2018). In the financial sector, algorithms are also being used to make lending and credit decisions. However, these algorithms can perpetuate existing inequalities in access to credit by disproportionately denying loans to women, people of color, and low-income individuals (Hill 2021). These examples underscore the need to critically examine the underlying assumptions and biases embedded in AI systems and algorithms in market environments to ensure that they do not perpetuate existing inequalities and contribute to distributive consequences.

In the context of small-scale producers, particularly women, addressing the issue of background justice requires a deeper consideration of distribution, recognition, and representation, as outlined by Fraser (2010). Although the digital space triad that we presented has its limitations, it offers a framework for developing feminist socio-technical tools that can promote justice at various scales. We refer to this as feminist AI, which holds great potential but also comes with a significant burden.

While some progress has been made through e-commerce training and commission discounts for women producers, these steps only address distribution without necessarily transforming the existing exploitative value extraction processes in digital environments. Therefore, digital capacity-building efforts should aim to foster digitally fair and equal communities that have material and real-time impacts for women producers.

Distributive justice depends on recognizing women's experiences in digital markets and ensuring their representation in such networks. Digital tools can provide unique experiences in representation. For example, AI-powered social network analysis can help understand the networks among actors in the market and the communities that specific digital en-

vironments engage with. Additionally, AI-powered community engagement designs, such as community mapping, social media analysis, or online surveys, can help increase women's representation and recognition in digital food markets.

However, the experience of cyberviolence and price determination remains problematic for women in digital markets. Market justice is leading to violent futures for women, rather than sustainable ones. Sociotechnical solutions are needed, particularly on large platforms. With the increasing use of AI-powered code generation, such as OpenAI's GPT3 and GPT4, these methods will become much more prevalent in the near future. It is therefore crucial to develop feminist AI tools that can promote just outcomes for women producers in digital food markets. While this holds great potential, it also comes with a significant burden of ensuring that these tools are designed and implemented in a way that avoids reproducing existing biases and injustices.

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