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The Rise of Femtech



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Women Entrepreneurship Knowledge Hub (WEKH) is a national network and accessible digital platform for sharing research, resources, and leading strategies. With ten regional hubs and a network of more than 250 organizations, WEKH is designed to address the needs of diverse women entrepreneurs across regions and across sectors. In response to COVID-19, WEKH adopted an agitator role connecting women entrepreneurs and support organizations across the country and led network calls and training sessions. WEKH's advanced technology platform, powered by Magnet, will enhance the capacity of women entrepreneurs and the organizations who serve them by linking them to resources and best practices from across the country.

With the support of the Government of Canada, WEKH will spread its expertise from coast to coast, enabling service providers, academics, government, and industry to enhance their support for women entrepreneurs. Ryerson University's Diversity Institute, in collaboration with Ryerson's Brookfield Institute for Innovation + Entrepreneurship and the Ted Rogers School of Management, is leading a team of researchers, business support organizations, and key stakeholders to create a more inclusive and supportive environment to grow women's entrepreneurship in Canada.



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The Institute for Gender and the Economy (GATE) at the University of Toronto's Rotman School of Management promotes an understanding of gender inequalities and how they can be remedied—by people of all genders—in the world of business and, more broadly, in the economy.

At GATE, we are changing the conversation on gender equality by: using rigorous research to investigate the hidden mechanisms that propagate gender equality; funding, translating, and disseminating innovative, academic research; and engaging executives, policy makers, and students to create new solutions for achieving equality, advancing careers, and creating economic prosperity.

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Is femtech an innovative and disruptive space for women's health or simply a buzzword?

Overview

In the last decade, we have seen a rise in businesses leveraging technology to offer products and services dedicated to “improving” women’s health. This new market segment has been dubbed “femtech,” and, according to Frost & Sullivan, it has the potential to reach \$50B by 2025.¹ Because femtech is relatively new, there is little empirical research about it. However, the topic has received a great deal of attention from the popular press, and we can also learn from prior work in cognate areas (e.g., gender diversity and innovation). This research overview provides a brief history of femtech and a summary of the existing academic work and industry research. Below, we begin by defining femtech, describing the importance of this new term—including backlash to it—and discussing what femtech signals about entrepreneurship, technology, and women’s health more broadly.

What counts as femtech?

When people talk about femtech, they are referring to a subset of medical technology (or “medtech”) products and services addressing issues historically and conventionally associated with the reproductive health of cisgender women.² That is, the vast majority of femtech addresses issues like contraception and assisted fertility such as in vitro fertilization (IVF), pregnancy and post-pregnancy, breastfeeding, menstruation and period care, pelvic health, menopause, hormonal disorders (e.g., polycystic ovary syndrome), health and fitness, and sexual wellness. Femtech can help individuals and couples monitor and predict cycles that come

with a very large financial investment. Some femtech companies—such as Maven, a virtual clinic for women—also address women’s health in general.

Examples of femtech products and services include:

> **Clue**

A mobile menstrual health app created by Berlin-based BioWink GmbH, a company co-founded by Ida Tin in 2013. As of 2019, Clue had raised \$29.7M.³

> **Glow**

A mobile fertility app created by a data science company of the same name, co-founded in 2013 by Max Levchin, former co-founder of PayPal. As of 2019, Glow had raised \$23M.⁴

> **Natural Cycles**

The first FDA-approved fertility tracking app created by CB Rank, co-founded in 2013 by CERN physicist Dr. Elina Berglund and her husband Dr. Raoul Scherwitzl. As of 2019, Natural Cycles had raised \$37.5M.⁵

> **Ava**

Established in 2014 by Lea von Bidder, Pascal Koenig, Peter Stein, and Philipp Tholen, Ava is a bracelet that monitors five “physiological signals of fertility” and then displays the real-time data via a mobile app. As of 2019, Ava had raised \$42.4M.⁶

> **Lola**

Established in 2014 by co-founders Alexandra Friedman and Jordana Kier, Lola offers a subscription service for menstrual products (e.g., pads, tampons, essential oil for menstrual cramps) and sexual health products (e.g., condoms, lubricant). As of 2019, Lola had raised \$35.2M.⁷



- > **Lia**
Lia offers the first biodegradable and flushable at-home pregnancy test. Co-founded by Bethany Edwards and Sarah Rottenberg in 2015, as of 2019, Lia had raised \$2.6M.⁸
- > **Bloomlife**
Co-founded by Eric Dy and Julien Penders in 2014, Bloomlife is a wearable tracking device that monitors contractions, displaying real-time data via a mobile app. As of 2019, Bloomlife had raised \$14.4M.⁹
- > **Elvie**
Creators of a Kegel trainer and breast pump, Elvie was co-founded in 2013 by Alexander Asseily and Tania Boler and had raised \$53.8M as of 2019.¹⁰

Who's behind femtech?

Ida Tin, a Danish entrepreneur and the co-founder and CEO of Clue, coined the term “femtech” in 2016 to describe the proliferation of women’s health products she’d noticed in the market and to mitigate men’s discomfort with discussing issues like incontinence and menstruation. As Tin explained during a 2018 Geekettes panel: “Then, investors can say, ‘I have four femtech companies in my portfolio’ instead of, ‘I have a company for women peeing in their pants.’ That’s hard for a male investor to say.”¹¹

The origins of the word femtech tell us several things. First, the advent of femtech signals unmet needs and corresponding opportunities in the marketplace. Second, Tin’s coining of “femtech” signals that the female anatomy continues to be stigmatized¹² and that women’s health continues to be infused with sexism.¹³ Relatedly, Tin’s reasoning (“That’s hard for a male investor to say”) signals that the majority of investors who have the capital to fund start-ups continue to be men. In addition, wearable tech (technologies that may be worn, embedded in fabric or accessories, or tattooed directly onto the skin) is a tech

industry that has a high proportion of women because it didn’t previously exist. Women find it easier to enter new fields such as femtech and wearable tech because they are not already dominated by men.¹⁴ Furthermore, women are already heavily represented in the healthcare and fashion industries; femtech and wearable tech are natural extensions.

Canadian femtech start-ups like Eve Medical, Damiva, Elvie, and Knix Wear—all of which were started by women—have also become prominent players in the femtech space. Although there’s a lot of speculation (and a growing amount of evidence) that femtech companies are more likely to be founded and funded by women, to date there has been very little academic research about femtech products, services, and entrepreneurs. Important exceptions include Sarah Fox’s 2018 dissertation in which she “examines recent industry and policy initiatives aimed at extending menstrual resources,” briefly touching on the work of social entrepreneurs in the menstrual product space.¹⁵ However, a few femtech founders have published books about their experiences as women entrepreneurs. For example, Miki Agrawal, the controversial co-founder and former CEO of THINX, published *Do Cool Sh*t: Quit Your Day Job, Start Your Own Business, and Live Happily Ever After* in 2013 and *Disrupt-Her: A Manifesto for the Modern Woman* in 2019.

Critiques of femtech products and services

Early critiques of femtech include Maggie Delano’s 2015 Medium article entitled “I tried tracking my period and it was even worse than I could have imagined.”¹⁶ Delano describes how—as a queer woman with irregular periods who is not interested in having children—she felt “erased” by the apps she tried. Since 2015, the backlash against femtech has become more widespread with others echoing Delano’s observations,¹⁷ asking whether the term “femtech” pigeonholes



women's health¹⁸ and essentializes women to reproductive biological functions while simultaneously excluding non-binary and trans users.¹⁹ Critics have also asked why there is no "mentech"—that is, why are cisgender men considered the "average user" for any given technology? Consider that menstrual tracking apps were created largely in response to Apple's initial failure to include menstruation in HealthKit (now known simply as Health).²⁰ Finally, feminists and practitioners alike have expressed concerns about how femtech products exploit women's anxieties and fears for profit.²¹ For example, in her 2019 book *The Vagina Bible*, Jen Gunter, an OB/GYN and pain medicine physician, argues that Kegel trainers and vaginal steams not only reinforce "vagina shame," they are also unnecessary and potentially dangerous.²²

Academic research on femtech

Academic research on femtech has primarily fallen outside of traditional management scholarship and has been dominated by those in the human-computer interaction (HCI) field.

Experimental designs and prototypes

In the past five years, a small group of human-computer interaction (HCI) researchers and designers have begun to design and build femtech prototypes solely for research purposes. For example, Almeida and colleagues created *Labella*, "an augmented system that supports intimate bodily knowledge and pelvic fitness in women" via a pair of underwear and a mobile phone,²³ while Schneider and colleagues created and tested a prototype of a fertility tracking app (FTA) to explore how technology might handle uncertainty without negative emotional effects.²⁴ In general, these experimental designs and prototypes have been vehicles for exploring concepts (e.g., self-knowledge, uncertainty, data practices) relevant to HCI in general.²⁵

Critiques of existing femtech products

Other HCI researchers have interrogated and critiqued existing femtech products on the market to ask how well these products meet users' needs. In their survey and interview-based study with users of period tracking apps, Epstein and colleagues found apps were ineffective when it came to predicting cycles and that designs of apps can create feelings of exclusion for some users.²⁶ Similarly, in a heuristic evaluation of 17 menstrual tracking apps, Eschler and colleagues found the majority of apps they tested did not account for users experiencing menarche and menopause.²⁷

Concerns about data security, privacy, and surveillance

Sociologists and legal scholars have also critiqued existing digital health technologies marketed to women, asking how they reinforce gendered norms and offer ways for the body to be subject to surveillance.²⁸ For example, Karen Levy writes about different kinds of intimate surveillance including fertility tracking, noting that some fertility apps (i.e., *Glow*) encourage partners to set up "mirror" apps so that they can monitor moods and even provide "objective" readings of dispositions.²⁹ Similarly, Deborah Lupton has written about the "caring dataveillance" enacted by mothers who use tracking technologies to monitor their pregnancies and, later, their children.³⁰

Questions about whether femtech products and services improve health-related outcomes

Finally, HCI and health informatics researchers have asked whether or not digital femtech products are based on evidence-based medical practices and can actually improve health-related outcomes. Lee and Kim argue that the results of their double-blind randomized control trial of two different menstrual tracking apps indicate that some such apps may result in the "possibility



of behavioral and cognitive changes in dysmenorrhea and PMS management.”³¹ To date, the adoption, use, and efficacy of other kinds of femtech products and services have been understudied.

Gender diversity and innovation

One of the questions researchers across disciplines have asked is whether gender diversity impacts innovation.³² For example, a study of 1,648 Danish firms found that firms with more balanced gender compositions were more likely to innovate than firms with a higher concentration of one gender.³³ We know from prior work—and from industry examples like Apple’s failure to include menstruation in its earliest versions of Health—that gender is a factor that is often not explicitly considered during product design.³⁴ We also know that when gender has been considered, design choices have reinforced stereotypes: for example, the “shrink it and pink it” phenomenon.³⁵ Some press pieces argue that men—rather than women—design the products and applications that dominate femtech.³⁶ However, as noted above, there has yet to be any academic research done in this space.

Industry research on femtech

Industry research on medtech indicates that healthcare is becoming more “consumer-centric” in general.³⁷ While femtech has received less attention from industry researchers, many of the general observations about medtech also hold true for femtech. However, reports about femtech tend to consider more specific markets. For example:

- > I See Africa, “a content hub of curated, informative, relevant information” about trends in Africa, released a report in 2019 about the ways in which femtech in Africa is addressing menstrual equity, pregnancy care, and sexual wellness.³⁸

- > Modern Fertility, HER, and researcher Mere Adams released a report based on survey data about the state of “LGBTQ+ fertility” in 2019. In the report, they note a fertility information gap and subsequent use of social media to address this gap, challenges with traditional healthcare, enthusiasm towards at-home fertility tests, and the anxiety triggered by fertility concerns.³⁹

In summary, the modest amount of industry research available on femtech indicates that some products and services may be able to address the needs of consumers who have historically been marginalized by mainstream markets, medical institutions, and practices.⁴⁰

Areas for future research on femtech

Because the rise of femtech is such a recent phenomenon, there is still much we do not know. Future academic research might ask questions about:

- > **The demographics and motivations of femtech founders and investors**
Who are femtech founders and what motivates them to start companies in this space? What kinds of barriers do they face and how do they overcome these barriers? How does entrepreneurship in this space compare to entrepreneurship in other industries and market segments? Are women more likely than men to start and/or invest in femtech ventures?
- > **The role of gender diversity in innovation**
How is gender diversity important in this space? Are women more likely to create innovative products that address women’s health concerns? Does one need to be a woman to disrupt the women’s health space?



> **The role of social entrepreneurship in femtech**

Are femtech founders more likely to make social good a key part of their businesses, as some popular media pieces have assumed?⁴¹ If so, how does this impact their business strategies and their success?

> **Global femtech markets and consumers**

How do femtech solutions for girls and women in poorer countries compare to those in wealthier countries? Do femtech markets and consumers differ across the globe? If so, how and why?

> **The design and execution of femtech products and services, particularly with regard to evidence-based medical practices**

How do femtech products and services incorporate evidence-based medical practices? Do femtech products and services improve health-related outcomes?

> **Femtech and health disparities**

What kinds of conceptualizations of the body do femtech founders employ in the design and execution of their products and services? How do femtech products and services contribute to existing health disparities? Relatedly, do they create new ones?

> **The necessity and efficacy of femtech products and services**

Is femtech truly radical, or is it yet another way to “shrink it and pink it”? If the femtech market becomes dominated by women entrepreneurs, investors, and designers, will we see new innovations that break with old stereotypes?

Returning to the question posed at the beginning of this report—is femtech an innovative and disruptive space for women’s health or simply a buzzword?—the answer is clear: femtech is more than a buzzword. But it is too early for us to understand how much more. We do not yet know all of the potential promises and pitfalls of technologies designed, produced, and marketed to “improve” women’s health. This, then, is an area for ample future work across a range of scholarly disciplines.



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