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Significance of theories and antecedents of consumer adoption in driving the femtech services: A comprehensive literature review

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Abstract
The FemTech industry has witnessed a significant surge in recent years, providing technology-driven solutions for women's health and wellness. This study examines literature to emphasize the significance of theoretical foundations, methods, and variables in FemTech solutions. This study delves into different theories, such as behavior change, feminist, social ecology, and user-centered design, in order to comprehend consumer motivations and behavioral tendencies in the realm of FemTech. It highlights the significance of theory in interdisciplinary collaboration, ethical considerations, and evidence-based practices. The study emphasizes the importance of technology in enhancing women's overall well-being through the use of user-friendly applications, wearable devices, and digital platforms. This review delves into theories, frameworks, and models in FemTech, with a specific focus on consumer behavior and adoption in emerging economies. The objective of this study is to improve marketing outcomes for mobile app-based services in India. It aims to fill gaps in the current literature and develop a conceptual model that can help us understand the acceptance of these services in emerging countries. This study employed a literature review process that combined systematic literature reviews (SLRs) and bibliometric analysis. The aim was to identify variables, methodology, research findings, and consumer concerns in existing studies on FemTech and related consumer research. The objective of the study was to create a conceptual model that addresses the deficiencies in current literature and identifies research trends and comparisons within the FemTech field. This review research could provide valuable insights for future research on the adoption of FemTech in developing nations. It can assist policymakers in understanding the essential factors for effective planning and in persuading potential customers to utilize FemTech services.

Keywords: FemTech, technology for female, mhealth for women, systematic literature reviews paper type, literature review based research paper

Introduction
FemTech, short for Female Technology (Frost & Sullivan, 2021) [25], is a thriving industry that is expanding swiftly that has just arisen from the confluence of healthcare and technology. FemTech describes a developing field of digital health products (Dr. Amanda Menking, 2021) [13], Tamar Krishnamurti, *et al*., 2022) [68], tools, and services that are especially geared towards the health and wellbeing of women. FemTech (Dr. Anne Moorhead, *et al*., 2018) [14] provides a wide range of inventions that have the potential to revolutionise (Frost & Sullivan, 2021) [25] women's healthcare (Sarah Liu, 2022) [63], from menstrual cycle (Alnoor Bhimani, 2020; Donna Lu, 2019) [1] tracking applications (Bridget G. Kelly & Maniza Habib, 2023) [6] to pregnancy monitors and menopause (Reenita Das, 2019) management aids. This literature study aims to clarify the factors influencing women's decisions to adopt these digital solutions (Frost & Sullivan, 2021) [25] by examining the importance of theories and antecedents in understanding and promoting consumer acceptance of FemTech services.

FemTech's importance goes beyond merely technology developments (Jo Brett, Mary Boulton, *et al*. 2023) [33]; it also includes a wider framework of society and healthcare.

In the past, medical research (Dr. Amanda Menking, 2021) [13] and healthcare systems have neglected and frequently ignored the interests and concerns of women with regard to their health (Sarah Liu, 2022) [63].

FemTech has become a promising way to address these historical inequalities by offering specialised solutions for women's particular health journeys. FemTech gives women more control over their health and wellbeing, which empowers (Madelin Burt-D'Agnillo, 2022) [41] them. It provides individuals with the knowledge and resources they need to make educated decisions regarding their reproductive health, fertility, pregnancies, sexual health (Francine Hughes, *et al*., 2018) [21], mental health (Joanna Collaton, *et al*., 2022) [34], stress (Aliaksandr Kazlou, *et al*., 2002; Monique van Beukering, *et al*. 2019) [2, 46], general wellbeing (World Health Organization, 2017), nursing and breastfeeding (McInnes, S**.,** 2015**;** HIMSS, 2020) [43, 30].

FemTech services hold the promise of enhancing women's health outcomes through personalised insights (Alnoor Bhimani, 2020) [1] and data-driven suggestions. This is especially important in fields like fertility control, where quick action can have a big impact on the likelihood of pregnancy.

FemTech services improve accessibility to crucial health monitoring (Deborah Lupton, 2018) [10] and information (Catrona McMillan, 2022) [7] due to the widespread use of cell phones (Dr. Tahmeena Kolar, *et al*., 2021) [15] and digital connectivity. In keeping with the greater trend of telemedicine (Erika Marie Rodriguez, *et al*., 2020) [20], they offer the convenience of remote healthcare management.

FemTech services acceptance is driven by a variety of variables based on well-respected theories and antecedents. Designing (Sri Nawangsari, *et al*., 2022) [66], promoting, and advancing the adoption of FemTech solutions rely heavily on an understanding of these forces.

According to ideas like the Technology Acceptance Model (Fred D. Davis, 1989) [22], perceived usefulness and ease of use are crucial factors in determining whether or not people accept new technology. Customers of FemTech (Rachel Palména *et al*., 2020) [57] are more inclined to use these services if they think they will actually improve their health and find them to be user-friendly (Chalermpon Kongjit, *et al*., 2022) [8].

The Health Belief Model (Edward C. Green, *et al*. 2021) [17] states that people are more likely to behave in ways that are connected to their health if they sense a threat to that health, believe that doing so will lower the threat, and believe that the advantages outweigh the disadvantages. FemTech services must make these qualities evident in order to encourage adoption.

Adoption of FemTech is greatly influenced by peer pressure, expert advice from healthcare providers (Tamar Krishnamurti, *et al*., 2022) [68], and adherence to social standards. When a woman decides to use these digital health tools, positive referrals and support systems can make a great difference (Nadine Bol, *et al*. 2018; Deborah Lupton, 2014) [50, 11].

In order to build user trust, it is crucial to address privacy and security concerns given the very sensitive nature of the health data involved. Services with a strong focus on data protection (Catrona McMillan, 2022) [7] are more likely to be accepted by customers.

FemTech adoption can vary significantly across different countries and demographic groups depending on cultural taboos (Amanda Karlsson, 2019) [4], religious views, and financial gaps. For adoption to be widely used, these complexities must be understood and addressed.

In conclusion, this review of the literature intends to investigate the relationship among consumer behaviour, women's health, and technology (Nadia Zainuddin, *et al*., 2011**)** [49], focusing on the significance of theories and antecedents that influence the uptake of FemTech services. By looking into these elements, we hope to offer insightful analysis to academic and business players, ultimately increasing the creation and application of FemTech solutions to meet the many and changing healthcare needs of women (Nayeri, F., 2021; Shannen R. van der Kruk,, *et al*., 2021) [51, 65].

2. Theoretical Framework

Understanding the importance of theories and antecedents in influencing customer adoption of FemTech services requires the development of a theoretical framework. This framework offers a well-structured foundation for investigation and analysis. To develop a thorough theoretical framework in this situation, you can incorporate a number of well-known theories. Here is a recommended structure:

Perceived Ease of Use (PEOU), a component of the TAM (Fred D. Davis, 1989) [22], measures how customers perceive FemTech services to be simple to use and hassle-free. It might be a significant precursor to adoption. The notion that using FemTech services will improve women's health and wellbeing is known as perceived usefulness, or PU. Adoption is probably influenced by how valuable something is seen to be.

The idea of perceived susceptibility in the Health Belief Model (HBM) (Edward C. Green, *et al*. 2021) [17] pertains to the perception of health risks or vulnerabilities. If they believe they are prone to certain health problems, women are more inclined to use FemTech services. HBM highlights Perceived Benefits as another important consideration (Shaimaa, H. Mohamady, *et al*. 2017) [64]. If there are obvious advantages in terms of disease prevention, health improvement, or reproductive health, women are more likely to use FemTech. HBM contends that adoption of health-related behaviours (Edward C. Green, *et al*. 2021) [17], including use of FemTech services, can be influenced by outside factors including societal pressures or recommendations from healthcare professionals.

Diffusion of Innovation Theory concentrates on the features of the innovation that affect its uptake. Adoption rates for FemTech services can be impacted by factors including compatibility with current practices, comparative advantage over conventional procedures, and trial ability. The diffusion theory (Les Robinson, 2009) [39] emphasises the significance of communication channels for promoting innovations. The adoption of FemTech can be accelerated through effective marketing (Sumant Ugalmugle, Rupali Swain, 2019) [67], endorsements from healthcare professionals, and peer recommendations.

The adoption of FemTech services can be greatly impacted by social norms and peer pressure. Adoption may be influenced by the idea that using these services is acceptable and even promoted in society. The size and organisation of a woman's social (Yingyi Zhang, *et al*. 2022) [73] network can influence her choice to use feminism-related technology (World Government Summit, 2019; Rosser, S. V., 2005) [61]. Women are more likely to use these services if they are part of supportive networks that prioritise their health and wellbeing.

It's crucial to address privacy issues (Alessia De Stefano and Theresa Müller, 2021) [3] and guarantee data security. FemTech services need to build confidence by being transparent about their data protection methods (Mesfn Mulugeta Woldegiorgis, 2022) [42], in line with privacy theories (Hugl, Ulrike, 2010) [31].

Cultural theories (Tansey, J., & O'riordan, T., 1999**)** [69] can be used to better comprehend how cultural values and beliefs affect the adoption of Femitech. Adoption among varied populations can be increased by service customization and sensitivity to cultural quirks. Socioeconomic (Sara Roetman, 2020) [62] theories can be used to examine how income and resource access affect how FemTech services are adopted. It is critical to acknowledge economic inequalities and provide practical solutions.

Feminist theories (Amanda Karlsson, 2019) [4] can be used to investigate how FemTech empowers women by removing historical gender inequities in healthcare and giving them control over their health decisions (Alessia De Stefano and Theresa Müller, 2021) [3].

This theoretical framework offers a comprehensive method for comprehending the importance of theories and antecedents in influencing customer adoption of FemTech services. This framework can be used by researchers to direct their studies while adding pertinent components from these theories (Mesfn Mulugeta Woldegiorgis, 2022) [42] to analyse the numerous factors that affect the adoption of FemTech in diverse situations and demographics.

3. Methodologies Adopted

3.1 Formulating a Thematic Assessment

In a standard systematic review of literature (Gabriela Frid, 2021) [27], explicit methodology used in earlier studies are extracted and synthesised in order to identify, select, and analyse pertinent studies and to inform future research (Nayeri, F., 2021) [51]. Zone-based, assertion-based, or method-based articles that include systematic reviews of the literature (SLRs) can broadly be categorised (Ko Ling Chan & Mengtong Chen, 2019) [73]. A domain-based review is one that is structured and concentrates on widely used approaches, significant concepts, and structures. To analyse and demonstrate how the frameworks are synchronised to examine the material from all sides, a literature overview is employed. There are further sorts of reviews, such as hybrid-based reviews, reviews based on meta-analyses, and bibliometric reviews. This study uses a zone-based hybrid structured review to examine the relationship between independent, dependent, and demographic variables in the adoption of technology in the FemTech sector.

The execution of this SLR involved a total of five phases (Khalid S Khan *et al*., 2003). The paper's main goal involves selecting selection keys, searching for publications, reading titles and abstracts, reviewing entire papers, and examining them to extract areas, methodologies, tools, models, and variables from the submissions. The keywords FemTech and mHealth (Yuqing Hou, *et al*., 2022) [74] were used when obtaining journals for this study from the Scopus database.

Table 1: A Comprehensive Literature Review's Different Steps:

First Step:	Creating review questions
Second Step:	Locating pertinent work
Third Step:	Evaluating the calibre of research
Fourth Step:	Condensing the evidence
Fifth Step:	Analysing the results

Source: Khalid S Khan *et al*., 2003

3.2 The Review's Structure

3.2.1 The method of looking through the Materials

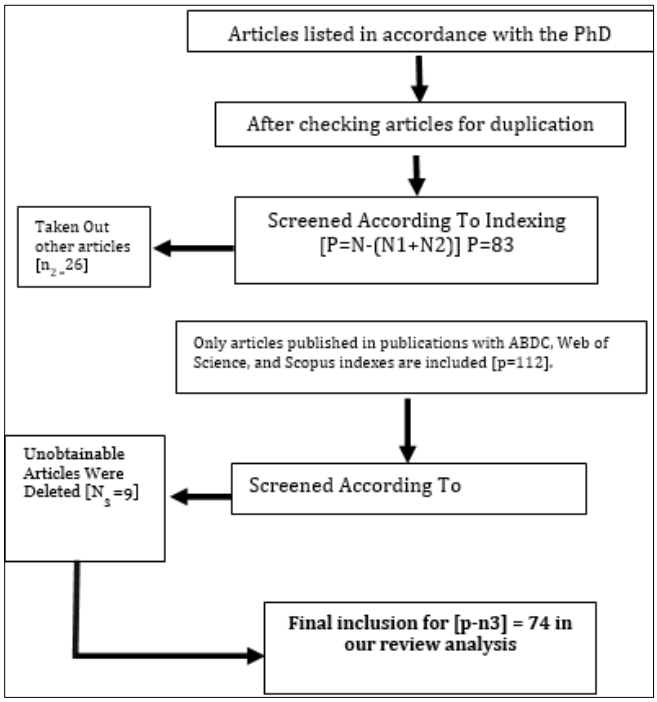
To perform the systematic review for this investigation, two different types of search techniques were deemed necessary:

a. Digital Search: In the FemTech field, a number of pertinent constructions have been discovered through recently published articles. When choosing these databases, a number of factors were taken into account, including (1) availability to the writers and (2) relevance to the particular domain (Rhaiem *et al.*, 2017) [60].

b. Manual Search: The reference lists of the mentioned papers were manually searched by the authors as part of this study's second search strategy in order to improve our methodology. This method's objective was to identify any items that may have been missed when creating our list (Rhaiem and Amara, 2021) [59].

3.2.2 Articles' inclusion and exclusion

We developed inclusion and exclusion criteria in order to restrict the scope of our methodology and subsequent investigation. Figure 1 lists them and provides a rationale for their additions and deletions. Duplication of articles is the initial criteria to look into. These are the Indexing Criteria. Only articles published in journals with UGC Care List and Scopus indexes are included.



Source: The authors

Fig 1: Articles' inclusion and exclusion

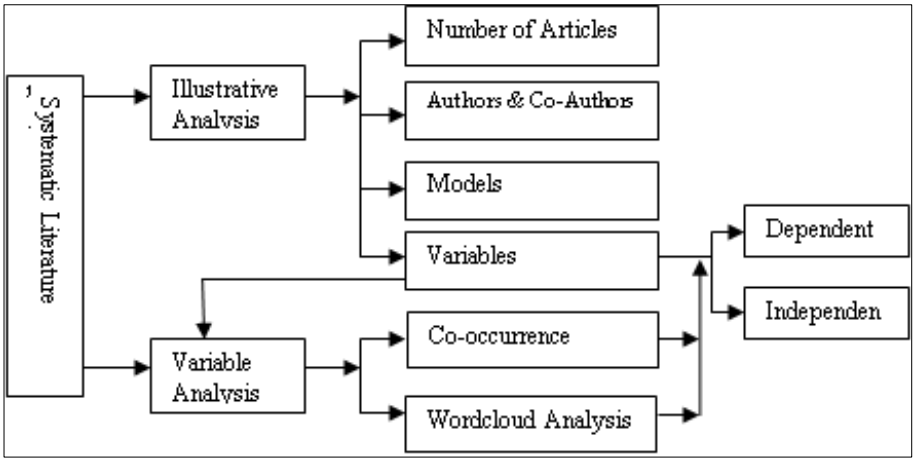
Disclaimer: This is the best available resolution

The articles' accessibility is the third criterion. In our case, 74 articles are the maximum number to be included in our Review Analysis.

3.2.2 The Structures of the Systematic Literature Review

Procedure: Within the comprehensive literature evaluation (Priyanka Rani Garg, *et al*., 2020) [56], using review data, internal links between journals, articles, literature, authors and co-authors, models, variables, and co-occurrences are connected algorithmically. The popularity of systematic

reviews during the past 30 years has given rise to fresh proof of review methodologies. These consist of umbrella reviews (which contrast and compare the review question-related conclusions of reviews) (Aromataris *et al*., 2015) [5], integrative reviews (Gregg B. Jackson, 1980) [26], evidence maps (Hetrick, 2010) [29], realist syntheses, fast reviews (Munn, 2015) [48], concept analyses (Draper *et al*., 2015) [12], mixed methods reviews (Pearson *et al*., 2015) [54], and others.



Source: The authors

Fig 2: The Structures of the Systematic Literature Review Procedure

When arguing a review process, researchers, policymakers (Mesfn Mulugeta Woldegiorgis, 2022) [42] and funders can use various review types to select appropriate databases, time ranges, search phrases, document types (journals are common), and software for quick data analysis in the designated domain, ensuring a comprehensive and efficient research process. The five principles or criteria listed above are very helpful in describing and supporting the essential elements of data collection.

4. Results and Discussions

4.1 Year-based organization of the study domain

Understanding the breakdown of articles by year and by zone is essential before moving on to the appraisal of papers (Paul *et al.*, 2020) [53].

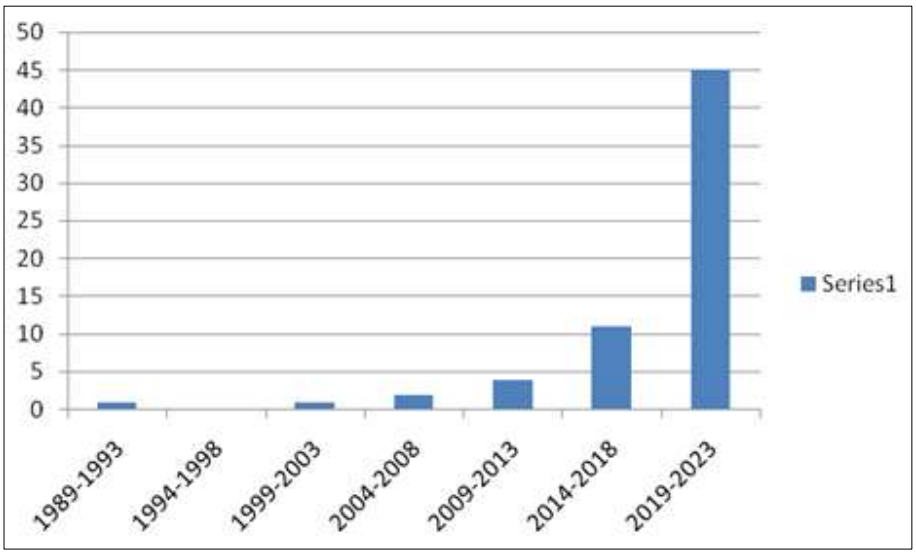


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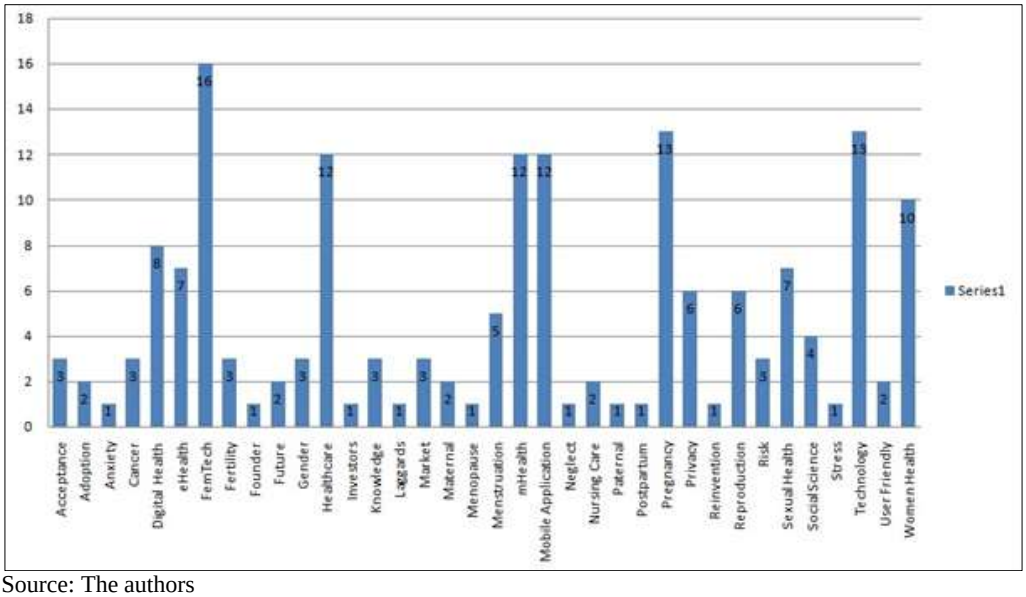
Fig 3: Structuring of studies by year

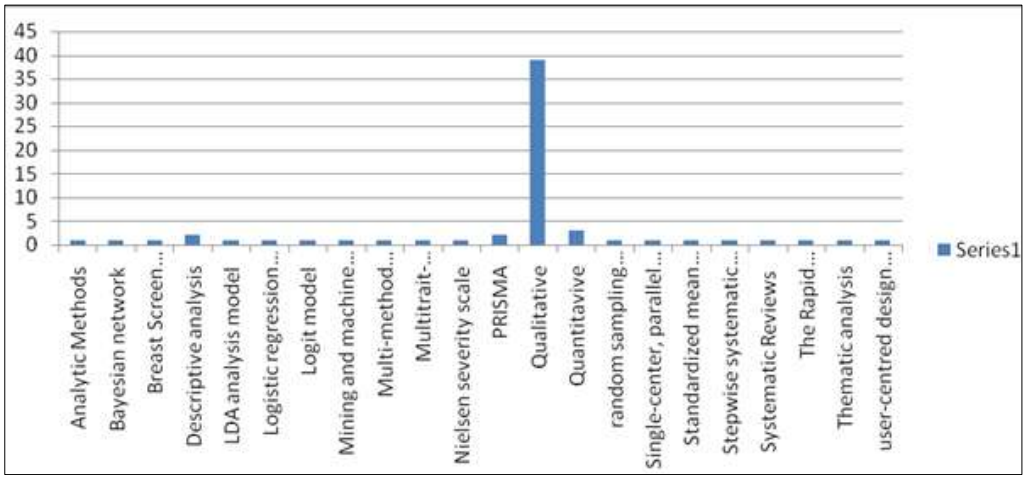
Figure 3 demonstrates that the most of the cited articles (about 45 articles out of 74 articles) are from 2019 to 2023. Figure 1 illustrates that we have taken these articles from 1989 to 2023. According to Figure 4, approximately 16 out of 74 articles fall under the FemTech Domain, and 13 out of 74 articles fall under the Pregnancy as well as Technology Domain. They, together with FemTech Service Technology and Convenience, were major contributors in this area.



Source: The authors

Fig 4: Article distribution according to domain

4.2 Article distribution based on the source of publishing: 48 publications or webpages containing research on FemTech services were later published. It is well known that the International Journal of FemTech has published approximately 358 articles.



Source: The authors

Fig 5: Distribution of Articles according to methodologies used

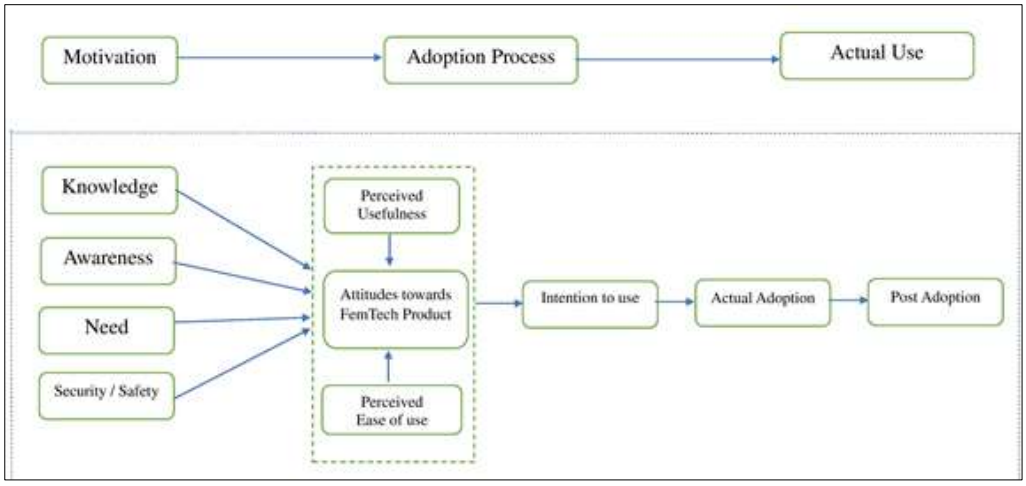
The majority of studies on FemTech (39 papers out of 74 articles) used Quanlitative method, Quantitave method (SEM), PRISMA, descriptive analysis, correlation, and so many.

4.3 Defining the Theoretical Domain

The papers obtained in this research were used to undertake a thorough systematic review (Jain, R., *et al*., 2023) [32] of FemTech. This study used a methodology that had been used before and that other researchers had found to be popular and well accepted.

4.3.1 Nomenclature and Terminology: Phrases and notions related to the application of FemTech have changed over time and are highly different from one another. FemTech was by far the most important factor advancing technology. There are two things that are noteworthy. The first is that, according to more current studies, the terms "digital" and "mobile" are more commonly used than "internet" and "electronic." Research needs to keep up with the speed of technological advancement and the growing dependence of consumers on digital devices in order to achieve this. Despite the evolution of terms and concepts over time, their core definitions have remained relatively stable.

4.4 FemTech adoption theories and models



Source: The authors

Fig 6: Conceptual Model

The factors that affect the acceptance of FemTech can be explained and predicted using a variety of theories and models, much like the adoption of any new technology or innovation. Here are some important theories and models related to the adoption of FemTech. HBM (Health Belief Model) (Karen Glanz, *et al*., 2008) [35] and among the important theoretical frameworks mentioned were feminist theory, LDA, predictive modelling, and the technology acceptance model (TAM). Subsequently, several behavioural models were examined, including the Unified Theory of Acceptance, Privacy Theory, Comprehensive Conceptual Model, and Contingency Model. These provided an explanation for why consumers accepted FemTech. Similarly, to better understand and explain FemTech acceptance, numerous studies used extensions or modifications of these models as well as combinations of different existing models.

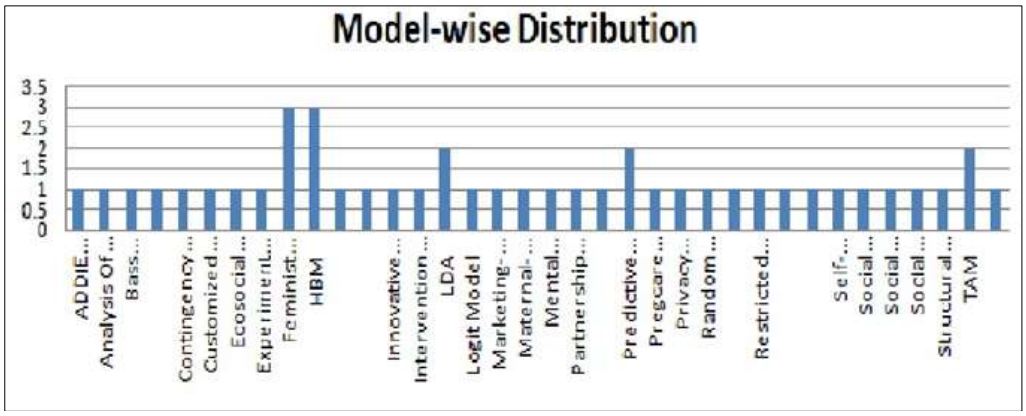


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Fig 7: Model-wise distribution

4.5 Antecedents in FemTech

Although the focus of this section was on the antecedents of FemTech, the literature analysis showed that different effects have been applied to assess the consequences of FemTech use. These results can be described by behaviour (which only happens once), attitude in 12, intention in 20, and satisfaction, which is commonly found to be a factor in 30 cases. Numerous factors are identified by the literature review as being often and consistently used in the growth of FemTech adoption (Hamed Taherdost, 2018) [28]. We can better understand these antecedents by organising them into five distinct perspectives: attribute-based FemTech perspective, divided into two sections a. Qualitative; b. Acceptance of technology; consumer-specific; Convenience-related preference; Need and Trust (Moshe Hod, *et al*., 2023) [47], and a perspective based on risk perception are all components of FemTech.

4.5.1 Attribute-based FemTech viewpoint

The attributes-based approach is the most commonly used strategy in literature on FemTech, primarily based on ideas related to the fundamentals of FemTech.

Perceived usefulness (PU) is a component of the TAM framework (Fred D. Davis, 1989) [22], which served as the basis for the development of the technological acceptance based perspective. It is associated with consumers' assessments of the efficacy or utility of utilising FemTech. In this case, perceived ease of use (PEU) of TAM is also quite important. Customers' perception of FemTech's compatibility (as measured by DOI) with their values, prior experiences, and needs is measured.

4.5.2 Consumer-specific perspective

FemTech's customer-centric strategy, which emphasises traits, demographic attributes, attitudes, emotions (Xuetong Chen, *et al*., 2018) [72], and customer cultures, is heavily influenced by the way consumers feel themselves. Self-

efficacy is a concept that is most frequently studied. It is defined as believing in one's own abilities. There were mixed results regarding the direct and moderating impacts of age, gender, income, and occupation.

4.5.3 Preference based on the viewpoint of convenience

The SERVCON and SERVPERF models' interpretation of UTAUT's concept of personal influence forms the basis of the convenience-based and personal preference points of view. The phenomenon denotes a person's conviction that they ought to embrace a specific technology (Hamed Taherdost, 2018) [28] because of their close relationships. The main elements that disclose the subjective viewpoint of individual preference and convenience are the influence of society, security, communication, convenience (which includes multiple dimensions like the decision, access, transaction, benefit, and post benefit), preference, ease-of-use, responsiveness, reliability, consumer preference, convenience, satisfaction, and loyalty.

4.5.4 Trust based perspective

The trust paradigm is used, which is why it is called the trust-based worldview. As a result of the service's ambiguity, a barrier to FemTech's data privacy (Lisa Dwyer, *et al*. 2020) [40] is the lack of confidence. It covers perceptions of privacy, security, and trust. Perceived security and privacy are closely related to trust.

4.5.5. Need based Perspective

From the perspective of the consumer, need is of the utmost importance in relation to FemTech. It encompasses perceptions of usefulness, convenience of use, assurance, and simplicity of use. These preconditions are the fundamental elements of the need perspective (Catrona McMillan, 2022) [7].

4.5.6 Risk Perception

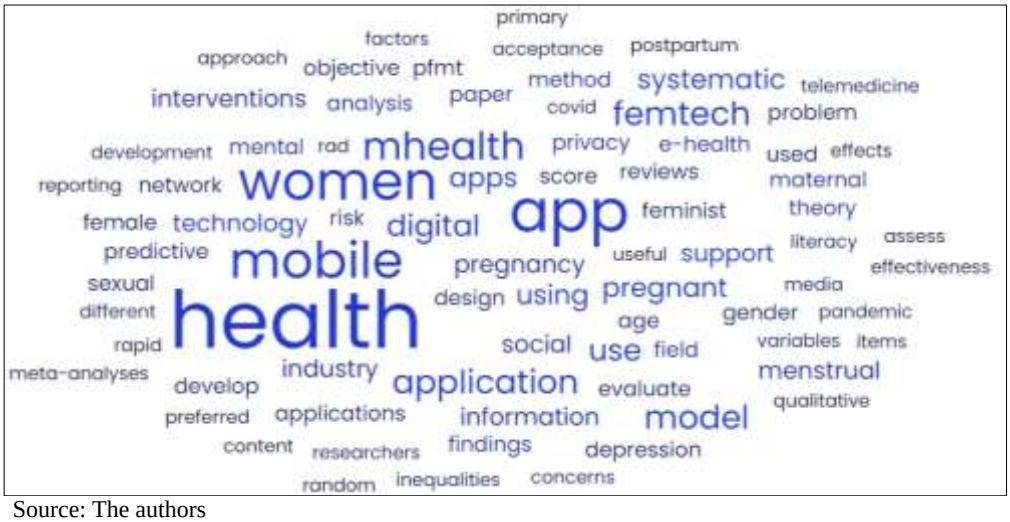
All of the factors that act as barriers are taken into account in the context of FemTech (Alessia De Stefano and Theresa Müller, 2021) [3]. The majority of its contents, including risk factors (such privacy, performance, money, time, and psychological), behavioural goals, and perceived usability, are all derived from particular, bespoke models (Chalermpon Kongjit, *et al*., 2022) [8].

4.5.7. Technological Perspective

Perceived utility, perceived usability, and perceived self-efficacy are attributes that are noteworthy and necessary in the relevant sector and comprise the technological perspective, which is significant in the FemTech context (Fred D. Davis, 1989) [22]. It is clear from the literature just mentioned that many research have made relatively isolated and fragmented attempts to define *customer satisfaction* (Mila Nu Nu Htay *et al*., 2022) [44]. FemTech solutions must be promoted to women, and they must have *knowledge* (Mila Nu Nu Htay *et al*., 2022) [44] about the advantages and how to utilise them properly. Campaigns to raise *awareness*, user training, and customer assistance might be involved. FemTech's core components are hardware, software, and data-driven solutions that were created specifically to meet the *needs* (Moshe Hod, *et al*., 2023) [47] of women in terms of health and wellness. FemTech offers the *safety and security* (Hugl, Ulrike, 2010) [31] to lower healthcare inequities and increase access to care by focusing on the unique demands of women's health. FemTech services and products are mostly used by women. To monitor, manage, and enhance their health and wellbeing, they plan to employ this technology. Through *adoption* (Yingyi Zhang, *et al*. 2022) [73] of FemTech, women are more capable of managing their health, making informed decisions, and keeping track of their advancements.

5. Co-word analysis

Technology developed especially for women's health and wellness is referred to as "FemTech," short for female technology. Machine learning and natural language processing (NLP) techniques are used in text mining for FemTech to extract relevant insights and information on FemTech-related goods, services, research, and trends from textual data. FemTech encompasses a wide range of subjects, such as technology, mHealth, telemedicine, pregnancy, sexual health, and menstruation monitoring.



Source: The authors

Fig 8: Word cloud diagram of sample topics (font size reflects the frequency of topic)

The expansion of the platform-based women's health revolution has been accelerated by femitech. The FemTech has made an international impact through multiple angel investors. On the other hand, female-related technology has been greatly impacted by women and health. As females are the element in the society that mostly neglected (Joanna

Collaton, *et al*., 2022) [34] in aspects of health, this technology supports women health. This technology maintains the privacy of data for the individuals. In the below analysis, we can find the major areas and related areas related to FemTech. The most major area is health and second major area is women. Basically, women health is most concern in FemTech. Other important areas are mobile health, application, technology, privacy, etc.

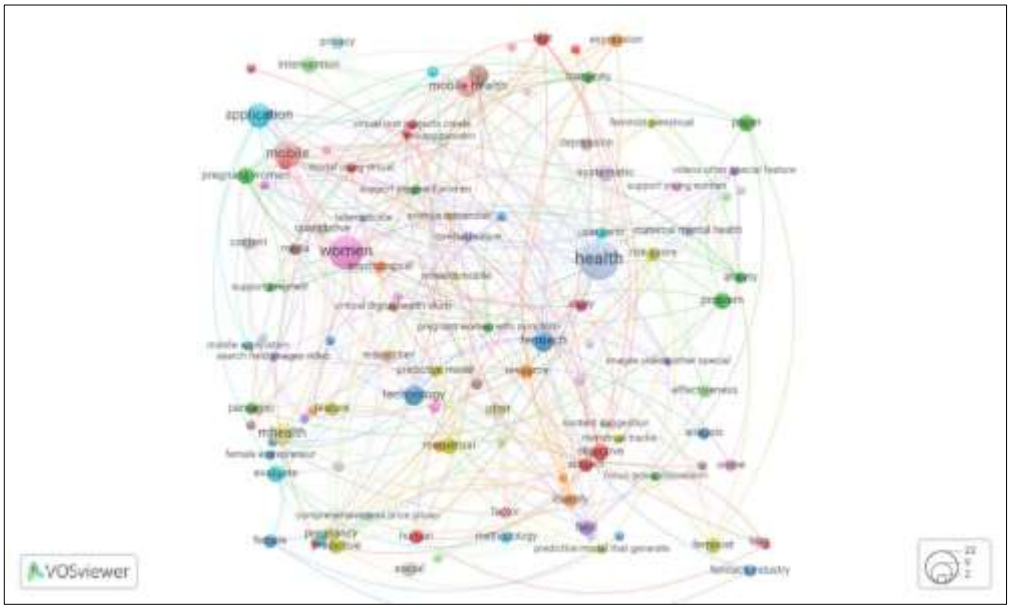


Fig 9: Co-word analysis (i)
Source: analysis withVosviewer

Technology, such as wearables, digital platforms, smartphone apps, and wearables, is widely used in femitech goods and services to provide women with the information and tools they need to better understand and manage their health. Some of the common occurrences of FemTech include menstrual health, reproductive health, maternal and foetal health, sexual wellness, pelvic health, breast health, general healthcare, and telemedicine and telehealth.

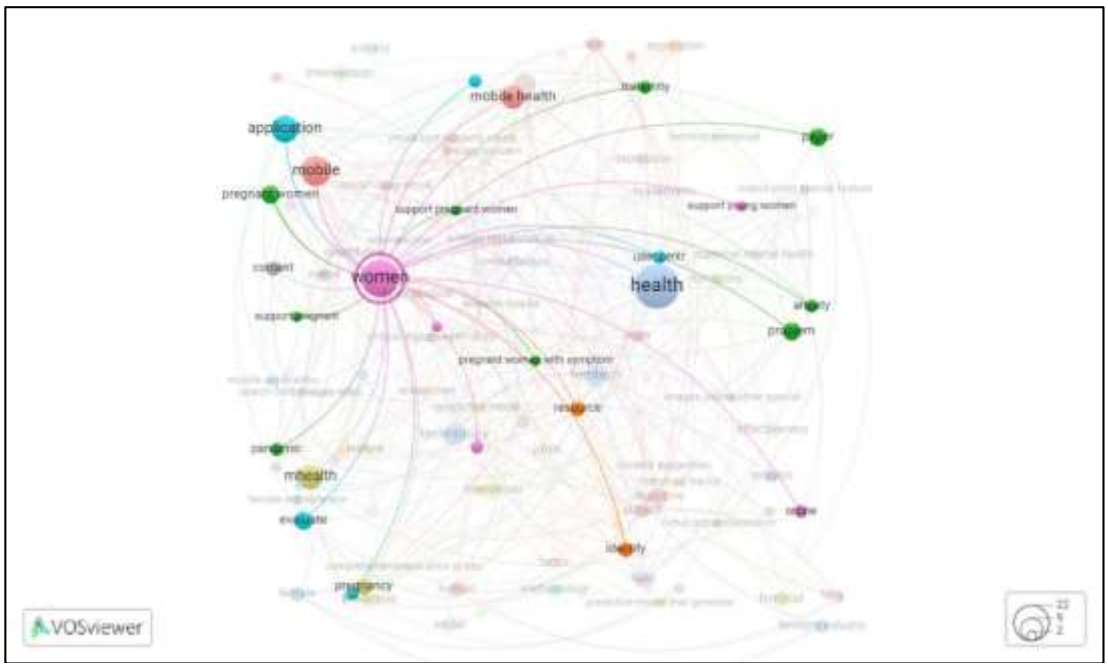
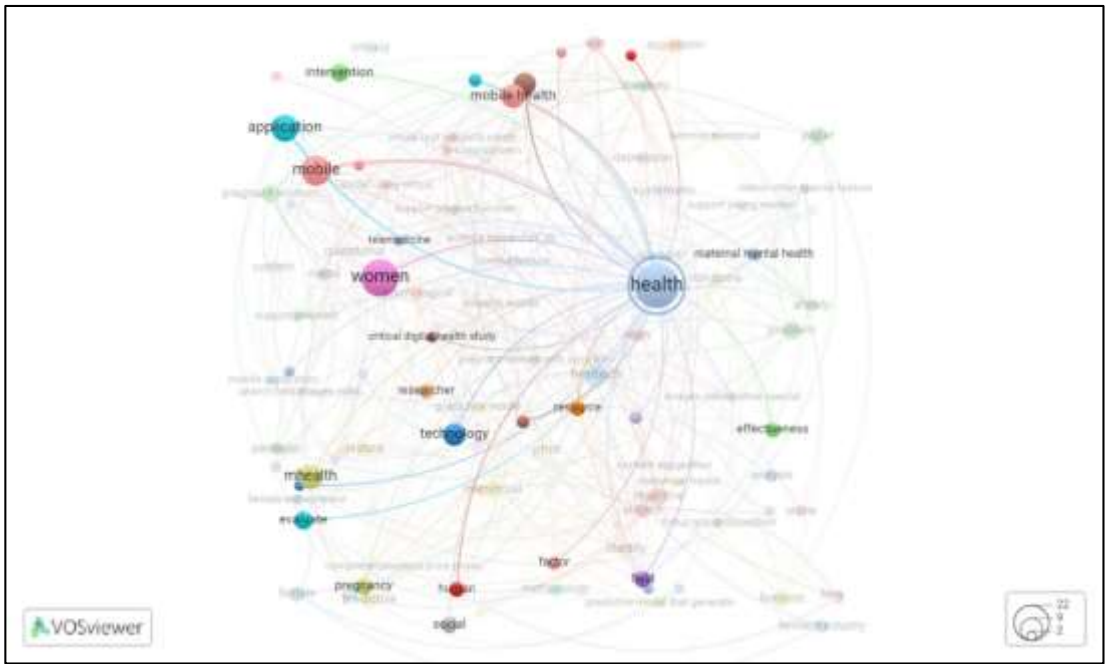


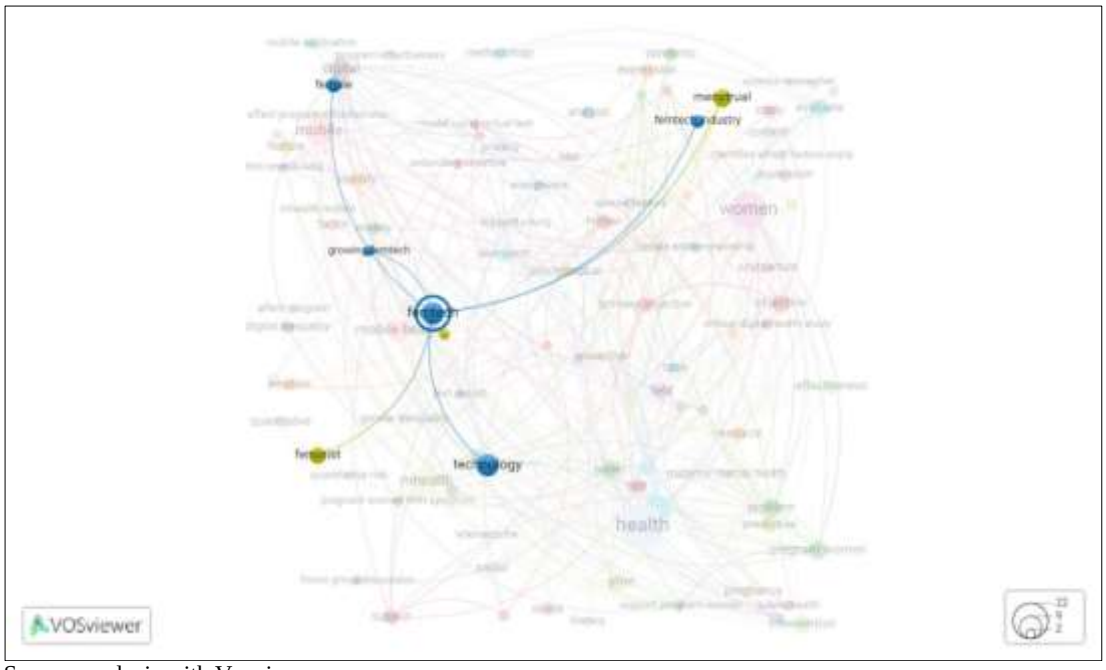
Fig 10: Co-word analysis (ii)
Source: analysis with Vosviewer

The following word clouding is showing the relation of women health and technology. Women may track changes over time and share critical information with healthcare professionals for more precise diagnosis and treatments thanks to the many FemTech platforms that gather and analyse health data.



Source: analysis with Vosviewe

Fig 11: Co-word analysis (iii)



Source: analysis with Vosviewer

Fig 12: Co-word analysis (iv)

The commercial sector and market that have developed around the creation, manufacturing, and distribution of these technologies and goods are explicitly referred to as the "FemTech industry" (Eric Lee, 2020) [18]. The following are some salient features of the FemTech sector: growth and market size, diversity of segments, startups and established players, investment and funding (Forst & Sullivan, 2021) [25], regulatory considerations, consumer empowerment, healthcare integration, privacy and data security, global reach, and social impact.

Overall, the FemTech sector is a fascinating and dynamic one that uses technology and creativity to improve the health and wellbeing of women. As more competitors enter the market (Sumant Ugalmugle, Rupali Swain, 2019) [67] and technology continues to play a crucial role in healthcare, it keeps expanding and diversifying.

As it targets crucial facets of women's health (Krissie Ferris, 2020) [38] that have historically been overlooked in the tech and healthcare industries, FemTech has attracted a lot of interest and investment in recent years. It aims to empower women by providing them with knowledge, better access to healthcare, and the ability to manage their own health.

In conclusion, FemTech has a close relationship to women's health since it provides a variety of technological services and solutions that address the particular healthcare demands and issues that women confront throughout their lives. It aims to increase informational accessibility, healthcare services, and general well-being (Yingyi Zhang, *et al*., 2022) [73] for women of all ages.

6. Conclusions

The exploration of the significance of theories and antecedents in driving consumer adoption of FemTech services reveals a complex interplay of factors that shape women's choices and preferences in the realm of digital health solutions (Deborah Lupton, 2014) [11]. In this comprehensive review, we have illuminated the critical role that established theories and antecedents play in understanding and promoting the adoption of FemTech services. FemTech services hold the potential to empower women by granting them greater control over their health and well-being. The convergence of technology, healthcare, and women's unique needs offers a transformative pathway towards informed decision-making and self-care. Drawing from established theories such as the Technology Acceptance Model (TAM), Health Belief Model (HBM), Diffusion of Innovation Theory, and various social and cultural theories, we have tried to develop a conceptual framework. This framework provides a structured lens through which to analyze and understand the factors influencing FemTech adoption. The TAM suggests that consumers' perceptions of FemTech services are critical in determining their perceived usefulness and ease of use. When users believe these technologies are useful and easy to use, they are more inclined to adopt them. The Health Belief Model emphasises how important it is for adoption to be influenced by perceived risk factors for health problems, perceived advantages of utilising FemTech, and outside cues to take action. These elements emphasise how crucial it is to spread knowledge and offer undeniable advantages. The adoption of FemTech is greatly influenced by social factors, such as social norms and peer pressure. Furthermore, a key component of consumer acceptability is trust, especially when it comes to data security and privacy. Recognizing and addressing cultural values, socioeconomic disparities (Phyllis N. Butow, *et al*., 2012), and gender-specific nuances are essential for tailoring FemTech services to diverse populations effectively. Feminist theory (Rosser, S. V., 2005) [61] underscores the transformative potential of FemTech in dismantling gender disparities in healthcare. By putting women at the center of their health decisions, FemTech aligns with feminist ideals of autonomy and empowerment.

As a result, FemTech services are advancing towards widespread adoption, with potential to improve women's health and wellbeing globally by developing tailored tactics and embracing diverse ideas and antecedents.

6.1 Implication: This thorough assessment of the literature is a useful tool for academics, medical professionals, policymakers, and business players. It offers insights into the complex adoption of FemTech and offers suggestions for creating and putting into action efficient promotional plans (Mingyue Guo, *et al*., 2023) [45]. By comprehending the theoretical foundations and precursors of consumer uptake in FemTech services (1) Create creative and user-friendly FemTech (Nadine Bol, *et al*. 2018) [50] solutions that are in line with perceived usability and simplicity; (2) Using the Health Belief Model (Edward C. Green, *et al*. 2021) [17] as a guide, develop awareness campaigns that highlight FemTech's advantages in addressing women's health concerns; (3) Use social influence theories to promote adoption by utilising social influencers (Yingyi Zhang, *et al*. 2022) [73], medical experts, and supportive networks; (4) Give data privacy and security first priority in order to foster trust while addressing issues raised by privacy theories (Hugl, Ulrike, 2010) [31]; (5) Tailor FemTech services to take into account cultural and socioeconomic diversity while honoring key lessons from pertinent theories (Mesfn Mulugeta Woldegiorgis, 2022) [42] (6) Be aware of the feminist (Alessia De Stefano and Theresa Müller, 2021) [3] viewpoint, which supports empowering women through technology and healthcare.

6.2 Future research direction

Future study is expected to change in reaction to new trends and problems in the industry. Look into the variables that affect women's long-term adoption and continued involvement of FemTech services. The effectiveness of these services depends on being able to sustain user interest and motivation over time. Investigate cross-cultural (Tansey, J., & O'riordan, T., 1999**)** [69] influences on the uptake of FemTech services among various populations and geographically diverse locales. FemTech products can be customised to satisfy the unique demands of distinct cultural groups according to this research. Design effective incentive structures using behavioural economics principles to entice women to use and stick with FemTech services. How to encourage consumers to adopt (Hamed Taherdost, 2018) [28] healthy habits and frequent usage of technology might be the subject of research. Analyse the effectiveness of FemTech services and the actual health results. Future studies can examine if these services result in better health outcomes and whether particular adoption theories (Hamed Taherdost, 2018) [28] are more closely linked to such effects. Investigate ways to improve the integration of FemTech services into current healthcare (Sarah Liu, 2022) [63] systems. The effects on healthcare delivery and the facilitators and inhibitors of such integration can be studied through research. Examine the ethical issues that surround the gathering and mobile application (Kerry Evans, *et al*., 2022) [36] of women's health information in FemTech services. Informed permission, data privacy (Catrona McMillan, 2022) [7], and responsible data use should all be topics of research. FemTech products and services should put a strong emphasis on user-centered design ideas and processes. Research can look at how including women in the design (Sri Nawangsari, *et al*., 2022) [66] process results in more usable and useful products. Analyse the extent to which FemTech services promote inclusivity and alleviate health inequalities (Patricia Homan, 2019) [52] for women. Research can determine whether particular female demographics are underserved or excluded from the advantages of these technologies. Analyse the influence of changing regulatory frameworks on the uptake of FemTech services. Research can examine how legal changes impact the creation and promotion (Mingyue Guo, *et al*., 2023) [45] of these products. Examine how well education and awareness programmes are doing at encouraging the use of FemTech services. Healthcare professionals (Krissie Ferris, March 2020) [38], educational institutions, and community organisations can all play a part in promoting awareness, according to research. Investigate the views of medical professionals on FemTech services and their application in clinical practice (Charity Nicole Shaw, 2021) [9]. The influences on the advice and application of these technologies by healthcare professionals can be studied through research (Nayeri, F., 2021) [51]. Look into how user

education (Emily Guhl, *et al*. 2020) [19] and support affect adoption. On adoption rates (Hamed Taherdost, 2018) [28] and user satisfaction, research can evaluate the effects of user education, customer support options, and user communities. Look at the application of artificial intelligence and predictive analytics to the customization of FemTech services to the preferences and needs of specific users (Moshe Hod, *et al*. 2023) [47]. How machine learning algorithms can improve user experience and health outcomes is a topic for research. Research in these areas will advance knowledge (Mila Nu Nu Htay *et al*., 2022) [44] of the elements that influence adoption and the manner in which as FemTech develops and grows, services for women can effectively improve their health and wellbeing.

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