

AGETECH MEETS OPPORTUNITY: UNLOCKING THE CGM MARKET IN  
EUROPE AND UKRAINE

by

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A thesis submitted in partial fulfillment of the  
requirements for the degree of

MA in Business and Financial Economics

Kyiv School of Economics

2025

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## ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my supervisor, Professor Maxym Obrisan, for his guidance and comments provided during the preparation of this thesis.

I also wish to extend my appreciation to Elena Besedina, whose guidance and suggestions provided the foundation for implementing the initial idea of this paper.

My sincere thanks go to the whole faculty of the Kyiv School of Economics, whose dedication and professionalism made my learning experience both fundamental and enriching. Their teaching has greatly contributed to the analytical and research skills applied in this study.

Finally, I am grateful to my colleagues and peers for their constructive discussions, and to my family for their understanding and constant support during my studies.

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Full Form</b>
<b>CGM</b>	Continuous Glucose Monitoring
<b>rtCGM</b>	Real-time Continuous Glucose Monitoring
<b>isCGM / FGM</b>	Intermittently Scanned CGM / Flash Glucose Monitoring
<b>mHealth</b>	Mobile health apps
<b>PPHG</b>	Post-prandial hyperglycemia
<b>IDF</b>	International Diabetes Federation
<b>NHSU</b>	National Health Service of Ukraine
<b>EU</b>	European Union
<b>GDPR</b>	General Data Protection Regulation
<b>MDR</b>	Medical Device Regulation (EU)
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>DCF</b>	Discounted Cash Flow
<b>WACC</b>	Weighted Average Cost of Capital
<b>R&amp;D</b>	Research and Development
<b>SWOT</b>	Strengths, Weaknesses, Opportunities, Threats

<b>Abbreviation</b>	<b>Full Form</b>
<b>NHS</b>	National Health Service (UK)
<b>EHR</b>	Electronic Health Record
<b>DESI</b>	Digital Economy and Society Index
<b>NICE</b>	National Institute for Health and Care Excellence (UK)
<b>UKCA</b>	UK Conformity Assessed (product marking post-Brexit)
<b>CE</b>	Conformité Européenne (EU Product conformity marking)
<b>GKV</b>	Gesetzliche Krankenversicherung (public health insurance system in Germany)
<b>AARP</b>	American Association of Retired Persons
<b>IT</b>	Information Technology

## CHAPTER 1. INTRODUCTION

Diabetes is a growing health concern among children and adults all over the world, and Europe is not an exception. The burden of diabetes among young people in Europe is considerable: the region has the highest number of living with type 1 diabetes globally, Type 2 diabetes accounts for about 90% of all diabetes cases. This way, approximately 1 in 10 adults (9.8%) in the European Region (aged 20-79 years) have diabetes and the number of people with diabetes are expected to see a 10% increase by 2050 (International Diabetes Federation, 2025). Continuous glucose monitoring (CGM) systems initially were developed for patients with such disease, but recently across Europe and beyond, healthcare systems are undergoing a major shift – from reactive treatment to proactive, preventive care. So, these systems are increasingly being used by individuals who do not have diabetes mellitus. This transformation in particular is caused by aging populations, rising healthcare costs, and the growing demand on longevity and quality of life. Around the world, aging is becoming a leading issue for governments and health care ecosystems as the number of people worldwide over 60 years of age will rise to reach nearly 2 billion by 2050 (Deloitte, 2024). Within this context, Agetech – technologies and services to support aging populations (Sixsmith, et al., 2019) – is emerging as a dynamic and high-potential field, that is evolving from clinical devices into ordinary everyday wellness trackers.

This way, CGM has a high potential for health benefits, but the application possibilities of CGM systems are still far from being fully exploited (Holzer, R., et al., 2022). This research investigates What is the business potential and economic viability of continuous glucose monitoring applications in selected European markets within the broader Agetech ecosystem, and how does Ukraine compare as a prospective market for adopting such preventive health tools among aging populations? It focuses on Germany, and the United Kingdom European markets, where digital health adoption is relatively advanced, and compares these findings with Ukraine, with an emerging market, demographic shifts and still undergoing digital transformations. This way, it is possible to

evaluate whether CGM technologies could be scaled in both developed and developing European contexts, based on consumer attitudes, pricing models, and public health policies.

This research is motivated to explore business innovation, public health, and social impact of CGM applications. Healthcare costs escalate alongside active population aging, so CGM apps might offer not only commercial value but also economic solution through preventive care. Only in the UK start-up activity in AgeTech space has continuously increased during the past years and they alone produced more than £427.8 million in revenue (ATLAS, 2024). CGM technologies can deliver both health benefits and economic returns, and they may become future of preventive care across Europe. Also, in Ukraine specifically, main question is not just whether users would use CGM tools, but whether the country's digital infrastructure and economic conditions can support adoption of such tools.

## CHAPTER 2. INDUSTRY OVERVIEW AND RELATED STUDIES

Today aging is becoming the main issue for governments and health care ecosystems as the number of people over 60 is expected to reach nearly 2 billion by 2050 worldwide. Because of this, the need for elderly care keeps growing and actively initiates the development of innovative technologies, like automation for managing care to support independent living as long as possible and help reduce the burden on caregivers and nursing staff. In 2024, companies at the forefront of such technologies are expected to benefit from this growing demand. Every patient journey can have several stages that are considered inherent to a specific disease. For example, cancer can appear suddenly and decisions regarding treatment can be time sensitive, causing a patient's emotions to run high. Chronic diseases, like diabetes, typically progress gradually and may often be preventable or mitigated with lifestyle changes (Deloitte, 2024). Within the growing Agetech ecosystem, digital tools for chronic disease management in adults are becoming more prevalent (Silva I., et al., 2023).

Among these tools, continuous glucose monitoring (CGM) has become a key innovation for diabetes management. CGM systems consist of a small sensor inserted under the skin, a transmitter that sends data wirelessly, and a receiver (or smartphone app) that displays glucose readings (Toschi E., et al., 2020). There are generally two types:

- Real-time CGM (rtCGM): provides continuous glucose readings and alerts without need for user interaction.
- Intermittently Scanned CGM (isCGM) or Flash Glucose Monitoring (FGM): requires the user to scan the sensor with a reader or smartphone to get a reading.

Continuous wear of the glucose sensor provides the user with detailed information about real-time glucose levels, glucose fluctuations, and other glucose-specific metrics. However, there has been a recent trend among individuals without diabetes to use these

devices in order to monitor their health indicators. Real-time glucose data can help them see how their lifestyle affects glucose levels after meals (Jarvis, 2023).

This landscape could be a missed opportunity within Agetech: the potential to create digital tools that not only support diabetes management but also improve quality of life even of healthy adults. Such tools can support constant user engagement, involve caregivers into this engagement, help users feel emotionally more stable, and even provide real time personalized feedback. In their review, Holzer et al. (2022) from the German Sport University Cologne explored the use of CGM in healthy adults and found a wide range of applications: from the early detection of dysglycemia to the optimization of nutrition, physical activity, and even stress management. In athletic field, CGM data can support pre-, intra-, and post-exercise strategies, and in everyday life it helps users better understand their glycemic responses to different foods, routines, and environments.

This growing interest in continuous glucose monitoring in healthy has also led to a better understanding of specific glucose dynamics, particularly post-prandial responses. Post-prandial hyperglycemia (PPHG) refers to elevated blood glucose levels that appear after food consumption. In individuals without diabetes, PPHG is defined as plasma glucose exceeding 140 mg/dL (7.8 mmol/L) within 1-2 hours after eating. Some glucose fluctuation is normal after meals, especially carbohydrate-rich ones, but typically healthy individuals experience glucose spikes approximately one hour after meal and levels returning to baseline within 2-3 hours (Jarvis et al., 2023).

González-Rodríguez et al. (2019) demonstrated that higher carbohydrate intake corresponds to significantly higher post-prandial glycemic responses, and increased fat intake tends to flatten the post-prandial glycemic curve. He also found out that insulin sensitivity follows circadian patterns and meal timing also affects glucose regulation. For example, evening meals produce higher glucose and insulin levels than identical meals in the morning (Jarvis et al., 2023).

An important phenomenon linked with PPHG is reactive hypoglycemia – state when blood glucose levels below 70 mg/dL (3.9 mmol/L) within four hours after eating. This condition typically follows periods of pronounced PPHG, or a strong glucose spike that triggers excessive insulin release, and then results in a subsequent transient period of mild hypoglycemia, or in simpler term – state when glucose falls too low. Affected individuals sometimes experience symptoms such as hunger, anxiety, dizziness, and sweating. Reactive hypoglycemia is unlikely to be a healthy phenomenon and often signals early impairments in beta cell function and insulin sensitivity. Even mild hypoglycemia preferentially activates limbic-striatal brain regions that increase desire for high-calorie food. In contrast, normal glucose levels (euglycemia) activate the medial prefrontal cortex, which helps regulate appetite and reduce food interest (Jarvis et al., 2023). For older adults, maintaining glucose on the same is especially important, because aging affects metabolism and insulin sensitivity. So basically, aging makes them more sensitive to cognitive effects of glucose swings.

The human brain consumes approximately 120 g of glucose daily and accounts for almost 20% of the body's total energy consumption. The demand emphasizes the necessity of a stable supply of glucose from dietary carbohydrates (Ekstrand et al. 2021). Whole grains and legumes are complex carbs that release glucose and this way can support long-term cognitive function and reducing fatigue when performing cognitively demanding tasks (Meeusen, 2014).

Simple carbohydrates, such as refined sugars, cause rapid elevations and subsequent declines in blood glucose levels, which can impact mood, cognitive function and brain health (Monti et al. 2015). High-fiber carbohydrates that can be found for example in fruits, vegetables, and whole grains, promote the growth of healthy gut flora. The short-chain fatty acids of the microbes instead decrease inflammation and this way can enhance neuroplasticity and brain function (Goyal et al. 2015). Regular consumption of carbohydrates has also been linked with better cognition and reduced risk of neurodegenerative disease such as Alzheimer's in older population (Rahman et al. 2022).

Even in non-diabetic individuals, repeated post-prandial glucose spikes can cause insulin resistance, oxidative stress, and endothelial dysfunction. This eventually increases the risk of atherosclerosis and cardiovascular diseases. Glucose fluctuations between 180–270 mg/dL have been shown to damage vascular function more than sustained hyperglycemia, or constant high glucose (Ceriello et al., 2008). Long-term studies also link higher post-prandial glucose responses to greater mortality, heart failure, and cardiovascular disease risk (Jarvis et al., 2023).

These insights show the relevance of integrating CGM into AgeTech solutions, This technology measures glucose in the interstitial fluid almost continuously, which is very close to blood glucose levels. And even though initially they were developed for diabetes management, now CGM systems are increasingly being used to understand glucose responses and metabolic health in non-diabetic populations (Jarvis et al., 2023).

A study by Dehghani Zahedani et al. (2021) found that CGM devices can detect hidden glucose spikes in 15% of healthy adults and 36% of people with prediabetes. When 448 individuals without diabetes and 192 individuals with diabetes logged their data in a smartphone app and combined together glucose, activity, and nutrition data, more than half of them improved their glucose levels in just 10 days. This experiment proves that such tools can improve health even in non-diabetic people (Jarvis et al., 2023).

So what actually causes such glucose spikes? According to Jarvis et al. (2023), these spikes can be triggered by different factors and individual characteristics such as age, BMI, menopause in women, genetics that affect insulin sensitivity, and gut microbiome composition. Lifestyle habits such as physical activity, meal timing, sleep quality, and stress level also make some impact. But the key role still plays dietary composition, particularly glycemic index, glycemic load, and macronutrient distribution.

Moreover, Asnicar et al. (2021) identified specific intestinal species that produce a favorable gut microbiome and diet has a big impact on it. High-fiber and prebiotic-rich food help to increase the number of such beneficial intestinal species. So, changing diet is

a key way to manage glucose. Studies also show that in order to reduce glucose spikes, people should reduce carbs intake, and instead of simple carbs include to their meals complex ones. To feel fuller, it is important to also include dietary fiber into meal plans. It increases satiety and serves as prebiotic material for beneficial gut bacteria (Jarvis et al., 2023). Low-glycemic diets also reduce hunger and make control of calories easier. This is very important in terms of weight management and research showed that individuals with access to CGM data improved their body weight, BMI, fat mass, fasting plasma glucose, HbA1c, and cholesterol profiles more than control subjects after just eight weeks. So, tracking meals and glucose spikes has lots of health benefits and for older adults, whose microbiome health gets poor with age, dietary recommendations based on CGM companion devices could help improve their gut health.

Besides weight management and lowering heart risk, CGM-based diet tracking may help protect cognitive function in older adults. Cognitive resistance and decreased aging in the brain were noted among models of animals under diets comprising more carbohydrates and minimal protein. Furthermore, a multi-decade observational study of 3,307 participants revealed that greater glycemic variation during young adulthood correlates with worse mental processing speed, memory, and language fluency in middle age, independent of fasting glucose levels (Jarvis et al., 2023).

Mobile health apps (mHealth) very often offer a way to monitor not just basic patient's health conditions, such as diet or body weight, but also blood pressure, mood, physical activity and sleep, which will be very important to combine for more precise glycemic control (Maaß et al., 2022).

Physical activity following meals has consistently proven effective in reducing post-prandial glucose excursions. Frampton et al. (2022) demonstrated that acute aerobic exercise performed in the post-prandial period decreased glucose and insulin concentrations in healthy adults. Importantly, even low-intensity activities such as walking can produce meaningful benefits.

Sleep quality research shows mixed results, some studies indicate that high-glycemic-index foods may influence sleep latency, duration, and quality. A CGM study of 104 adults without diabetes found that sleep duration negatively correlated with blood glucose levels, while diets high in sugar, starch, and refined grains were associated with higher rates of insomnia (Jarvis et al., 2023).

Integrate mobile health features into companion apps for continuous glucose monitors therefore can bring great value. Glucose data from these devices can be merged with user inputs on activity, sleep, and diet, so that users can better manage their glucose spikes. However, despite its potential, there are concerns about sensor accuracy, discomfort with physical application of such devices, data fatigue, and limited reimbursement opportunities.

Reimbursement for the systems typically covers Type 1 diabetes patients with Type 1 diabetes and sometimes extends for high-risk patients with Type 2 diabetes in some regions. This coverage slightly improves access and market penetration.

Most existing solutions generally come in two categories. Device-specific solutions refer to monitoring systems that work only with specific glucose sensors. For example, FreeStyle LibreLink and Dexcom G7 apps work only with their own branded sensors. Platform solutions, like MySugr or OneTouch Reveal, are more software-centric and may support data from different glucose monitoring devices. Both show real-time glucose trends, but usually they don't offer deeper interaction with user or emotional support during their interaction with the application. Some apps include medication or activity logs, and basic gamification, but for older adults or people with cognitive or physical limitations these functionalities very often are simply too complex.

The Deloitte Global Health Outlook in 2024 identified five major drivers in healthcare industry: innovation, sustainability, social care integration, cost management, and workforce adaptation. Aging population is one of central focuses now and governments are also aware that health systems can avoid more costly interventions in the

future if they address these issues in advance. This way, new technologies for prevention and self monitoring, become essential for future healthcare systems.

In the Ukrainian context, Dushyna's thesis titled Prospects for PlayOrtho Project in Conditions of Ukrainian Market (2020), provided a great methodological approach for this study. The PlayOrtho app was designed to provide digital reminders and habit tracking in pediatric orthodontics. Dushyna's work included business and economic part like market analysis, financial modeling, and SWOT analysis, but her paper was focused on the Ukrainian market. This study now applies her to the AgeTech field

From a business perspective, age group of people over 50 becomes a key target for preventive health technologies. This age group is more vulnerable to chronic diseases such as type 2 diabetes. All selected countries now face major demographic challenges as their older adult populations grow, so they are very relevant to become pilot countries for applications like this one.

Germany is projected to have its type 2 diabetes prevalence to grow from 10.5% in 2015 up to 20% by 2040 (Tönnies T, et al., 2025). In the UK prevalence among adults was 7.8% in 2021 and is also only rising with time.

Ukraine faces same even worse demographic issues. Moreover, economic instability and limited healthcare funding make adoption and reimbursement of expensive medical devices harder there. But Ukraine's strong IT sector has potential for developing affordable digital health solutions, especially in the context of growing number of older population, driven by historical demographic trends and recent migration of younger populations. Also, as a part of its EU integration efforts, Ukraine is harmonizing its health regulations with European standards. This includes data protection (like GDPR legislation), medical device certification (like EU MDR), and digital public services. Exploring the EU market is therefore not only relevant from a geopolitical perspective, but it also can help to understand how Ukraine's health tech innovations can grow in the future.

## CHAPTER 3. METHODOLOGY

The main purpose of this paper is to evaluate the business potential of continuous glucose monitoring (CGM) systems for older adults who are at risk of Type 2 diabetes across European and Ukrainian markets. The main research question is *What is the business potential of continuous glucose monitoring applications in selected European agemarkets, and how does Ukraine compare to them?*

To make conclusions about potential of CGM applications for older adults, paper used both qualitative and quantitative approaches.

The qualitative part includes a comparative study of Germany, the United Kingdom, and Ukraine. These countries were selected because they have different healthcare systems, economic conditions, and digital health maturity. The overview of academic and industry sources helped understand CGM applications, digital health trends, and preventive care strategies. Afterwards, based on SWOT and the Business Model Canvas principles, this study evaluates the solution market position and possible go-to-market strategies.

The quantitative part focuses on market size and economic modeling and estimates the Total Addressable Market (TAM), Serviceable Available Market (SAM), and Serviceable Obtainable Market (SOM) for each selected country. These calculations were made based on demographic data, diabetes prevalence rates, and technology adoption indicators. For revenue projections

Based on assumptions about pricing models, user adoption, and market penetration over time, revenue projections were made. Market Readiness Index (MRI) was used to compare market conditions within the selected countries. It showed readiness of each country and includes six dimensions: policy and regulation, infrastructure readiness, consumer readiness, economic accessibility, health system burden, and innovation ecosystem.

The Business Model Canvas, developed by Osterwalder and Pigneur (2010), helped to explain how a CGM-based mobile application can create and deliver value. This way it was possible to form components such as customer segments, value propositions, revenue streams, partnerships, and cost structure, and also understand how the business model might need to adapt to different market contexts.

Germany, the United Kingdom, and Ukraine were chosen as case studies that represent different healthcare and economic conditions within Europe. Germany provides a social insurance model example with one of the most advanced digital maturity, the United Kingdom has universal coverage through the NHS with rapidly progressing digital health integration, and Ukraine is a transitioning system in the post-Soviet space. These differences help identify advantages and barriers for the technology adoption. Economically, the research focuses on two high-income and one developing countries. However, all three countries are experiencing demographic aging, but this only increases the relevance of this technology.

Overall, this approach covers social, economic, and policy perspectives and provides a holistic view of the CGM market. This can help identify how AgeTech solutions can scale across different European countries in the future.

## CHAPTER 4. DATA

Global institutions have a great variety of reports and statistical databases with standardized metrics that were used in this paper. For example, the International Diabetes Federation's Atlas 11th Edition (2025) had epidemiological data for diabetes prevalence, prediabetes indicators, and undiagnosed cases across different countries. The World Health Organization provided data for health metrics, healthcare expenditure, and digital health policy frameworks. The World Bank has economic indicators such as GDP per capita, R&D spending, and internet penetration. OECD data was used to compare healthcare systems and digital adoption. Commercial and industry databases provided market-specific insights on CGM technology, consumer behavior, and business models. For example, Grand View Research projected growth of the UK CGM market from USD 532.2 million in 2024 to USD 1,952.8 million by 2033. For Germany, Mordor Intelligence projected that CGM market will also grow from USD 488.74 million in 2025 to USD 757.18 million by 2030. Additional industry sources such as Cognitive Market Research provided CGM user demographics and adoption rates, and Statista covered age-specific trends in demographics and technology use.

Country-specific data sources helped to understand the market potential in each study country. National statistical offices, like Germany's Federal Statistical Office, the UK Office for National Statistics, and the State Statistics Service of Ukraine, provided demographic information that was used to estimate market size. National health authorities such as the UK National Health Service (NHS), the German Federal Ministry of Health, and the Ministry of Health of Ukraine, provided key policy and regulatory information about reimbursement rules, digital health policies, and strategic priorities. Industry reports also added context, for example Spherical Insights' estimate that Germany's prediabetes market will reach USD 84.21 million by 2035, as well as WeCovr's finding that more than one in three adults in the UK currently has prediabetes.

This paper targeted adults aged 50 and older with a focus on three sub-populations:

1. Current primary market for CGM technology – individuals with diagnosed Type 2 diabetes
2. Emerging preventive market – this is individuals with prediabetes or impaired glucose tolerance
3. Health-conscious older adults without diagnosis representing the potential wellness and longevity market.

This focus was justified by epidemiological evidence from the Rotterdam study, which demonstrated that approximately half of individuals diagnosed with prediabetes at age 45 would eventually develop diabetes with 10-year progression risk of 9-14% (van Herpt et al., 2020).

To estimate market size across three countries, only population aged 50 and older from national demographic data was used.

Current CGM adoption was estimated through two methods. First, market value data were divided by the average annual spending per user to derive estimated user counts. Second, these results were validated against published industry reports if available.

Revenue projections formula:  $MP = N \times MS \times P \times Q$

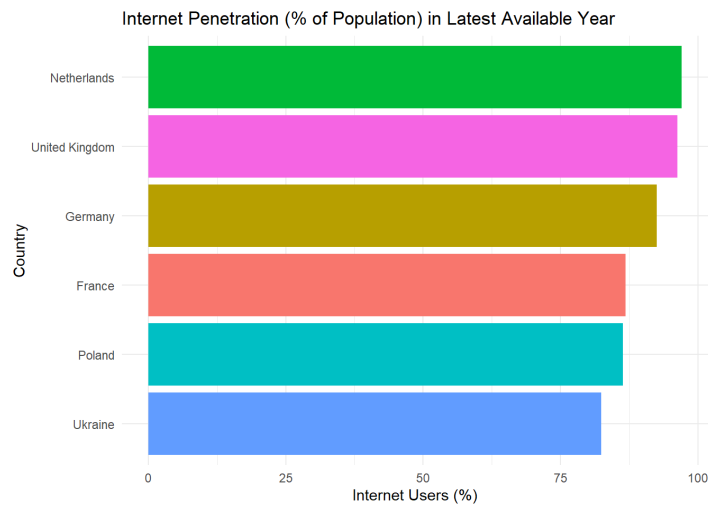
Where  $MP$  = Market Potential,  $N$  = Target Population Size,  $MS$  = Market Share (adoption rate),  $P$  = Price,  $Q$  = Quantity (usage period).

This model was applied to three revenue streams: subscriptions, in-app purchases, and one-time purchases.

For Market Readiness Index estimation, there were standardized indicators across six dimensions used:

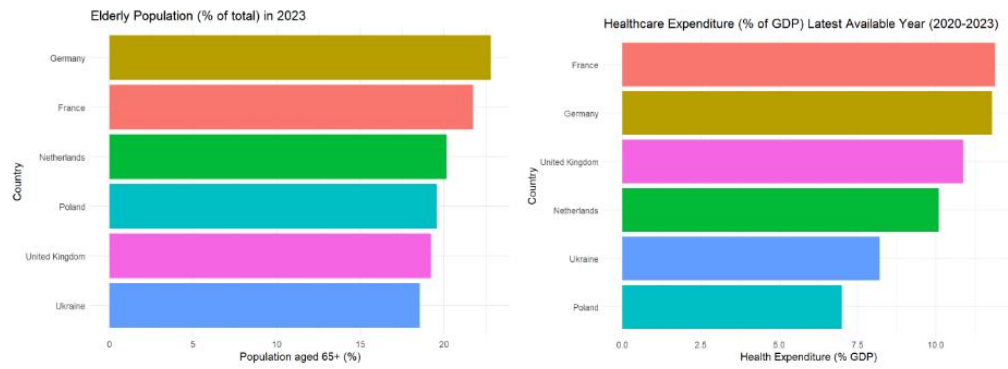
1. Policy and regulation: reimbursement status, regulatory frameworks, and certification requirements.
2. Infrastructure: digital health systems, EHR adoption, and broadband/mobile penetration. Differences in digital infrastructure illustrated by World Bank data on internet penetration (Figure 1).

*Figure 1. Internet penetration in selected countries. Source: World Bank (2025)*



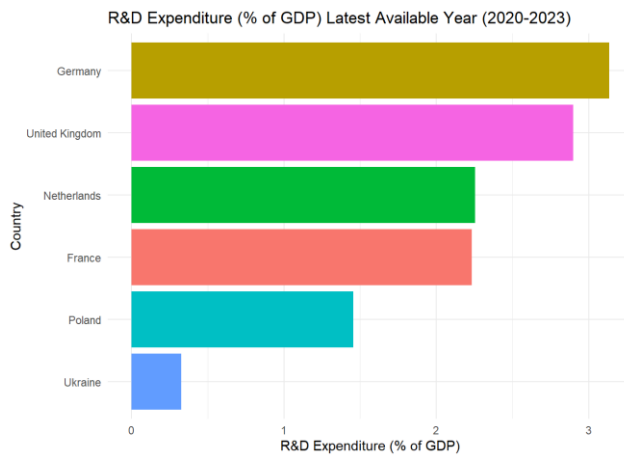
3. Consumer readiness: digital literacy, health awareness, and smartphone penetration.
4. Economic accessibility: GDP per capita, healthcare spending, and out-of-pocket costs.

*Figure 2. Elderly population and healthcare expenditures. Source: World Bank (2025)*



5. Health system burden: aging demographics, diabetes prevalence, and healthcare system strain.
6. Innovation ecosystem: R&D expenditure, startup activity, and clinical trials. R&D investment disparities were illustrated by World Bank indicators (Figure 3).

Figure 3. R&D Expenditures. Source: World Bank (2025)



7.

Within the research, several data limitations were identified. First, Ukraine lacked national data on prediabetes prevalence. To fill this gap, regional studies from the Ivano-Frankivsk area were used as proxies, to apply that around 13.3% of adults has undiagnosed prediabetes.

Estimating exact CGM user numbers was also challenging, because for this only secondary data sources were available. Consumer attitudes and adoption willingness were also derived from published studies and market reports. In cases where official figures were unavailable, market value was divided by average per-user annual spending, and results were adjusted to similar market conditions.

Differences in reporting standards between countries and between institutional and commercial datasets were also challenging. In order to ensure consistency, all financial statements were reported in U.S. dollars.

Despite these limitations, combination of multiple sources and methodological adjustments helped to make comparative analysis and market projections possible and reliable.

## CHAPTER 5. RESULTS

### 5.1. Country selection justification

For this paper three case study countries were selected: Germany, the United Kingdom, and Ukraine. With these three countries it was possible to compare countries with very different health infrastructures, regulations, and demographics, all of which may affect CGM scalability and market growth.

Germany for example is the ideal case, because it has one the most advanced healthcare systems in Europe and over 20% of its population is projected to be living with type 2 diabetes by 2040. At the same time, it has policies like the Digital Healthcare Act (DVG, or DiGA framework) and established reimbursements, strong government support for preventive digital tools, active startup ecosystem and high R&D spendings, which makes it a leader in medical innovations.

The United Kingdom is another high-income country that has centralized public health system – the National Health Service (NHS). The UK has high rates of EHR usage and an very digitized care delivery model. CGM access is expanding through the National Institute for Health and Care Excellence (NICE) guidelines (Breakthrough T1D, 2025). Although some regional inequalities still exist, the combination of public-sector digital strategies, AgeTech investments, and telehealth adoption show how policy and innovation can work together to support innovation growth.

Ukraine, in contrast, represents an emerging market, but with rapid digital transformation. As part of the Soviet Union, Ukraine's hospital system was deeply rooted in the Soviet regime, and even after the country gained independence in 1991 and healthcare infrastructure and reimbursement models are still developing. Moreover, war brings enormous damage and disruption to health care systems. According to the Ministry of Health of Ukraine, from February 2022 to August 2023, 1591 medical facilities were

damaged and 210 more ruined, not including health care assets such as hospital transport, personnel, patients, supplies, and warehouses. In addition to direct attacks on hospitals, access to medical services has been indirectly affected by security concerns, restricted mobility, broken supply chains, shortages of diagnosis kits and medicine, mass population displacement, and power outages (U. Haque, et al., 2024). Also, the same way as Germany and the UK, Ukraine is facing a serious challenge from an aging population, which only becomes more severe due to war, low birth rates, and emigration. Since independence in 1991, Ukraine's population fell from over 50 million to around 31 million in Kyiv-controlled areas by 2024. Fertility rate dropped from ~2.3 in the early 1990s to just 0.9 in 2024, which below the 2.1 replacement level. The median age increased from 41 in 2020 to 45 in 2024. Currently, 25% of the population is aged 60 or older, and this share is expected to grow, as noted by Daryna Marchak, First Deputy Minister of Social Policy of Ukraine. Diabetes prevalence is high, with a large share undiagnosed, and CGM usage remains limited due to regulatory and financial barriers. So Ukraine brings a different perspective to the analysis: how can innovative tools like CGM be introduced and scaled in environments where digital ambition exists, but medical readiness still lags?

This way it is possible to capture a broad spectrum of market readiness scenarios, from highly structured and well-funded systems to emerging ones with strong digital intent but more fragile healthcare frameworks. This comparison then can help understand the drivers and blockers across Europe and neighboring regions.

One of the ways – is a market readiness indicator. The term “market readiness” (MRI) is a term to describe the necessary technical, policy and institutional frameworks that a country and/or its entities need to access and employ, through market mechanisms, private and public financing for adoption of the technology. It describes the various elements, or building blocks, needed to make the intended market mechanism operational – i.e. the key components of market readiness (Aasrud, A. et al, 2010). The MRI evaluates readiness across six key dimensions – Policy & Regulation, Infrastructure Readiness,

Consumer Readiness, Economic Accessibility, Health System Burden, and Innovation Ecosystem.

Based on analyzed literature and data, there is clear readiness gap between Germany and the United Kingdom, which are well-positioned for CGM expansion, and Ukraine, whose market shows promise but remains in early stages of development.

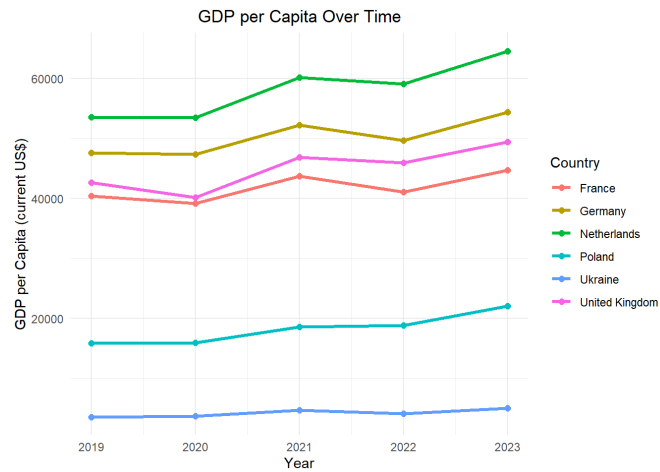
Germany demonstrates strong institutional support for CGM: country has national reimbursement for insulin users since 2016 and regulatory compliance with the EU Medical Device Regulation (MDR) (Yong Du, et al, 2025). Similarly, the United Kingdom has established CGM reimbursement through NICE guidelines for all patients with Type 1 diabetes and other high-risk groups (J. Isitt, et al, 2022). Also, after country's Brexit, regulatory approval is transitioning from CE marking to the UKCA (UK Conformity Assessed) system. Ukraine, in contrast, lacks broad reimbursement for CGM and country's current policies are limited to only strategy recommendations.

In terms of infrastructure readiness, both Germany and the UK have mature digital health systems. Electronic Health Records (EHRs) and ePrescription platforms are widely used in primary and secondary care. Internet penetration is also high. Ukraine's infrastructure is improving, but has gaps in EHR coverage and the country also has lower eHealth platform usage outside urban areas. This urban-rural divide also limits equal access to digital health tools.

In Germany and the UK, high levels of digital literacy, strong smartphone penetration, and increasing awareness of CGM make adoption conditions very promising. Both countries have highest DESI Human Capital within Europe. By contrast, consumer readiness in Ukraine is constrained by lower digital literacy and public awareness regarding diabetes. However, smartphone adoption is rising steadily, so there is a future potential for mobile-based solutions.

According to the World Bank data, Germany and the UK both have high GDP per capita and strong public investment in healthcare. Reimbursement systems cover most of the cost burden. Ukraine, however, has a lower per capita income and high out-of-pocket expenditures. Subsidy mechanisms are not widely available, and price remains a key barrier (Vlasenko, et al, 2022).

Figure 4. GDP per capita in selected countries. Source: World Bank (2025)



All three countries face significant pressure with aging populations and high rates of Type 2 diabetes.

In Ukraine, limited access to CGM and inconsistent diabetes monitoring may put even more pressure on an already pressured health system.

Germany and the UK benefit from digital health innovation environments. AgeTech startups, health-focused accelerators, and consistent R&D investment are among such innovation drivers. Ukraine’s innovation ecosystem is still emerging, and has limited AgeTech-specific startups. However, there is a great potential, as Ukraine has large ambitions to work on alignment with EU innovation frameworks and regulatory standards.

Overall, Germany and the United Kingdom exhibit strong readiness across all six dimensions, so they are potentially a favorable environments for CGM adoption and AgeTech expansion. Ukraine presents a developing but promising market. While structural

and economic challenges remain, the country's digital ambition, demographic trends, and ongoing regulatory alignment with the EU suggest that targeted interventions and international partnerships could accelerate readiness in the near future.

## 5.2. Country by country analysis

During the research of the population based in the Rotterdam area in the Netherlands, approximately half the individuals diagnosed with pre-diabetes according to ADA-definition and approximately two-thirds of WHO-defined pre-diabetes at age 45 years would eventually develop diabetes. Furthermore, women with pre-diabetes at age 45 years had higher lifetime risk to progress to diabetes than men. Moreover, for people 45 years old with prediabetes, the 10-year risk of developing Type 2 diabetes is 9% to 14%, and more than 80% of people with prediabetes don't know they have it, as it often has no symptoms. The good news is that it's possible to reverse prediabetes with healthy lifestyle changes, so the target user group for me will be the population over 50 years old (van Herpt T\*TW, 2020).

Additionally, retirees are a valuable consumer demographic because they have spending power. The 50-plus population accounts for half of global consumer spending. By 2050 this figure will reach nearly 60%, or \$96 trillion, according to an economic analysis done on behalf of American Association of Retired Persons (AARPa), an advocacy group for older Americans.

According to the State Statistics Service of Ukraine, as of 2022 there were over 15 million people aged over 50 in Ukraine. For the UK it is over 26 millions (Statista, n.d.) and for Germany it is roughly 46 millions (Federal Statistical Office of Germany 2024).

Germany's prediabetes market grows mainly due to demographic shifts, such as an aging and increasingly urbanized population, along with lifestyle changes that prioritize convenience over physical activity. About 15% to 20% of adults are estimated to have prediabetes as of 2025. This corresponds to roughly 10 to 13 million people when applied to the adult population aged 20 to 79. Growing public concern over chronic disease prevention has led to a surge in demand for early detection tools and health-tech innovations. The Germany Prediabetes Market Size was estimated at USD 28.20 Million in 2024 and is expected to Reach USD 84.21 Million by 2035 (Spherical Insights, 2024). The Germany Continuous Glucose Monitoring Market size is estimated at USD 488.74 million in 2025, and is expected to reach USD 757.18 million by 2030. Moreover, according to Cognitive Market Research report on Continuous Glucose Monitoring Market in 2025, while exact user counts are not universally published, it is known that CGM adoption is expanding due to favorable reimbursement policies and growing awareness of CGM benefits. Estimates suggest that upwards of 300,000 to 500,000 people with diabetes in Germany may currently use CGM technology, supported by a healthcare infrastructure that promotes digital health tools and patient-centric care (Mordor Intelligence, 2025).

In the UK, as of 2025, estimates suggest the number of CGM users is in the range of 300,000 to 400,000, with strong demand especially among insulin-treated type 1 and type 2 diabetes patients (Grand View Research, 2025), and its continuous glucose monitoring devices market generated a revenue of USD 532.2 million in 2024 and is expected to reach USD 1,952.8 million by 2033.

WeCovr data projections for 2025 reveal also that more than one in three adults in the UK are now living with pre-diabetes. The UK prediabetes market generated a revenue of USD 15.7 million in 2023 and is expected to reach USD 26.9 million by 2030 (Grand View Research, 2025).

About Ukraine, as of 2025, continuous glucose monitoring is still emerging in country's diabetes care landscape, with relatively limited but growing adoption. Market data

shows the diabetes care devices market in Ukraine is valued at about USD 42.36 million in 2025, much lower compared to Germany's market size worth hundreds of millions of USD. Moreover, the Ukrainian healthcare system has less expansive reimbursement policies and digital health infrastructure compared to Germany. Given Ukraine's adult population of roughly 35-40 million, applying prediabetes prevalence of about 13% suggests that approximately 4.5 million adults in Ukraine might currently meet prediabetes criteria. The exact number of people with prediabetes is less frequently reported, but according to a regional study in the Ivano-Frankivsk region of Western Ukraine, about 13.3% of adults had undiagnosed prediabetes based on fasting blood glucose measures. The overall diabetes prevalence in Ukraine among adults aged 20-79 is estimated at around 6-7% as of 2024-2025.

The table below presents a comparison of the potential market for CGM solutions in Germany, the United Kingdom, and Ukraine. The main purpose is to identify the target population segments, assess the prevalence of diabetes and impaired glucose tolerance, and estimate the adoption potential for CGM-based digital health interventions.

The data combines demographic indicators (population size, population aged 50+), epidemiological indicators (diabetes prevalence, type 1 and type 2 diabetes breakdown, insulin dependence, and undiagnosed cases), and market-specific information (current CGM users, estimated market size, and average annual spending per user) in order to estimate the serviceable obtainable market (SOM) today and the potential expansion in the coming years.

*Table 1. Overview of the potential market*

	<b>Germany</b>	<b>UK</b>	<b>Ukraine</b>
Population	83510950	69226000	37860221
Population 50+	46000000	26000000	15000000

Diabetes prevalence <sup>1</sup>	7.80%	7.40%	6.00%
Diabetes cases	6485300	4454600	2276800
Prevalence of impaired glucose tolerance	8.30%	5.40%	2.50%
Diabetes T1 <sup>2</sup>	336936	340794	108643
Diabetes T2	5836770	4009140	2049120
Insulin dependent t2 (25% of t2)	1459193	1002285	512280
Undiagnosed	20%	29%	37%
Potential adoption within diabetes patients at the moment	561387	473092	-
Potential adoption within diabetes patients - max	1796129	1343079	620923
CGM market size	USD 488740000	USD 532200000	USD 42360000
Average annual spending	USD 2200	USD 1750	USD 1750
Estimate user numbers = Market size / Cost per user	222155	304114	4206
Current CGM users - reported	400000	350000	-

Diabetes prevalence is based on WB, IDF and national demographic statistics databases.

Prevalence of impaired glucose tolerance (IGT) is the percentage of people in the population who are not yet diabetic but have abnormal glucose levels after eating (higher

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<sup>1</sup> Diabetes prevalence refers to the percentage of people ages 20-79 who have type 1 or type 2 diabetes.

<sup>2</sup> All age groups

than normal but not high enough to be diabetes) and is basically a measure of prediabetes risk. People with IGT are much more likely to develop type 2 diabetes in the coming years if no lifestyle changes are made. Not necessary for the initial stage, but good for long term vision and future market expansion. Same applies to undiagnosed cases represented as a percentage of the total diabetes population (IDF data). This also highlights the underestimation of the actual diabetic population and the possible future demand for CGM solutions once diagnosed.

The Atlas notes that Type 2 diabetes accounts for a vast majority (around 90%) of all cases. Also, it was assumed that 25% of Type 2 diabetics require insulin, based on clinical guidelines (Farmer et al., 2021).

Potential adoption within diabetes patients calculated by applying conservative adoption rates to the insulin-dependent population. In selected counties, around 80% of people with Type 1 diabetes now have access to CGM technology. Additionally, NICE guidance currently recommends CGM for adults with type 2 diabetes who take more than one daily insulin injection, yet at this stage their fraction may not reach even 20%. Maximum adoption potential is calculated by applying higher penetration rates, which are all insulin dependent patients.

CGM market size is reported from industry sources, reflecting the total monetary value of the CGM market in each country and is used for Average annual spending per user, which is estimated based on typical CGM sensor and device costs in each country. Then estimated user number is derived by dividing the reported market size by the average annual spending per user. Where available, on the last row industry data on current CGM penetration was added to validate the estimates.

The annual cost of CGM systems varies by country and system type. On average, a CGM user in Germany spends approximately USD 2,200 per year, while in the UK and Ukraine, the average annual spending is roughly USD 1,750 per patient. These values reflect the combined cost of sensors, transmitters, readers, and other necessary components, and

they serve as a practical benchmark for estimating the number of users from market revenue. Generally, in Europe, the average annual out-of-pocket cost for CGM systems ranges from approximately €1,000 to €3,000 (~USD 1,100 to 3,300), depending on device type and region. Actual costs may vary depending on the system configuration, brand, and frequency of sensor replacements, but the logic behind this is the following.

NICE's economic model report for intermittently scanned CGM (isCGM), such as the FreeStyle Libre, states the sensor cost is £35 each and lasts 2 weeks. Therefore:

$$26 \text{ sensors/year} \times \text{£}35 = \text{£}910 \text{ per year per patient}$$

This range from £910 via sensor-only cost to £2,000 including hardware and support translates approximately to USD 1,200-2,500 annually.

Since 2016, German statutory health insurance has a policy to reimburse the costs of CGM systems for patients who are on intensive insulin therapy (typically defined as more than three daily insulin injections). CGM systems in Germany are expensive, costing between €1,500 and €3,000 per patient annually.

The annual cost of continuous glucose monitoring systems in Ukraine varies depending on the system type and configuration, but it is approximately:

Sensors for the Medtronic Guardian Sensor 3 cost about 2,500-12,800 UAH per pack (5 pcs), with an average yearly need of 30-40 sensors. This results in roughly 15,000–100,000 UAH per year (~USD 360-2,400).

FreeStyle Libre 3 sensors cost about 3,600-4,000 UAH per sensor, usually replaced every 14 days, i.e., about 26 sensors per year. The annual cost is therefore approximately 90,000-104,000 UAH (~USD 2,160-2,496).

Transmitters, readers, and other components may cost 5,000-15,000 UAH or more per year, depending on replacement needs (~USD 120-360).

The simplest monitoring systems (e.g., Medtronic iPro 2) can cost about 50,000 UAH for the device (~USD 1,200).

Thus, the total annual cost of CGM systems in Ukraine can range from approximately 50,000 to 100,000 UAH or more (~USD 1,200-2,500), depending on the brand, number of sensors required, and accessories.

These calculations are important for the initial phase, as the primary target group of adults aged 50 and older with diabetes or prediabetes already represents the main user base for CGM technologies. This group not only carries the highest burden of disease but also demonstrates an increasing willingness and ability to adopt digital health interventions, especially when supported by reimbursement frameworks in countries like Germany and the UK.

Over time, however, the target user group can be expanded and include health-conscious individuals from younger age groups. Such users may not yet be diagnosed with diabetes or prediabetes but are motivated to prevent metabolic deterioration, optimize nutrition, and maintain healthy aging. This broader positioning will allow the application to reach both medically indicated and preventive markets, that aligns with current trends in digital health and AgeTech.

Total Addressable Market might be all adults 50+ with diabetes, prediabetes, and also health-conscious users motivated to track and manage their glucose (even without diagnosis). That way, TAM is not only a “disease population” but also includes the preventive and wellness market.

- Germany:  
50+ population = 46M  
Diabetes prevalence = 7.8% → ~6.49M  
Prediabetes prevalence (IGT) = 8.3% → ~3.82M  
TAM = 6.49M + 3.82M ≈ 10.3M

- UK:  
50+ population = 26M  
Diabetes prevalence = 7.4% → ~4.45M  
Prediabetes prevalence = 5.4% → ~1.4M  
TAM = 4.45M + 1.4M ≈ 5.9M
  - Ukraine:  
50+ population = 15M  
Diabetes prevalence = 6% → ~2.28M  
Prediabetes prevalence = 2.5% → ~0.38M  
TAM = 2.28M + 0.38M ≈ 2.7M
- Total TAM across 3 countries ≈ 18.9M

Serviceable Available Market - those eligible for CGM given reimbursement & affordability.

Assumption: mainly insulin-dependent Type 1 + Type 2 (~25% of T2D).

- Germany: Insulin-dependent = 1.46M
  - UK: Insulin-dependent = 1.00M
  - Ukraine: Insulin-dependent = 0.51M
- Total SAM ≈ 3.0M

Serviceable Obtainable Market - the share of SAM the app can realistically capture in early years.

Assumption: 10% adoption in 5 years (reasonable for a new app supported by reimbursement & partnerships).

- Germany:  $1.46M \times 10\% = \sim 146,000$  users
  - UK:  $1.00M \times 10\% = \sim 100,000$  users
  - Ukraine:  $0.51M \times 5\%$  (lower due to affordability) = ~25,000 users
- Total SOM ≈ 270,000 users

### 5.3. Market potential

This part is a modeling of the potential revenue when the app reaches the preventive, health-conscious 50+ audience, not just the currently eligible CGM users. The primary target group is adults aged 50+ in Germany, the United Kingdom, and Ukraine who are living with or at high risk of type 2 diabetes. This age group is selected due to its higher prevalence of prediabetes and diabetes and greater healthcare spending compared to younger populations.

The analysis focuses on three markets:

Germany (high healthcare spending, strong adoption of digital health, established reimbursement for CGM).

United Kingdom (universal healthcare, rapid digital adoption, strong NHS role in CGM distribution).

Ukraine (emerging market with increasing diabetes prevalence, limited reimbursement, but growing private demand).

The market is shaped by three global CGM manufacturers: Abbott, Dexcom, and Medtronic. In addition, digital health startups and lifestyle-oriented platforms (e.g., Nutrisense, Lingo, Undermyfork, mySugr) are expanding into the prevention and wellness segment and also target individuals with prediabetes.

Market size (N): From the Rotterdam study diabetes 10-year risk is 9–14% at age 45 and is getting higher with age, so estimated at-risk population. Germany has bigger fraction of this age group, so can be adjusted accordingly:

*Table 2. Market size*

Country	Population 50+	Prediabetes prevalence (50+)	At-risk population (N)
Germany	46,000,000	20–25%	9.2M – 11.5M
UK	26,000,000	15%	3.9M
Ukraine	15,000,000	15%	2.25M

Market share (MS): adoption scenarios are estimated conservatively at 2–5% of the at-risk population for preventive use (50+ adults not yet diagnosed but at high risk), reflecting current adoption barriers and market maturity.

Average annual consumption (Q):

Subscription: app subscription is monthly. Assuming an average active user subscribes for 8 months (aligning with the CGM monitoring period for preventive users), Q = 8 months.

In-app purchase: assume the average user makes 2 in-app purchases per year (like extra features, tips, or gamification packs).

One-time purchase: some users may buy a permanent feature or package 1 time per year.

Average selling price (P):

Subscription: \$2.99 – \$4.99 per month → average \$3.99/month

In-app purchase: \$8.99 per purchase

One-time purchase: \$20.99

Market potential (MP) the formula:  $MP = N \times MS \times P \times Q$ ,

Then the potential market values are:

MP for subscriptions =  $N \times MS \times P_1 \times Q_1$

Germany:  $11,500,000 \times 5\% \times 3.99 \times 8 \approx \$18,354,000$

UK:  $3,900,000 \times 5\% \times 3.99 \times 8 \approx \$6,218,400$

Ukraine:  $2,250,000 \times 5\% \times 3.99 \times 8 \approx \$3,591,000$

MP for in-app purchases =  $N \times MS \times P2 \times Q2$

Germany:  $11,500,000 \times 5\% \times 8.99 \times 2 \approx \$10,338,500$

UK:  $3,900,000 \times 5\% \times 8.99 \times 2 \approx \$3,506,100$

Ukraine:  $2,250,000 \times 5\% \times 8.99 \times 2 \approx \$2,024,000$

MP for one-time purchases =  $N \times MS \times P3 \times Q3$

Germany:  $11,500,000 \times 5\% \times 20.99 \times 1 \approx \$12,044,250$

UK:  $3,900,000 \times 5\% \times 20.99 \times 1 \approx \$4,089,000$

Ukraine:  $2,250,000 \times 5\% \times 20.99 \times 1 \approx \$2,361,375$

*Table 3. Total market potential*

Country	Subscription MP (\$)	In-app MP (\$)	One-time MP (\$)	Total MP (\$)
Germany	18,354,000	10,338,500	12,044,250	<b>40,736,750</b>
UK	6,218,400	3,506,100	4,089,000	<b>13,813,500</b>
Ukraine	3,591,000	2,024,000	2,361,375	<b>7,976,375</b>

#### 5.4. Competitors overview

According to Healthcare Digital (2025), the global CGM market is growing unusually fast now. In 2023 it was valued at USD \$4.6 billion and is expected potentially reach USD \$16.8 billion by 2033 or even USD 55 billion by 2035. Current trends in the EU CGM market focus on enhancing user experience and broadening accessibility for different patient populations, including the elderly, as well as miniaturization, extended wear times, smartphone compatibility and integration with AID systems.

Abbott is a dominant player in the global CGM market, primarily through its FreeStyle Libre portfolio. The flagship products include the FreeStyle Libre 2 and FreeStyle

Libre 3 systems, and also newer products like FreeStyle Libre 2 Plus and FreeStyle Libre 3 Plus sensors. The FreeStyle Libre 3 system offers real-time, minute-by-minute glucose readings delivered automatically to a smartphone for immediate data access. The FreeStyle Libre 2 system is a flash glucose monitor requiring scanning, but it also offers optional real-time alarms in its newer versions. A key feature of company products is the extended sensor lifespan: Libre 2 and 3 sensors last up to 14 days, and the newer Plus versions can last even up to 15 days. All systems are designed to prevent patients from the need for routine finger-prick blood glucose monitoring. The FreeStyle Libre 3 is also notable for its discreet design, and is recognized as the world's smallest and thinnest sensor. Abbott also built a full digital ecosystem around the sensors: LibreLink for the phone, LibreView for cloud data, and LibreLinkUp so family members or caregivers can follow the readings.

Abbott's market presence is extensive across the EU. In Germany, the FreeStyle Libre 3 system launched in March 2024, with reimbursements for individuals with diabetes on insulin therapy is available since 2016, and specifically for Type 1 diabetes patients since 2023 (Verified Market Research, 2025). In the UK, the FreeStyle Libre 2 sensors were discontinued in the end of August 2025, and users are now encouraged to switch to the Plus sensors. Furthermore, these systems are available on prescription for all Type 1 diabetes patients across the UK and for certain Type 2 diabetes patients in England and Wales (Abbot, 2025). Specific details on official commercial registration or pilot activities for market access in Ukraine were not found.

The primary target user segments for Abbott's CGM systems are individuals with Type 1 diabetes and insulin-treated Type 2 diabetes. The FreeStyle Libre 2 Plus and 3 Plus sensors are indicated for ages 2 years and older, while the Libre 2 and 3 systems are for ages 4 years and older. Recent real-world studies, such as the one from REFLECT published in May 2025, show that using Libre technology can reduce hospitalizations related to cardiovascular disease for both Type 1 and Type 2 diabetes patients.

Dexcom is another global leader in real-time continuous glucose monitoring, with its flagship products like the Dexcom G6, the newer Dexcom G7, and the more affordable Dexcom ONE+ systems (Dexcom, 2022). A core feature of Dexcom systems is the automatic, real-time transmission of glucose readings every 5 minutes to a compatible display device. Both the G6 and G7 sensors have a 10-day lifespan, though a new 15-day version of the G7 has received FDA approval and is anticipated for release. A significant enhancement with the G7 is its rapid 30-minute warm-up time, which is currently the fastest on the market, a big improvement over the G6's 2-hour warm-up. These systems have broad smartphone compatibility through the Dexcom G6/G7 apps, and connect Dexcom Clarity for data analysis and Dexcom Follow for remote monitoring, so users can share data with up to 10 followers. A future G7 update should allow direct connection to the Apple Watch. Dexcom devices do not require routine finger pricks or calibration. The G7 is also 60% smaller than the G6 and combines all-in-one sensor and transmitter unit.

In Germany, the Dexcom G7 launched in January 2023, and reimbursement for insulin-dependent Type 1 and Type 2 diabetes patients using systems with alarms has been available since 2016. According to Breakthrough T1D UK (2025), in the UK, the Dexcom ONE+ is prescribable through the NHS for Type 1 diabetes, but the G7 is available for self-funding. In Ukraine, Dexcom G7 sensors are available for purchase through third-party retailers, but users may encounter difficulties with app installation and system use due to the lack of official local registration. The system is not officially registered for inclusion in public reimbursement programs in Ukraine.

Dexcom's target user segments primarily include individuals with diabetes aged 2 years and older with both Type 1 and insulin-dependent Type 2 diabetes, as well as pregnant women.

Another competitor – Medtronic – global healthcare technology leader, with its diabetes division focusing on integrated insulin pump and CGM solutions. Its flagship CGM products include the Guardian Connect (a standalone CGM system) and, more

significantly, the MiniMed™ 780G system, which integrates with either the Guardian™ 4 sensor or the newer Simpler Sync™ sensor. The MiniMed 780G system stands out as an advanced automated insulin delivery (AID) system designed to automatically adjust and correct glucose levels every 5 minutes for continuous, real-time glucose data.

In Germany, the MiniMed 780G system with the Guardian 4 sensor has been reimbursed since March 2023. Reimbursement in Germany generally covers Type 1 and insulin-dependent Type 2 diabetes patients. In the UK, Medtronic CGM systems, when integrated with insulin pumps, may be eligible for NHS coverage for Type 1 diabetes patients (Medtronic, 2022). In Ukraine, Medtronic CGM is the only major CGM system officially registered, although patients are responsible for the cost of the devices and supplies. Medtronic has also been involved in the distribution of other medical products in Ukraine, such as stents and catheters, through the Ministry of Health.

Medtronic's target user segments include individuals with diabetes (both Type 1 and Type 2) who are on insulin injection therapy. The MiniMed 780G system is approved for Type 1 diabetes patients aged 7 and above. Recent studies have shown promising results for the MiniMed 780G system in insulin-intensive Type 2 diabetes patients and young children (2-6 years old) with Type 1 diabetes, so there is a potential for expansion into these populations.

Apart from device companies, some digital platforms use CGM data in new ways. Nutrisense, for example, has developed a unique value proposition that pairs CGM readings with personalized expert advice from a credentialed dietitian. The service offers the option of insurance-covered video calls with a registered dietitian, which differentiates this application from other digital driven players. The app's key features is photo-based food logging, barcode scanning, and macro tracking – it all helps to interpret the glucose data. Nutrisense works with several sensors, such as Dexcom G6/G7 and FreeStyle Libre, so users can choose what fits them best.

Another innovative platform is Undermyfork. It integrates CGM or blood glucose meter (BGM) data, for example from Dexcom via API or Apple Health, with data that it retrieves from meal photos taken by user. Then it calculates postprandial "time in range" (TIR), and categorizes meals by color: green means optimal glucose level, and red – poor control. Over time it the app also start to recognize patterns in user's diet and help them make better food choices in the future.

The success of a digital health app often depends on how well it can engage users in long term perspective. Lingo app addresses this with principles of behavioral psychology and managed to transform the chore of data logging into an engaging activity. It uses its own metric called the "Lingo Count" to show glucose swings and encourages better habits through a simple, game-like interface. Also, Lingo has a strong community support that may be very important for users who are new to digital health tools. This model is similar to the approach used by mySugr: their application has a monster that you tame by logging blood sugar testing and food intake. This way these apps make the process more easy and fun and can increase user retention and improve the consistency of collected data and therefore improve health indicators.

While CGM technology provides continuous data, many diabetes patients still rely on less technical and more traditional blood glucose meters. Apps designed for such simpler tracking systems also exist and mySugr is one of the popular ones. It offers a freemium model and free version provides a personalized dashboard to track data such as diet, medication, carb intake, and blood glucose levels. It auto-logs data and generates daily, weekly, and monthly reports that can be shared with a doctor. The paid version, mySugr PRO, adds features like an insulin calculator, meal photos, and advanced PDF/Excel reports. Some Accu-Chek devices also activate the PRO version for free and this way keeps the entry cost low for beginners.

## 5.5. Business model analysis

The Business Model Canvas is a strategic tool that describes how a product or service creates, delivers, and captures value. It consists of nine building blocks. Customer Segments represent the groups of people or organizations that an innovation aims to serve. For each segment, developed Value Proposition reflects a bundle of products and services that address specific needs or problems.

According to Osterwalder (2014), Channels define how these value propositions are communicated and delivered. Customer Relationships describe the type of interaction maintained with each segment. Revenue Streams capture how value is monetized and what customers are willing to pay for. Key Resources, Activities, and Partnerships identify critical assets, processes, and collaborations required to deliver the product. Finally, the Cost Structure outlines the expenses associated with running the model, and Profit is derived from balancing revenues against costs. And as a result, Value Proposition connects the solution to the expectations and unmet needs of the target customer segment.

In this case, the CGM companion app is designed to provide personalized support for adults aged 50 and older who have or are at risk of Type 2 diabetes. This group includes both prediabetic and recently diagnosed patients who faces different challenges such as limited ability to interpret glucose data, reduced digital literacy compared to younger users, and need for guidance to use such tools. And recent studies have shown that older adults can successfully adopt continuous glucose monitoring systems when appropriate education is provided. Also, to improve the adoption of wearable devices or dedicated receivers, it is important to implement extended battery life, user-friendly interfaces with larger fonts and clearer visual presentations, and enhanced insurance coverage (Hanjin Kim, et al, 2025).

Another innovation of the proposed solution app is integration of artificial intelligence that will analyze glucose trends and lifestyle factors in real time. AI algorithms will identify recurring patterns that lead to glucose spikes and then will provide

recommendations to mitigate these spikes. This could be adjusting meal composition, its timing, or physical activity. Over time, AI can learn from each user and improve prediction accuracy and feedback. Similar AI-driven tools demonstrated potential in diabetes self-management (Yu X., 2025; Silva I., et al., 2023).

The app will offer the tiered strategy:

- High-tech option (real-time CGM, rtCGM): provides continuous glucose readings and alerts with minimal user effort. It's ideal for users who want detailed monitoring and feedback. This will be initial part of the platform.
- Moderate-tech option (intermittently scanned CGM, isCGM / flash glucose monitoring): sensor-based, requires periodic scanning to access readings. This option is less expensive than rtCGM, and still avoids frequent pricks.
- Low-tech option (manual data entry, food/activity logs and finger-pricks): no CGM device needed. Users can estimate glucose spikes from meals and activity. This option is suitable for cost-limited populations and mainly targets larger user segments, like populations who are not yet diagnosed with prediabetes.

This way, app can cover both high-tech and low-tech users and address different digital literacy and economic user segments.

To make the application even more usable, the app will include voice-based input and navigation to log meals, symptoms, or activities. Recent research shows that voice assistants can significantly increase accessibility and engagement among older populations if it is designed with empathy and clear communication (BMC Geriatrics, 2022). For instance, users could say "I had soup and bread for lunch" and system would automatically calculate nutritional data and predict glucose impact.

In addition, just as PlayOrtho motivates children through gamification (Dushyna, 2020), this CGM app will keep older adults motivated with user friendly visualizations, reminders, and simple recommendations. Additionally it is possible to include dhealthcare

professionals into user group segment: functionality like reports generation that can be shared during medical consultations will also include doctors into user group segment.

From a business perspective, applications model will follow freemium structure and basic monitoring and analytics will be available for free. Premium features such as AI-driven insights, personalized recommendations, and reports will be subscription-based. To facilitate integration with existing sensors and promote reimbursements in countries like Germany and the UK, it also will be important to establish partnerships with national stakeholders, healthcare payers, insurers, and CGM manufacturers such as Abbott, Dexcom, or Medtronic. Additionally, anonymized aggregated data can be used (in compliance with GDPR) for public health insights or scientific research, so it can be considered a secondary revenue opportunity.

Looking forward, the platform can evolve into a preventive health ecosystem beyond diabetes and can include users who are interested in healthy aging. This aligns with the global shift toward proactive and preventive healthcare.

## 5.6. SWOT analysis

This section provides an overview of the internal and external factors that influence market potential and implementation of the proposed CGM companion application. The SWOT analysis identifies strengths, weaknesses, opportunities, and threats, so that it is possible to assess the app's competitiveness, scalability, and long-term potential on the existing digital health market.

### Strengths:

- Personalized, AI-driven guidance and meal data recommendations for users based glucose trends, lifestyle and habits.
- Tiered technology approach – High-tech (rtCGM), moderate-tech (isCGM), and low-tech (manual entry) options to ensure accessibility across diverse digital literacy and economic levels.

- Alignment with global trends in AgeTech, digital health adoption, AI and preventive healthcare.
- Potential to expand beyond diabetes and target health-conscious users.

#### Weaknesses:

- High initial development costs – AI integration, multi-platform support, and user-friendly design require significant investment.
- Digital literacy may limit engagement among some target users groups.
- High-tech options require hardware that may not be affordable or fully reimbursed.
- Legal alignment with medical device regulations.
- Lower engagement among preventive users, as people without diabetes may not want to “poke” themselves regularly with invasive devices.
- Many potential users may not know they are at risk, so it also requires extra marketing and education.

#### Opportunities:

- Europe’s CGM rising interest in prevention and self-management health/wellness segment and market expansion
- Partnerships with CGM with Abbott, Dexcom, Medtronic, or healthcare payers could accelerate adoption.
- Reimbursement policies in Germany and the UK.
- Cross-country / European scaling after launch in Germany and the UK.

#### Threats:

- Strong competition with existing players (Abbott, Dexcom, Medtronic) and apps (Nutrisense, mySugr, Undermyfork, Lingo).
- Reimbursement limitations.

- AI accuracy, device integration, and data security are critical because failure could damage trust.
- Economic constraints in emerging markets.

Based on the analysis above, we can suggest that the app has a strong alignment with global AgeTech and preventive healthcare trends and can be scalable innovation. However, success will depend on partnerships with device manufacturers, compliance with national medical regulations, and marketing campaigns targeting users with lower digital literacy.

## CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

This thesis explored the business potential of continuous glucose monitoring applications for older adults in Germany, the United Kingdom, and Ukraine – three countries with different healthcare systems, digital health development, and economic levels.

Results show that Germany and the UK are the most prepared for glucose monitoring innovations. Both countries already have reimbursements for diabetes patients, strong healthcare infrastructure and digital health sectors. It makes CGM devices there more accessible and creates opportunities to expand their use from simple diabetes treatment to disease prevention and healthy aging. Ukraine unfortunately presents a different case, as it has weaker economic capacity, very limited reimbursements, and a healthcare system under heavy pressure from war. At the same time, even if the current adoption is low, Ukraine has factors that can support long-term market development. Among its strengths are a large IT sector, ongoing EU integration, and a growing interest in digital health solutions.

The market analysis showed that around 19 million people with diabetes or prediabetes across three countries fall into the target group of adults over 50. In the first stage, a realistic obtainable market will about 270,000 users. Application will have a freemium revenue model and subscription will be the main source of income.

Among challenges there are strong competitors and complex regulations in medical field. Digital literacy of target user group and expenses for glucose monitoring wearables are also barriers, especially in Ukraine. But there are opportunities too: Europe's population is aging, interest in preventive health keeps growing, and new technologies, including AI, make environment more favorable to develop such products.

Based on the findings, the first priority should be to pilot such applications in Germany and the UK. Ukraine will need more time, but international support, policy reform, and pilot projects could open the way for launch. For policymakers, there is a need to expand reimbursement, improve public awareness of diabetes and prediabetes, and encourage cooperation with EU institutions to improve the digital health sector.

In conclusion, CGM devices are no longer limited to diabetes treatment. They have the potential to become everyday preventive tools that support healthy aging and reduce future healthcare costs.

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## APPENDIX

*Table 1. Comparative analysis of market readiness across UK, Germany, and Ukraine*

Category	United Kingdom	Germany	Ukraine
<b>Policy &amp; Regulation</b>	Reimbursement for high-risk groups, expanding to all T1D and pregnant women; NICE guidelines; transitioning to UKCA marking	Reimbursed since 2016 for insulin users; integrated into care; EU MDR compliance	No broad reimbursement; early policy development; recommendations in place; regulatory process less mature
<b>Infrastructure Readiness</b>	Mature EHR & ePrescription systems; high digital infrastructure	Widely available EHR & ePrescription; high broadband/mobile penetration	Less widespread EHR/ePrescription; significant urban-rural digital divide
<b>Consumer Readiness</b>	High digital literacy; growing public awareness; strong smartphone and health app usage	High digital literacy; increasing CGM awareness; high smartphone penetration	Improving digital literacy; lower awareness; smartphone use growing but still below EU average
<b>Economic Accessibility</b>	High GDP per capita; reimbursement expanding; some cost barriers remain; support programs for select groups	High GDP per capita; CGM fully reimbursed for many; declining out-of-pocket costs	Lower GDP per capita; limited subsidies; high out-of-pocket costs; reimbursement under policy discussion
<b>Health System Burden</b>	Aging population and high diabetes prevalence; CGM reduces complications and proves cost-effective	Same as UK	Aging population; rising diabetes prevalence; limited CGM access exacerbates healthcare burden
<b>Innovation Ecosystem</b>	Robust digital health/AgeTech sector; NHS innovation programs; active clinical trials	Strong digital health/startup presence; ongoing R&D and clinical trials	Fewer startups; lower R&D spending; emerging innovation with focus on certification and pilot initiatives

R code with WB data: <https://rpubs.com/bndrsnatchh/1324519>

Excel table with calculations:

<https://docs.google.com/spreadsheets/d/1CZ6CRH07jJzvKiHqQ8FQE7GBwAk7Ye11RVJSZWIlz6s/edit?gid=0#gid=0>