

Challenges and Innovations in Digitizing Elderly Care in Switzerland: A Single Case Study

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Abstract: Switzerland's aging population, with the old-age dependency ratio reaching 32% in 2023, has significantly increased the demand for efficient elderly care services that enable seniors to live independently for longer. This study investigates the challenges and opportunities in digitizing elderly care in Switzerland through the lens of the Consolidated Framework for Implementation Research. Using a qualitative single-case study approach focused on a Swiss-based company specializing in AI-powered tools for home-based care, the study addresses two key research questions: (1) What are the challenges in digitizing elderly care in Switzerland? and (2) How can digital health technologies support this sector? The findings reveal key challenges, including economic disincentives, workforce imbalances, and fragmented technology adoption, while also demonstrating how tailored digital tools can enhance preventive care and improve operational efficiency. Collaborative efforts among policymakers, care providers, and digital health companies are crucial for advancing sustainable and equitable elderly care.

1 INTRODUCTION

Many developed countries are experiencing a significant demographic shift with a rapidly aging population (Grinin et al., 2023; Manfredi et al., 2019; Marois et al., 2020). Switzerland is no exception, with individuals aged 65 and over representing 19.3% of the population in 2023, up from 15.4% in 2000 (bfs.admin, 2024). This demographic shift has led to a narrowing ratio of working-age individuals to retirees, as the old-age dependency ratio reaches 32%, closely approaching the youth dependency ratio of 33% (Figure 1).

These trends greatly increase the demand for efficient elderly care services that enable seniors to live independently for longer. As the elderly population grows, healthcare systems face the challenge of addressing the rising demand for services while managing resource constraints (Bloom et al., 2015; Jones & Dolsten, 2024). Digitization is an important strategy to meet these challenges, offering innovative approaches that streamline care

delivery, enhance patient outcomes, and optimize resource allocation (Chen et al., 2023; Lee et al., 2023; Pekkarinen et al., 2019; Sun et al., 2020).

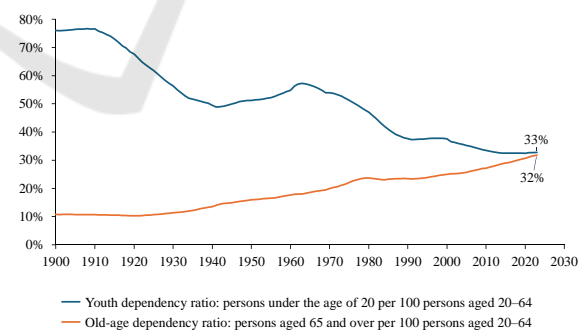




Figure 1: Dependency Ratios in Switzerland: Trends in the old-age dependency ratio (persons aged 65 and older per 100 working-age individuals) and youth dependency ratio (persons under 20 per 100 working-age individuals) in Switzerland from 1900 to 2023.

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This paper explores the challenges of elderly care in Switzerland and examines how digital technologies address these issues by addressing the following research questions:

RQ1: What are the challenges in digitizing the elderly care sector in Switzerland?

RQ2: What are the opportunities in digitizing the elderly care sector in Switzerland?

2 METHOD

This study uses a qualitative single-case approach to examine digitizing elderly care in Switzerland, focusing on Domo Health. This company was selected due to its position in developing AI-powered tools for home-based care, integrating real-time monitoring, predictive analytics, and connected devices. Its direct involvement in addressing systemic challenges in elderly care in Switzerland makes it suitable for analyzing digitization opportunities and barriers within the Swiss healthcare context. Founded in 2012, Domo Health's platform provides actionable insights for early intervention and features enterprise resource planning tools to streamline workflows, such as visit scheduling and invoicing, for home care organizations (domo.health, n.d.). The data was collected through a 29-minute semi-structured interview with Domo Health's CEO, conducted with prior consent and transcribed using Fireflies.ai. The interview explored systemic challenges, policy influences, and technological innovations in elderly care. Thematic analysis was performed on the transcript using the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2022), focusing on challenges to digitization and opportunities. Secondary data from academic literature, policy documents, and Domo Health's reports complemented the analysis, ensuring a comprehensive perspective on the potential of digital technologies in Swiss elderly care.

3 RESULTS

We examine the challenges in digitizing elderly care in Switzerland, including financial, workforce, and technological barriers, and explore opportunities through enhanced care delivery and sustainable digital business models.

3.1 Challenges in Swiss Digital Elderly Care Adoption

First, we investigate key barriers to adopting digital technologies in Swiss elderly care, focusing on financial, structural, and workforce challenges and the preference for reactive over preventive care.

3.1.1 Financial Disincentives for Preventive and Home-Based Care

Using CFIR's "Outer Setting" domain, particularly the "Financing" construct, we uncovered systemic barriers to promoting home-based care in the Swiss healthcare system. With decentralized governance and mixed financing structures, Switzerland's healthcare system has historically posed challenges in promoting preventive and home-based care for older adults. The current Federal Health Insurance Act (HIA) financing model combines contributions from health insurers, cantonal residual financing, and client copayments (Möckli et al., 2024). However, the system has historically favored hospital-based treatments, discouraging the adoption of cost-effective home care services. As the CEO of Domo Health explained: *"Insurance companies prefer funding treatments that involve hospital stays because these are reimbursed more favorably compared to home care services."*

This model created significant disincentives for preventive care technologies, such as remote patient monitoring and fall detection systems, as financial support for these innovations was often insufficient. Healthcare providers were consequently less inclined to implement these cost-saving measures, leading to higher long-term expenses and less effective care for older adults (Kherad, 2017).

A key turning point occurred following the November 24, 2024, national referendum. Swiss voters approved an amendment to the HIA introducing standardized financing of benefits. Under the new system, cantons must cover at least 26.9% of healthcare costs, while health insurers contribute up to 73.1%, regardless of whether care is provided in hospitals or at home (Health Insurance Act, n.d.). This reform balances potential financial biases against home-based care and aligns reimbursement structures across care settings. By leveling the playing fields, the reform encourages the adoption of preventive care technologies, aiming to reduce long-term costs while promoting more effective and patient-centered care for older adults. However, it is also argued that the reform may inadvertently lead to a rise in health insurance

premiums, as insurers are now responsible for a greater share of costs (RTS, 2024).

3.1.2 Fragmentation in Service Delivery and Technology Adoption

Applying CFIR's "Outer Setting" domain and "Local Conditions" construct, we found a sizable impact of decentralized governance on technology adoption in elderly care. The Swiss healthcare system is highly fragmented in its structure and use of electronic health records (EHR) and digital technologies. Each Canton regulates healthcare independently, making it difficult to achieve standardization and coordination among providers (REF). This fragmentation is further compounded by the diversity of healthcare actors, including public and private hospitals, nursing homes, and private practices, which operate with differing priorities and resources. While the Federal Act on the Electronic Patient Record mandated EHR adoption for hospitals and nursing homes by 2020 and 2022, respectively (Federal Department of Home Affairs (FDHA), 2017), it only encourages voluntary participation for other providers, such as general practitioners and ambulatory services, resulting in low uptake outside of mandatory settings. Financial and technical barriers, particularly for smaller practices, hinder widespread adoption, as the law provides only limited federal funding and no direct reimbursement for implementation costs. As our interviewee noted, *"Switzerland is far behind compared to other countries, like even the electronic patient record is behind."*

This reflects the country's lagging position in adopting EHR systems relative to other OECD nations. This fragmentation complicates the scalability of nationwide digital health technologies, as technologies must be adapted to different technology environments and practices in each canton (De Pietro & Francetic, 2018).

3.1.3 Imbalance in Workforce Distribution

The Swiss healthcare workforce appears more balanced towards hospital-based specialized care, leaving a critical gap in home-based services and general practitioner care. This imbalance also aligns with CFIR's "Outer Setting" domain, and the construct of "Local Conditions". This imbalance incentivizes doctors to pursue specialization, exacerbating the shortage of general practitioners and primary care providers (Baumann et al., 2020). As Domo Health's CEO pointed out:

"The whole system has shifted from a general practitioner and specialist physician 20 years ago

receiving the same salary to a system now where you make three times more money if you are a doctor in the hospital as a specialist."

This uneven distribution not only undermines the accessibility of primary care but also impacts the quality of care in home settings, where comprehensive support is increasingly necessary due to an aging population.

3.1.4 Focus on Reactive over Preventive Care

Using CFIR's "Process" domain, particularly the "Engagement" construct, we highlight the focus on reactive treatments over preventive measures due to systemic disincentives. Domo Health's CEO described the challenges of prioritizing sustainable healthcare practices: *"Somehow, nobody cares about prevention. [...] the whole system is based on I am sick, I'm being diagnosed, and I get the treatment."*

This reliance on expensive, reactive treatments increases financial strain and undermines opportunities to address health issues before they escalate. Preventive measures like remote monitoring, early detection systems, and lifestyle interventions could significantly reduce long-term costs while improving patient outcomes (AbdulRaheem, 2023). However, the need for systemic incentives for prevention creates barriers to adopting these measures at scale. Without policy reforms that prioritize and reward preventive care, the sustainability of Switzerland's long-term care system could face risks, particularly as the aging population drives up demand for healthcare services.

3.2 Opportunities in Swiss Digital Elderly Care

Second, we examine how digital health technologies can overcome structural challenges in elderly care, enhancing service delivery while supporting sustainable business models.

3.2.1 Digitization for Enhanced Elderly Care

Digitization aligns with CFIR's "Intervention Characteristics" domain, particularly through the constructs "Relative Advantage" and "Compatibility". Domo Health's platform exemplifies these characteristics by integrating real-time health monitoring, predictive analytics, and operational tools into a single solution tailored to elderly care. By consolidating clinical data from

multiple sources, such as medical devices, apps, and patient-reported data, the technology provides actionable insights to support early interventions. As our interviewee noted:

“We are adding [...] a tool which can [...] plan which visits they need to do, which care is reimbursed and then connect that to insurance companies.”

Their platform is tailored to the unique care needs of older adults across patient and home care settings, for instance, the Domo.Go safety watch enables fall detection, emergency response via the Swiss Red Cross, and real-time health data tracking, empowering seniors to remain independent while enhancing their safety. The platform combines enterprise resource planning tools with clinical functionalities for home care providers, automating scheduling, invoicing, and insurance reimbursements. This integration helps nurses focus on patient care while ensuring financial sustainability.

By enabling remote patient monitoring and predictive analysis, the platform empowers healthcare professionals to shift from reactive to preventive care, addressing early warning signs such as sleep disruptions or changes in respiration rates. This approach can reduce hospitalizations and allow seniors to stay at home longer, as Domo’s CEO emphasized:

“The goal should be prevention [...] before it’s too late.”

The companies’ dual focus on operational efficiency and clinical decision-making demonstrates how digital health technologies can transform elderly care. By overcoming barriers to preventive care and streamlining workflows, their approach directly addresses the needs of Switzerland’s aging population while easing the strain on the healthcare system.

3.2.2 Business Models for Sustainable Digital Elderly Care

Switzerland’s reimbursement framework presents difficulty in adopting preventive digital health technologies, as these services are often underfunded and not integrated into standard care practices (Jürgens et al., 2024). To address this challenge, Domo Health has developed a business model that directly sells its software to nurses and home care organizations. This approach reflects CFIR’s “Intervention Characteristics” domain, particularly “Innovation Design” and “Cost” constructs. By combining clinical tools with operational features, such as invoicing systems linked to insurance reimbursements, the platform ensures financial

viability while incentivizing the adoption of preventive care. As the CEO of Domo Health explained: *“Our tool is a daily tool for nurses [...] and at the same time, it’s a clinical tool for them to offer better care.”*

Compared to countries like Germany and France, where reimbursement policies for digital health technologies are more advanced (van Kessel et al., 2023), Switzerland lags in providing incentives for innovation. However, recent policy developments, such as adjusting co-payments for ambulatory care, signal a shift toward more favorable conditions. These changes align insurance incentives with the adoption of digital health technologies, paving the way for broader implementation of preventive care and highlighting how CFIR’s “Outer Setting” domain, through the construct “Policy and Incentives”, can influence the implementation of digital health solutions. By tailoring their business model to the Swiss healthcare context, digital health companies can strategically position themselves to capitalize on these policy shifts and expand the impact of their services, enhancing both the sustainability and scalability of their services.

4 DISCUSSION

The findings highlight the significant challenges in digitizing elderly care in Switzerland, including fragmented service delivery, financial disincentives for preventive care, and workforce distribution. Additional challenges identified in related work, such as the limited adoption of technology by elderly care workers (Baudin et al., 2020) and the low digital literacy of older adults (Östlund, 2021), further compound the difficulty of implementing digital solutions. Addressing these challenges requires comprehensive policy reforms (Nicolet et al., 2023; Tynkkynen et al., 2022), collaborative efforts to facilitate the widespread adoption of digital technologies, and alignment in stakeholders’ goals (Pfitzer et al., 2024). Such advancements hold promise for mitigating the pressures of a rapidly aging population and enhancing the quality of life for older adults (Chen et al., 2023; Ienca et al., 2021; Nikou et al., 2020). While Domo Health served as the focus of this case study, the opportunities discussed can be abstracted to emphasize broader implications for global healthcare systems. For instance, digitization strategies like integrating predictive analytics and real-time monitoring have universal relevance for elderly preventive care, making them applicable to diverse contexts beyond Switzerland.

This study is limited by its single-case focus, which may not capture the variation in healthcare delivery models and policies across Switzerland. Additionally, the reliance on the perspective of Domo Health's CEO provides only one viewpoint, omitting insights from other key stakeholders such as policymakers, healthcare providers, and patients. The absence of quantitative data also limits the ability to assess measurable outcomes, such as cost reductions or improvements in care quality.

Future research should address these limitations by incorporating perspectives from multiple stakeholders, conducting comparative studies across elderly care-focused digital health companies, and including quantitative assessments to evaluate the impact of digitization in elderly care. Longitudinal studies could also provide a better understanding of these technologies' long-term effects on the healthcare system and patient outcomes.

5 CONCLUSIONS

Care for older adults in Switzerland faces critical challenges, including fragmented service delivery, a lack of incentives for preventive care, and barriers to digitization. However, novel innovations demonstrate how integrating clinical data, predictive analytics, and operational tools can help transform the care landscape. Empowering healthcare professionals and supporting preventive care measures can help older adults remain independent and reduce the burden on hospitals. Collaborative action among policymakers, healthcare providers, and technology companies will be crucial to overcoming current challenges and ensuring the sustainability of elderly care. Through these efforts, Switzerland has the potential to establish a more efficient, patient-centered system that enhances the quality of life for its aging population.

CONFLICT OF INTEREST

EP and TK are affiliated with the Centre for Digital Health Interventions (CDHI), a joint initiative of the Institute for Implementation Science in Health Care, University of Zurich, the Department of Management, Technology, and Economics at ETH Zurich, and the Institute of Technology Management and School of Medicine at the University of St. Gallen. CDHI is funded in part by CSS, a Swiss health insurer, the Swiss growth-stage investor MTIP,

and the Austrian health provider Mavie Next. TK is also a co-founder of Pathmate Technologies, a university spin-off company that creates and delivers digital clinical pathways. However, CSS, Mavie Next, or Pathmate Technologies were not involved in this research. EP works at MTIP, a Swiss healthtech growth equity firm that helps founders scale up successful and sustainable digital health businesses. MTIP was not involved in this research.

REFERENCES

- AbdulRaheem, Y. (2023). Unveiling the Significance and Challenges of Integrating Prevention Levels in Healthcare Practice. *Journal of Primary Care & Community Health*, 14, 21501319231186500. <https://doi.org/10.1177/21501319231186500>
- Baudin, K., Gustafsson, C., & Frennert, S. (2020). Views of Swedish Elder Care Personnel on Ongoing Digital Transformation: Cross-Sectional Study. *J Med Internet Res* 2020;22(6):E15450 <https://www.jmir.org/2020/6/E15450>, 22(6), e15450. <https://doi.org/10.2196/15450>
- Baumann, K., Lindemann, F., Diallo, B., Rozsnyai, Z., & Streit, S. (2020). Evaluating 10 years of state-funded GP training in GP offices in Switzerland. *PLOS ONE*, 15(8), e0237533. <https://doi.org/10.1371/JOURNAL.PONE.0237533>
- Bloom, D. E., Canning, D., & Lubet, A. (2015). Global Population Aging: Facts, Challenges, Solutions & Perspectives. *Daedalus*, 144(2), 80–92. <http://www.jstor.org/stable/24711220>
- Chen, C., Ding, S., & Wang, J. (2023). Digital health for aging populations. *Nature Medicine* 2023 29:7, 29(7), 1623–1630. <https://doi.org/10.1038/s41591-023-02391-8>
- Damschroder, L. J., Reardon, C. M., Widerquist, M. A. O., & Lowery, J. (2022). The updated Consolidated Framework for Implementation Research based on user feedback. *Implementation Science* 2022 17:1, 17(1), 1–16. <https://doi.org/10.1186/S13012-022-01245-0>
- De Pietro, C., & Francetic, I. (2018). E-health in Switzerland: The laborious adoption of the federal law on electronic health records (EHR) and health information exchange (HIE) networks. *Health Policy*, 122(2), 69–74. <https://doi.org/10.1016/J.HEALTHPOL.2017.11.005>
- domo.health. (n.d.). *domo.health | Empowering Health Together*. Retrieved December 14, 2024, from <https://www.domo.health/>
- Evolution des données démographiques, de 1950 à 2023 - {period} | {amg}*. (n.d.). Retrieved December 9, 2024, from <https://www.bfs.admin.ch/bfs/fr/home/statistiques/population.assetdetail.32374806.html>

- Federal Department of Home Affairs (FDHA). (2017). *Explanatory report on the ordinance on the electronic patient record (ODEP) and the FDHA ordinance on the electronic patient record (ODEP-FDHA)*.
- Grinin, L., Grinin, A., & Korotayev, A. (2023). Global Aging: An Integral Problem of the Future. How to Turn a Problem into a Development Driver? *World-Systems Evolution and Global Futures, Part F1459*, 117–135. https://doi.org/10.1007/978-3-031-34999-7_7
- Health Insurance Act: standardised financing of benefits*. (n.d.). Retrieved December 9, 2024, from https://www.admin.ch/gov/en/start/documentation/votes/20241124/health-insurance-act-standardised-financing-of-benefits.html?utm_source=chatgpt.com
- Inenca, M., Schneble, C., Kressig, R. W., & Wangmo, T. (2021). Digital health interventions for healthy ageing: a qualitative user evaluation and ethical assessment. *BMC Geriatrics*, 21(1), 1–10. <https://doi.org/10.1186/S12877-021-02338-Z/FIGURES/1>
- Jones, C. H., & Dolsten, M. (2024). Healthcare on the brink: navigating the challenges of an aging society in the United States. *Npj Aging 2024 10:1*, 10(1), 1–10. <https://doi.org/10.1038/s41514-024-00148-2>
- Jürgens, K., Raddatz, A., Tausendfreund, F., & Clemens, T. (2024). Market access regulations for mHealth applications in Germany, Austria and Switzerland: A Review. *Health Policy and Technology*, 13(5), 100934. <https://doi.org/10.1016/J.HLPT.2024.100934>
- Kherad, O. (2017). *The challenge of implementing less is more medicine in Switzerland*.
- Lee, C. H., Wang, C., Fan, X., Li, F., & Chen, C. H. (2023). Artificial intelligence-enabled digital transformation in elderly healthcare field: Scoping review. *Advanced Engineering Informatics*, 55, 101874. <https://doi.org/10.1016/J.AEI.2023.101874>
- Manfredi, G., Midão, L., Paül, C., Cena, C., Duarte, M., & Costa, E. (2019). Prevalence of frailty status among the European elderly population: Findings from the Survey of Health, Aging and Retirement in Europe. *Geriatrics & Gerontology International*, 19(8), 723–729. <https://doi.org/10.1111/GGI.13689>
- Marois, G., Bélanger, A., & Lutz, W. (2020). Population aging, migration, and productivity in Europe. *Proceedings of the National Academy of Sciences of the United States of America*, 117(14), 7690–7695. https://doi.org/10.1073/PNAS.1918988117/SUPPL_FILE/PNAS.1918988117.SAPP.PDF
- Möckli, N., Wächter, M., Moffa, G., Simon, M., Martins, T., & Zúñiga, F. (2024). How regulatory frameworks drive differences in home-care agencies: Results from a national multicenter cross-sectional study in Switzerland. *The International Journal of Health Planning and Management*, 39(2), 477–501. <https://doi.org/10.1002/HPM.3744>
- Nicolet, A., Perraudin, C., Krucien, N., Wagner, J., Peytremann-Bridevaux, I., & Marti, J. (2023). Preferences of older adults for healthcare models designed to improve care coordination: Evidence from Western Switzerland. *Health Policy (Amsterdam, Netherlands)*, 132. <https://doi.org/10.1016/J.HEALTHPOL.2023.104819>
- Nikou, S., Agahari, W., Keijzer-Broers, W., & de Reuver, M. (2020). Digital healthcare technology adoption by elderly people: A capability approach model. *Telematics and Informatics*, 53, 101315. <https://doi.org/10.1016/J.TELE.2019.101315>
- Östlund, B. (2021). Digitalization of Later Life: What Prevents the Care Sector from Meeting the Rapid Digitalization of Older Populations? *Lecture Notes in Networks and Systems*, 263, 287–298. https://doi.org/10.1007/978-3-030-80744-3_36
- Pekkarinen, S., Melkas, H., & Hyypiä, M. (2019). *Elderly Care and Digital Services: Toward a Sustainable Sociotechnical Transition*. 259–284. https://doi.org/10.1007/978-981-13-7725-9_14
- Pfitzer, E., Bitomsky, L., Nißen, M., Kausch, C., & Kowatsch, T. (2024). Success Factors of Growth-Stage Digital Health Companies: Systematic Literature Review. *J Med Internet Res 2024;26:E60473* <https://www.jmir.org/2024/1/E60473>, 26(1), e60473. <https://doi.org/10.2196/60473>
- RTS. (2024). *Le peuple fera-t-il confiance au financement uniforme des soins? - rts.ch - Suisse*. <https://www.rts.ch/info/suisse/2024/article/le-peuple-fera-t-il-confiance-au-financement-uniforme-des-soins-28680351.html>
- Sun, X., Yan, W., Zhou, H., Wang, Z., Zhang, X., Huang, S., & Li, L. (2020). Internet use and need for digital health technology among the elderly: A cross-sectional survey in China. *BMC Public Health*, 20(1), 1–8. <https://doi.org/10.1186/S12889-020-09448-0/TABLES/4>
- Tynkkynen, L. K., Pulkki, J., Tervonen-Gonçalves, L., Schön, P., Burström, B., & Keskimäki, I. (2022). Health system reforms and the needs of the ageing population—an analysis of recent policy paths and reform trends in Finland and Sweden. *European Journal of Ageing*, 19(2), 221–232. <https://doi.org/10.1007/S10433-022-00699-X/TABLES/4>
- van Kessel, R., Srivastava, D., Kyriopoulos, I., Monti, G., Novillo-Ortiz, D., Milman, R., Zhang-Czabanowski, W. W., Nasi, G., Stern, A. D., Wharton, G., & Mossialos, E. (2023). Digital Health Reimbursement Strategies of 8 European Countries and Israel: Scoping Review and Policy Mapping. *JMIR Mhealth Uhealth 2023; 11:E49003* <https://mhealth.jmir.org/2023/1/E49003>, 11(1), e49003. <https://doi.org/10.2196/49003>