European Commission

NUTRITION QUICK TIPS SERIES

DIGITALISATION AND NUTRITION

Digitalisation and the increasing use of mobile phones in low-and middle-income countries are transforming the means through which nutrition can be improved. Through enhancing access to information, enabling personalised approaches to diet and nutrition, improving tracking and monitoring capabilities, and promoting healthy eating to an online audience, digital approaches enhance the impact of nutrition-focused development actions.
This Quick Tip aims to highlight the potential benefits (and risks) of 'e-nutrition' or integrating digital solutions into nutrition-sensitive sectors.

Introduction

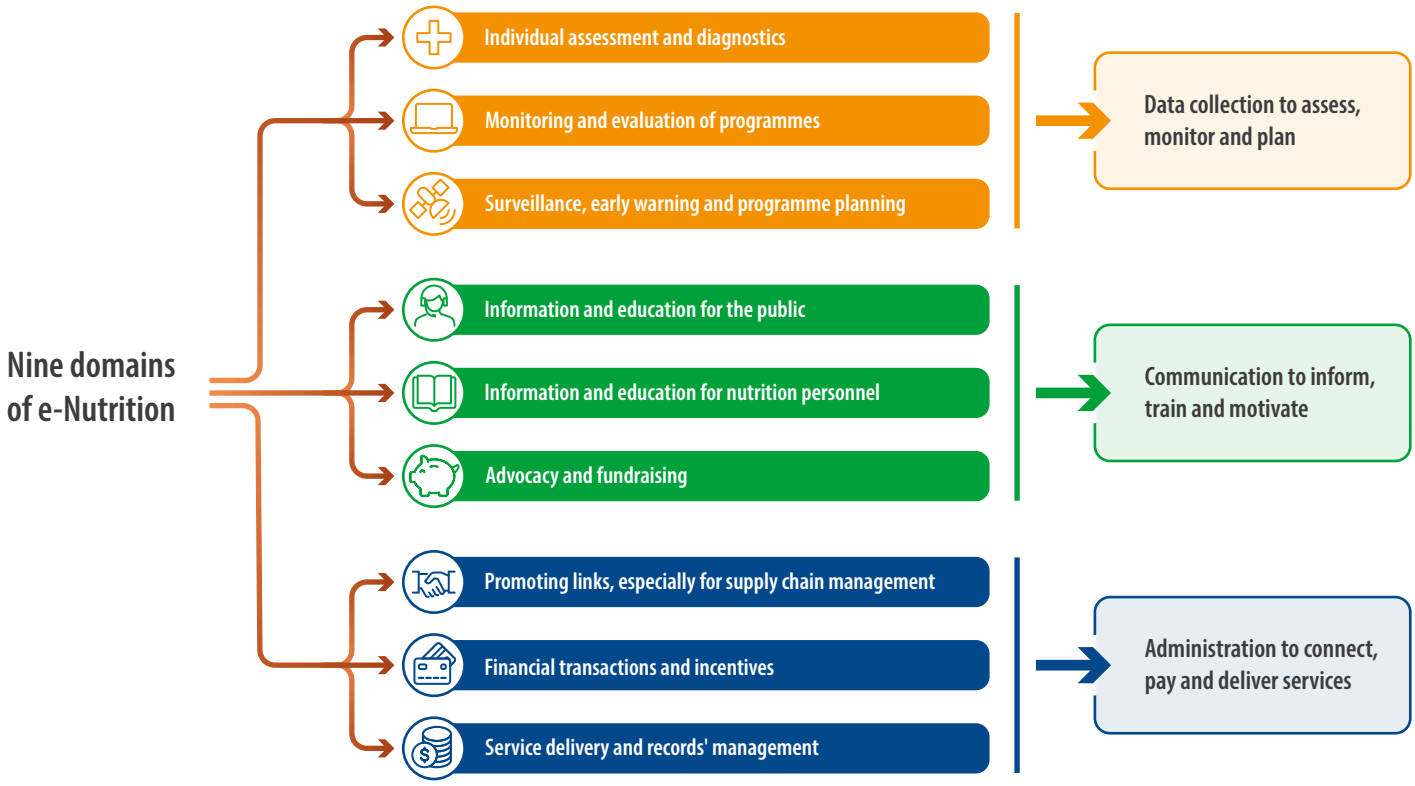
Promoting digital solutions across nutrition-sensitive sectors (including health, education, social protection, food security/ agriculture, and water, sanitation and hygiene (WASH)), across different contexts, providing affordable connectivity and enhancing digital skills can positively impact vulnerable communities at risk of malnutrition. Digital technologies can also be empowering for women, fostering a mutually reinforcing relationship between increased gender equality, women's empowerment and improved diets and good nutrition. Digital tools play an instrumental role in social transformation and increasing gender equality, through the provision of information to support women in decision-making, by amplifying their voices, facilitating the delivery of services to women, and enabling access to finance, health, and education.

Opportunities and risks

Digital technologies in nutrition are crucial to evidence-based policymaking and programming. They can provide national and local decision-makers with accurate and recent data from qualitative and quantitative assessments, surveys, surveillance, and early warning mechanisms (see figure 1). Timely access to nutrition-related data supports communication, advocacy, and representation for vulnerable populations, and can be used to influence legislative changes. Digital technologies facilitate effective monitoring and evaluation of nutrition policies, strategies, services at community level, fostering social inclusion and empowering civil society in monitoring and advocacy roles.

Additionally, these technologies can also play a role in public education, for example in the area of affordable healthy diets, awareness-raising on aspects of nutrition, and offering tailored training or awareness-raising on nutrition for personnel in different sectors (e.g., health, food systems, education, social protection). There is also an important role for digital technologies in the administration and delivery of nutrition-related services, covering areas such as finance, supply chain management and record-keeping.

Figure 1: Domains of e-Nutrition



Source: GIZ GmbH, From Bits to Bites – ICTs in Food Security and Nutrition Programmes, GIZ, Bonn, 2020

Risks and mitigation options

While digitalisation offers numerous benefits, for individuals and for the nutrition 'sector', it also raises important concerns regarding data privacy, the potential to exacerbate disparities, and the quality and amount of information available online. A clear understanding of contexts and target audiences is crucial to frame development actions and fully harness the power of digitalisation, while mitigating associated risks. There has also been a recent tendency of so-called 'pilotitis': launching small-scale pilot projects, without a commitment to scaling up to full implementation.

One significant risk is the **digital divide,** where not all individuals have equal access to digital technologies. To address this an inclusive approach is crucial, to address language and cultural barriers, focusing on marginalised groups, including indigenous ethnic communities, who are often more nutritionally vulnerable. It is essential to avoid increasing this digital divide, especially between different socio-economic groups, ensuring equitable access for all. Examples are: i) supporting traditional subsistence farmers to access modern technology in developing countries, to reduce disparities in resources, infrastructure, skills, and costs, and ii) promoting gender equality at multiple levels, including access to education and the labour market, and reaching positions of power and influence in society[1].

Another risk is **information overload,** characterised by the constant stream of digital information about nutrition which can overwhelm consumers, causing stress, anxiety, and difficulty in taking decisions. This can lead to unhealthy food habits due to conflicting advice and time constraints, e.g. adoption of convenient but unhealthy food choices, particularly among young people in urban areas. Managing information overload is vital for promoting healthy choices and well-being in the digital age and governments should intervene by restricting companies to use digital marketing to promote unhealthy foods to young people[2].

1 CGIAR. (2023). Overcome the digital divide to enable inclusive agricultural transformation.

2 Kraak et al. (2020). Digital marketing to young people: Consequences for the health and diets for future generations.

The EU and digitalisation

The new European Consensus on Development underlines how the EU and its Member States will continue to develop their support for promoting information and communication technologies in partner countries. The new EU Digital Strategy and new digital partnerships, aim at fostering a human-centric vision for the digital economy and society across the globe[3]. Through the Digital4Development approach, the EU intends to mainstream digital technologies and services where relevant, into EU development policy, which includes nutrition.

Examples of integration of digital solutions which can contribute to improved nutrition outcomes across sectors:

Health

- The broad scope of digital health includes categories such as mobile health communication (mHealth), to rapidly transmit health and nutritional data from remote locations, health information technology, wearable devices, telehealth and telemedicine. These technologies can enhance the nutrition knowledge and counselling skills of front-line rural health workers and facilitate the prevention and treatment of malnutrition through rural health facilities, enabling remote nutrition counselling and consultations for patients in distant communities[4,5].

- Digital health solutions encourage compliance with treatment and attendance at appointments, especially for mothers and young children (e.g. by sending appointment reminders by SMS) in services including ante/post-natal care, weekly outpatient visits for children under treatment for acute malnutrition, or vitamin A and vaccination campaigns.

- The use of digital surveys and assessments, with a focus on gender-disaggregated data (qualitative and quantitative), supports tailored nutrition-related programs and policies for women and children[6]. These surveys include nutrition indicators like stunting and wasting, monitoring service uptake (ante/postnatal care), and assessing practices related to infant and young child feeding (IYCF).

- Beyond the health sector, digital monitoring tools (for example National Information Platforms for Nutrition (NIPN)[7]) can collect information on various determinants influencing maternal and child nutrition, including access to extension services, social protection, business opportunities, education, and water, sanitation, and hygiene facilities.

Education

- Digital educational tools, such as interactive e-Learning platforms, can be leveraged to improve diets and nutrition outcomes[8, 9]. They can:

  - provide flexible learning opportunities, boost nutrition knowledge and skills, and empower women to engage in nutrition-related initiatives and advocacy;

  - increase equitable access to quality education on nutrition best practices;

  - inform professional development training on nutrition, enabling education professionals to access quality resources on nutrition and healthy eating.

- Apps promoting healthy diets and lifestyles provide users to track their dietary intake and provide real-time feedback and tailored recommendations[10]. These include specialised apps for parents, school children and interactive tools such as games, quizzes, challenges, and simulations that engage users to understand and apply nutrition concepts in real-life situations[11].

3 European Commission. (2022). Communication to the Commission. European Commission digital strategy.
4 EUROSAN Occidente. (2020). TeleSAN.
5 USAID. Advancing Nutrition. (2020). Using Digital Tools to Strengthen Nutrition Service Delivery: An Overview. pp. 10-11
6 Action Against Hunger. (2020). Innovations in Nutrition Information Systems. Action Against Hunger 2020.
7 NIPN - National Information Platforms for Nutrition (nipn-nutrition-platforms.org)
8 Rise up Labs. (2020). Nutrition e-Learning Platform: Online Training System on Adolescent Nutrition Interventions.
9 GIZ FaNS. (2020). Digital tools to empower women on nutrition security.
10 Fallaize et al. (2020). The eNutri app: using diet quality indices to deliver automated personalised nutrition advice.
11 Zarnowiecki et al. (2020). A systematic evaluation of digital nutrition promotion websites and apps for supporting parents to influence children's nutrition.

Social protection

- Collecting real-time data through digital platforms facilitates the design and delivery of more flexible, inclusive, and equitable social protection systems[12], that can respond to specific nutritional needs in a community. This enables the tracking of the equitable and targeted disbursement of benefits/assistance and monitoring of programme compliance, and allows for prompt responses to issues or anomalies, improving overall efficiency and effectiveness.
- Digital Identification Systems which use biometric authentication and electronic IDs[13] further ensure benefits reach the most nutritionally vulnerable whilst minimising fraud.
- Machine learning and artificial intelligence technology can be employed to assess levels of nutritional vulnerability within a population more accurately[14]. It allows for combined analysis of data from various sources, including socioeconomic, geographic, and health data, facilitating targeting of assistance to those in greatest need.

Climate-sensitive food systems

Digital technologies can be leveraged to increase availability of and access to healthy diets and enhance nutrition outcomes.

On the **production** side, this includes for example:

- Using e-learning and digital advocacy tools to encourage a shift towards production and commercialisation of locally appropriate, nutrient-rich crops and to raise awareness within the food industry and across the different value chain actors (from farm to fork) to harmonise knowledge and foster a shared understanding of issues related to healthy diets, dietary diversity and nutrition.
- Using digital diagnostic tools to analyse the nutrient content of crops and foods[15] helping to identify nutritional gaps and opportunities for crop diversification.
- Utilising digital tools to collect, store, and analyse climate data[16], assisting farmers and remote communities in recognising climate change trends and mitigating their impact on food production and nutrition outcomes.
- Using digital tools to connect and support local food systems actors[17] in providing nutritionally diverse and sustainable diets to their communities.

In terms of addressing **consumer behaviour**, this includes:

- Using advanced analytics techniques and digital monitoring technology, including artificial intelligence, resolving existing nutrition data gaps to extract meaningful insights to facilitate the design of appropriate interventions addressing the drivers of poor diets and malnutrition with more equitable and data-driven solutions.
- The use of digital platforms to empower consumers, offering unrestricted access to information, allowing consumers greater opportunity to communicate with food systems actors, share their opinions and to shape demand for improved products and services. They can also host virtual communities of women and facilitate sharing of experiences, challenges, and successes relating to nutrition, healthy diets and lifestyles. E-commerce platforms can provide information on food products, including nutritional value, sustainability, and ethical production practices, increasing consumer awareness as well as creating demand for better information on food products[18].
- Supporting governments in the use of digital channels to promote behaviour change for healthy diets and improved nutrition and in the enforcement of advertising regulations in digital marketing by the private sector[19].

12 Lowe et al. (2023). Discussion Paper: Pathways toward digitalization in Social Protection and Labor (SPL) service delivery.

13 Bill and Melinda Gates Foundation. Singh. (2023). Digital IDs are an effective tool against poverty.

14 Bitew et al. (2021). Machine learning algorithms for predicting undernutrition among under-five children in Ethiopia.

15 EIP-AGRI Focus Group. (2022). Digital Tools for sustainable nutrient management.

16 Gebresenbet, G et al. (2023). A concept for application of integrated digital technologies to enhance future smart agricultural systems.

17 Glaros et al. (2023). Digital technologies in local agri-food systems: Opportunities for a more interoperable digital farmgate sector.

18 EIT Food. (2023). Trust Tracker.

19 Bälter et al. (2022). A Web-Based Program About Sustainable Development Goals Focusing on Digital Learning, Digital Health Literacy, and Nutrition for Professional Development in Ethiopia and Rwanda: Development of a Pedagogical Method.

Humanitarian preparedness and response

- In times of increasing crisis, preparedness, and response to disasters as well as emergency transitional response and aid gain importance. By leveraging digitalisation and technology-driven solutions, governments, humanitarian organisations, and communities can improve their ability to respond quickly and effectively to nutrition-related challenges during disasters[20]. Blockchain technology[21] can be used to enhance transparency in humanitarian assistance supply chains, for recording the movement of food and nutritional supplies, reducing the risk of diversion or mismanagement of aid[22].

Further information and support

- European Commission. Europe´s Digital Decade: digital targets for 2030
- FAO. (2020). Realizing the potential of digitization to improve agri-food system: Proposing a new International Digital Council for Food and Agriculture
- UNSCN. (2020). Nutrition in a Digital World. Concrete examples of digital solutions and the respective lessons learnt including recommendations for the design of digital initiatives to benefit nutrition.
- European Commission, DG INTPA. Responsible digitalisation
- African Union and European Commission. (2019). New Africa-Europe Digital Economy Partnership
- Expert Panel on effective ways of investing in health (EXPH). (2019). Assessing the impact of digital transformation of health services
- OECD. (2019). Measuring the Digital Transformation: A Roadmap for the Future
- Mondejar et al. (2021). Digitalization to achieve sustainable development goals: Steps towards a Smart Green Planet
- European Commission, DG INTPA. (2022). Action plan on nutrition – Seventh progress report April 2021 – March 2022

20 For example, local crop production forecasting methodologies, such as the JRC Anomaly Hotspots of Agricultural Production (ASAP) that use earth observation data to allow for early anticipation of potential food and nutrition security crises.

21 A blockchain is a distributed database or ledger shared among a computer network's nodes.

22 Kumar et al. (2021). From Physical Food Security to Digital Food Security. Delivering value through blockchain.

Relevant EU actions that represent case studies for digitalisation and nutrition

- The Global Monitoring for Environment and Security and Africa is a joint programme of the European Commission and the African Union Commission. It serves to strengthen and further develop infrastructure for a more coherent exploitation of earth observation data (space and in-situ), technologies and services in support of the environmental policies for sustainable development in Africa and African, Caribbean and Pacific Group of States. One component includes a training to use data for crop yield forecasting.

- Eurosan contributes to the improvement of food security and nutrition of women and children in Honduras and improves rural incomes through decentralised governance systems in line with national and subnational policies. The innovation forum brought out e.g. telehealth services (links in Spanish).

The new policy marker on nutrition of the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) was approved by the OECD-DAC for official development assistance reporting in 2019 with the support of the European Commission and EU Member States. According to this marker, 'a project should be identified as nutrition related when it is intended to address the immediate or underlying determinants of malnutrition'. An OECD-DAC Nutrition Policy Marker Handbook is available.

The EU is a global leader in promoting gender equality as a key political objective of its external action and common foreign policy, aimed at accelerating progress towards the UN Sustainable Development Goals. By 2025, 85% of new EU actions should contribute to achieving the objective of gender equality and women's empowerment, with more actions including it as a main objective. Please refer to the Quick Tips: Nutrition, gender equality and women's empowerment.

For further information contact INTPA F3 Nutrition and One Health Sector by email: intpa-f3@ec.europa.eu

Published by Directorate-General International Partnerships, Directorate Green Deal, Digital Agenda, April 2024.
The contents of this publication do not necessarily reflect the opinion of the European Commission.
For further information: https://ec.europa.eu/international-partnerships/home_en