

FINAL REPORT

Assessing the Implementation of Indonesia's National Nutrition Information System (e-PPGBM):

Challenges, Gaps and Opportunities



Report Structure

PART 01		
Setting the Context	Background & Objectives Research Methodology Research Methods	03
PART 02		
e-PPGBM: An overview	Users & Tasks Users' Perceptions	09
PART 03		
Implementation Gap Analysis	Insights Opportunity Areas	22
PART 04		
Recommendations for the Service Owner	Closing Implementation Gaps Summary of Insights and Recommendations	50
References		65
Annexes		



03

PART 01

Setting the Context

Background

To support the National Movement for Stunting Reduction, the Indonesian Ministry of Health (Kemenkes) launched *Sistem Informasi Gizi Terpadu* (SIGIZI Terpadu) – a national nutrition information system to record and report data on community-based nutrition. Focused particularly on adolescents, pregnant women and children under five years of age, this system is used to track the implementation of various nutrition programmes in Indonesia.

One of the key modules of the SIGIZI platform is known as e-PPGBM - *Pencatatan dan Pelaporan Gizi Berbasis Masyarakat elektronik* (an application for recording and reporting on community-based nutrition). Through this application, health workers can directly report on the nutritional status of children in their areas and arrange necessary follow-up.

However, early observations by the Ministry of Health's Nutrition Surveillance team indicate there are existing challenges in implementing this system. Some of these challenges include: underreporting of data in e-PPGBM, lack of clarity in follow-up mechanisms, the suboptimal capacity of posyandu and puskesmas officers in using e-PPGBM, and suboptimal use of the data within districts and provinces.



Given the importance of e-PPGBM in recording data that can be used to address stunting, it is essential for us to understand the various factors that contribute to the suboptimal use of the application.

OBJECTIVES

In this study, we aim to:

- Better understand the gaps related to e-PPBGM's implementation
- Identify areas for improvement
- Develop strategic recommendations for its future development

In line with these research objectives, we were guided by three main research questions:

How is e-PPGBM designed to function as part of the national nutrition information system?

- Who are the intended users of e-PPGBM across the different levels of usage (i.e. national, provincial, districts and kecamatan)?
 - What types of support are provided to the users to help with the implementation of e-PPGBM?
 - What are the types of nutrition-related data covered in e-PPGBM?
 - How is e-PPGBM designed to be linked with the SIGIZI platform, as well as the decision making processes on nutrition?
 - What is the current mechanism for monitoring the implementation of e-PPGBM?
-

What are the key gaps between e-PPGBM's design and implementation at the various levels of usage, and what are the contributing factors?

- What are the specific difficulties and challenges for e-PPGBM users at the various levels (i.e. national, provincial, districts and sub district), including with respect to nutrition programming?
 - How do policymakers at different levels (i.e. national, provincial, districts and kecamatan) use the data collected in e-PPGBM?
 - What are the underlying factors contributing to the implementation challenges identified?
-

What are the opportunity areas for improving e-PPGBM's implementation?

- What standards of *Satu Data Indonesia* might be adopted to improve e-PPGBM's implementation?

RESEARCH METHODOLOGY

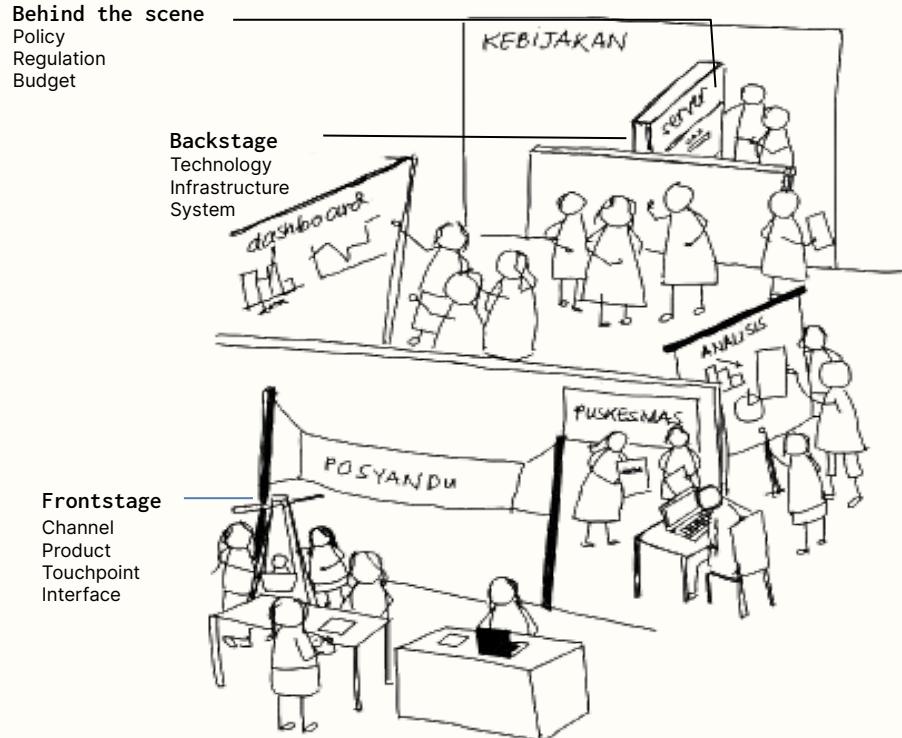
Mixed-methods Approach

In this study, we applied a mixed-methods approach, combining service design with quantitative surveys. Service design is a human-centered design approach that aims to improve the quality of interaction between services and their users, by taking a thorough look at the end-to-end processes and resources (people, infrastructure, protocols) required for services to run and generate value.

The data collection was done through the use of literature review, online surveys, field observations, and in-depth interviews.

Limitation:

This study is designed to gain an in-depth understanding of stakeholders' experiences whilst using e-PPGBM. However, the online surveys, field observations, and in-depth interviews were not designed to cover nor represent every puskesmas nutrition officers, district health officers and provincial health officers nationwide.



Research Methods

online survey

to understand users' perceptions regarding the use of e-PPGBM from data input and reporting, to data utilization for determining appropriate intervention

1474	Puskesmas officers
173	District health officers
30	Provincial health officers

field observation

to understand the context of the respondents, including details of the activities they carry out and their surrounding environment

15	Puskesmas officers
10	District health officers
5	Provincial health officers

in-depth interviews

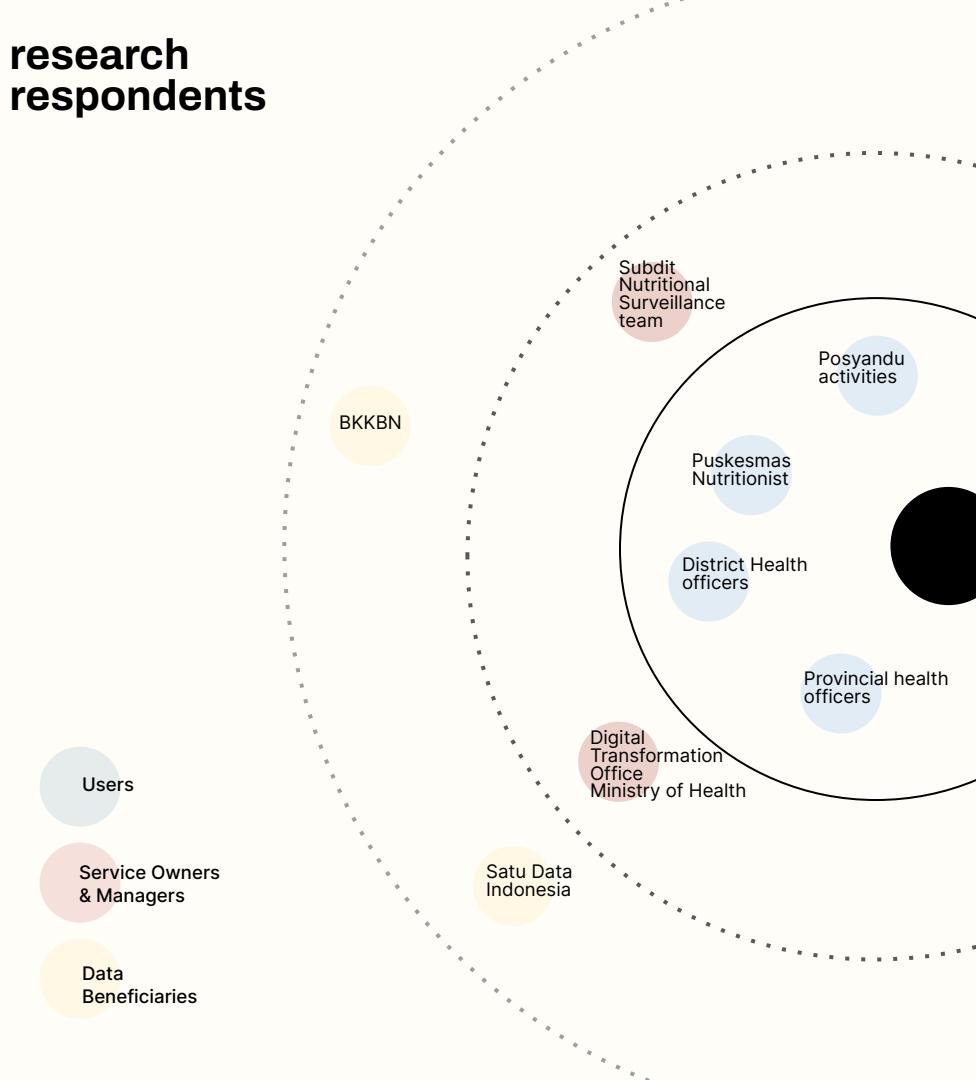
to understand the respondents' habits, pain points, desires, and challenges in using e-PPGBM

15	Puskesmas officers
10	District health officers
4	Provincial health officers
2	MoH team members
2	Data beneficiaries

75% female

25% male

research respondents





PART 02

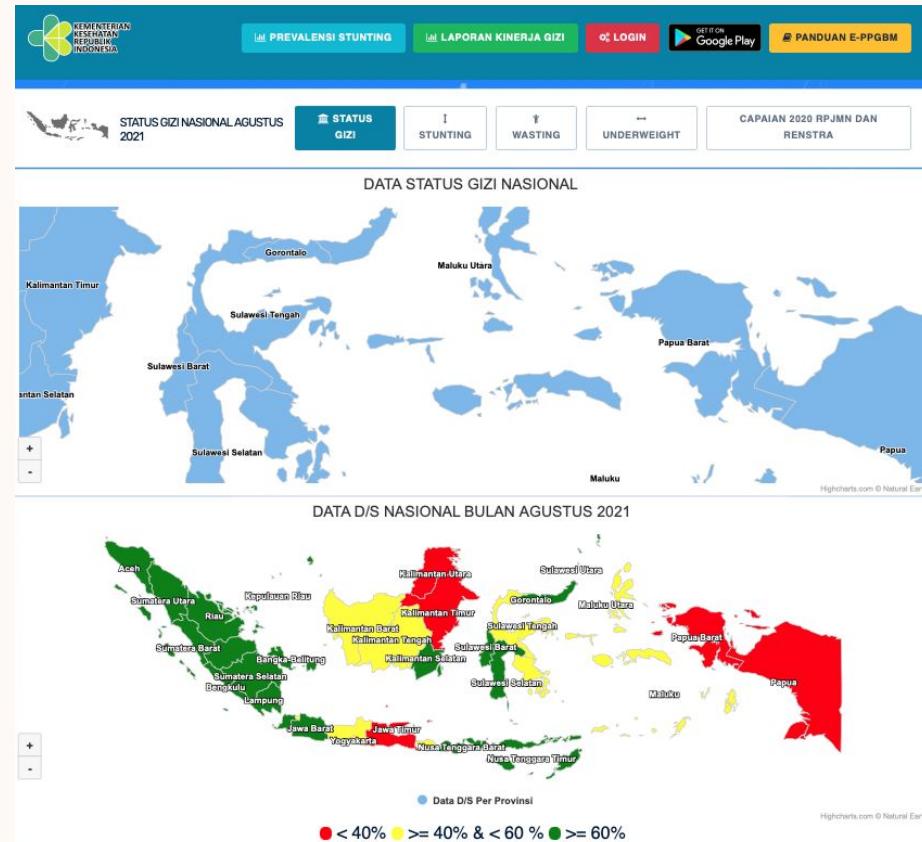
e-PPGBM: An overview

SIGIZI

SIGIZI is an integrated nutrition information system that generates data on nutritional status and programme performance. Data from SIGIZI is used to identify nutritional problems and to make decisions and policies related to community nutrition programmes*.

SIGIZI has several integrated nutrition modules which are divided based on the level of authority of the user at the central, provincial, and city/district levels as well as puskesmas and posyandu. The modules consists of:

1. **e-PPGBM.** A module for electronically storing individual target data obtained by Posyandu.
2. **Regular Report.** Used for monthly, quarterly, semester and annual reporting in the form of aggregated data taken from individual data that has been inputted through e-PPGBM and consumption of supplementary food.
3. **Supplementary Food Distribution.** Module for recording supplementary food (PMT) availability data up to the puskesmas level.
4. **Data Management.** User management feature to create accounts at the all levels in accordance with the authority.
5. **e-PPGBM offline.** To facilitate data entry for areas with poor internet connection.



*source: Nutritional Surveillance Technical Implementation Guidelines, Indonesian Ministry of Health

What is e-PPGBM?



*source: e-PPGBM guidebook, Indonesian Ministry of Health
^based on interviews with provincial health officials

The e-PPGBM is a module within the SIGIZI platform, which is designed to support implementers and policymakers focused on nutrition programmes across the country. In particular, e-PPGBM is intended to identify and monitor nutritional challenges in a rapid, accurate, regular and sustainable way, in addition to providing insights on the most appropriate course of action, both for individuals and communities*.

At the national level, the e-PPGBM module is expected to produce data with high granularity to support the Ministry of Health (and other relevant institutions) in determining and implementing national programmes and policies geared towards reducing malnutrition.

Implementation

The e-PPGBM module was developed in 2017. Following several rounds of piloting, iteration and training for users, e-PPGBM was rolled out nationwide in 2019.

Twice a year, provincial health offices are required to assess e-PPGBM's implementation, which involves direct participation from district health offices and puskesmas officers[^].

Variables in e-PPGBM

The main variables in e-PPGBM include: identity data, weight and measurement data, and programme data (for instance related to Early Initiation of Breastfeeding, Exclusive Breastfeeding, Vitamin A, Iron Folic Acid (IFA) supplementation, and Distribution of PMT - supplementary food). Data related to these main variables, along with 23 other indicators, need to be regularly inputted into e-PPGBM by puskesmas nutritionists.

Children and Infant Health Service

- Percentage of infants with low birth weight (weight < 2500 grams)
- Coverage of newborns getting early initiation of breastfeeding
- Coverage of infants age less than 6 months getting exclusive breastfeeding
- Coverage exclusive breastfeeding at 6 months
- Coverage of children between 6-59 months who receive Vitamin A capsules
- Coverage of moderate wasted children received supplementary food
- Coverage of severe wasted children receive treatment
- Number of children under 5 years old who receive micro nutrition implementation.
- Coverage of children who are weighed
- Coverage of children under 5 years old who have maternal and child health books (KIA)/ health cards
- Coverage of children under 5 years old who gained weight
- Prevalence of underweight (moderate and severe underweight) among children under 5 years old.
- Stunting prevalence (short and very short) among children under 5 years old.
- Prevalence of wasting (moderate and severe wasted) among children under 5 years old.

Maternal Health Service

- Percentage of pregnant women with anemia
- Percentage of pregnant women with chronic energy deficiency
- Coverage of pregnant women who receive minimum 90 IFA tablets during pregnancy
- Coverage of pregnant women with Chronic Energy Deficiency who receive supplementary food
- Coverage of postpartum mothers who receive vitamin A capsules

Adolescent Health Service

- Coverage of adolescent girl receiving Iron Folic Acid (IFA).

Family Health Service

- Coverage of households consuming iodized salt.

Services at Health Facilities

- Percentage of districts/cities carrying out nutrition surveillance
- Percentage of puskesmas capable to treat severe acute malnutrition children under 5 years old.

The users of e-PPGBM

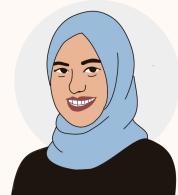
The data collection involves monthly recording of weight and measurement data in the register books at health posts managed by the community, known as posyandu. Inputting the data into the e-PPGBM module then becomes the responsibility of the puskesmas officers, which eventually becomes a growth and nutrition monitoring data source. By design, e-PPGBM's main users include puskesmas officers, district health officials, provincials health officials and Ministry of Health officials – all with different roles.

USER

ROLE

Level of task

Avg. years of experience in using e-PPGBM



Puskesmas Nutrition Officers

Puskesmas nutrition officers are tasked with recording, validating, and inputting all children's anthropometric measurement data from posyandu, in addition to the data on pregnant mothers and adolescent girl, into e-PPGBM, as well as using the data for determining intervention programmes.



District Level Health Officers

District level health officers are administrators of e-PPGBM. They provide access for puskesmas and supervise puskesmas nutritional surveillance performance through e-PPGBM.



Provincial Level Health Officers

Provincial level health officers administer and supervise nutrition surveillance through e-PPGBM. They provide access for district health offices; assist with monitoring during field visits; and advocate for analyses at the provincial level.

service owner



Ministry of Health Officers

As the service owner, the Ministry of Health officers' work mainly focuses on monitoring, evaluating, and analysing data from e-PPGBM, as well as maintaining and developing the application system.

High



Low

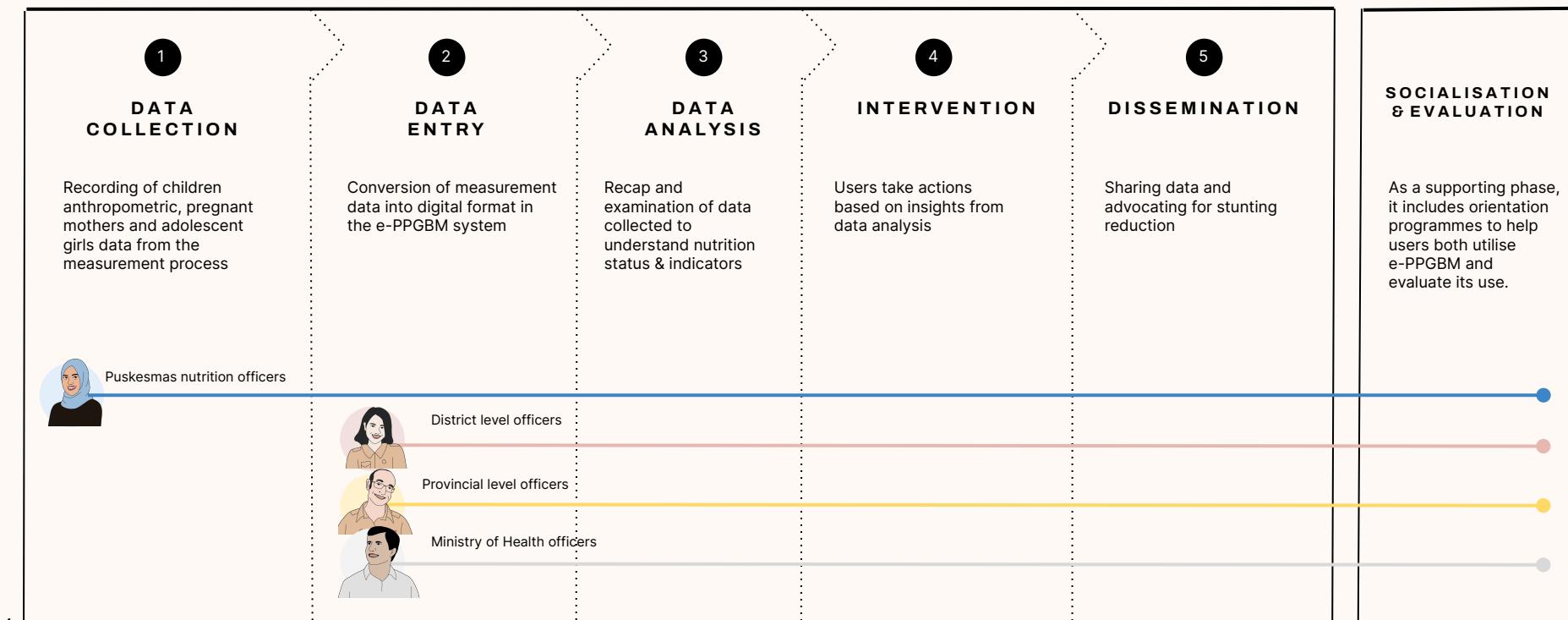
3 years of using e-PPGBM

3 years of using e-PPGBM

3 years of using e-PPGBM

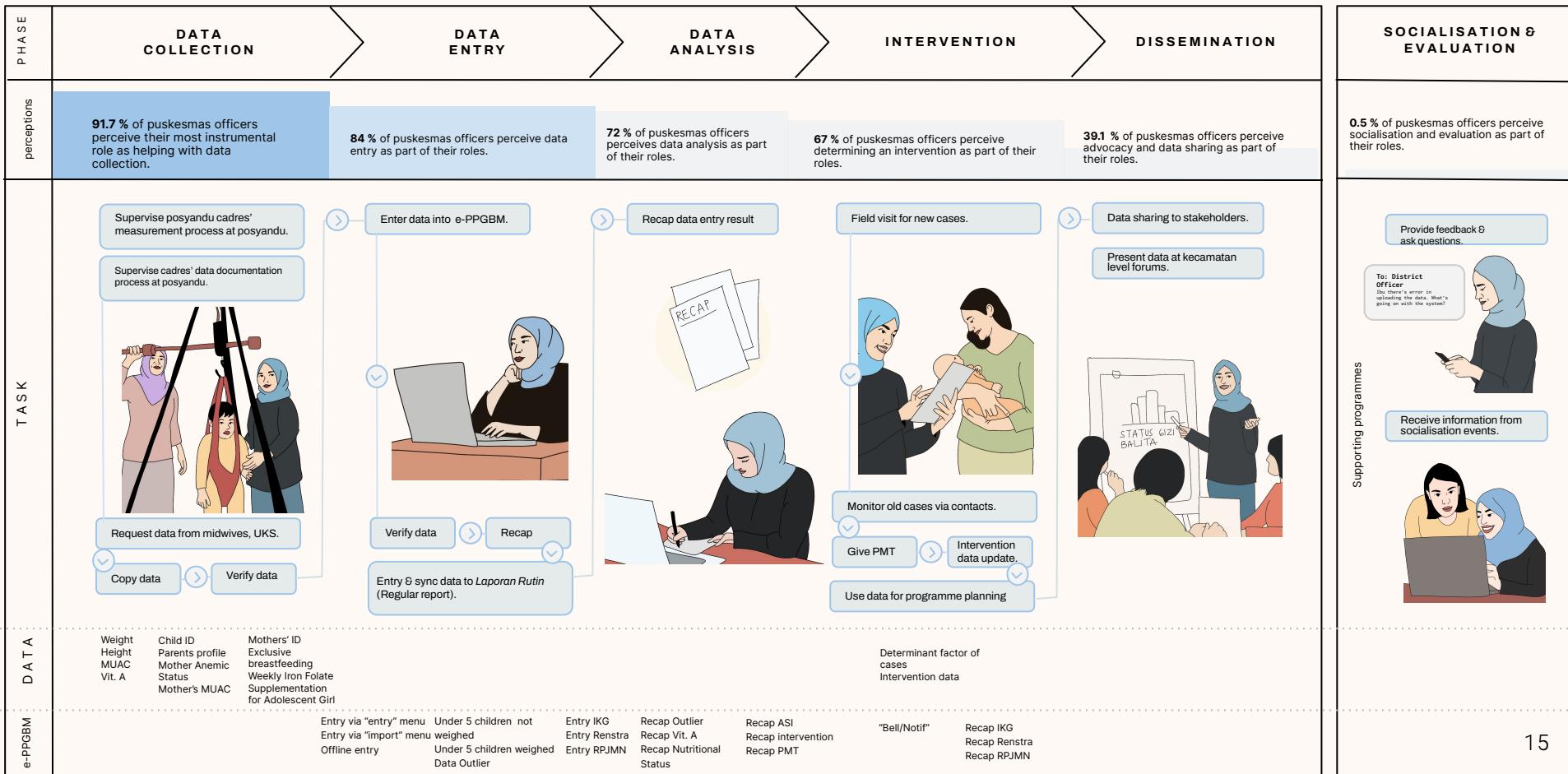
5 years of using e-PPGBM

The uses of e-PPGBM range from data collection to dissemination. The level of user involvement varies within each phase.



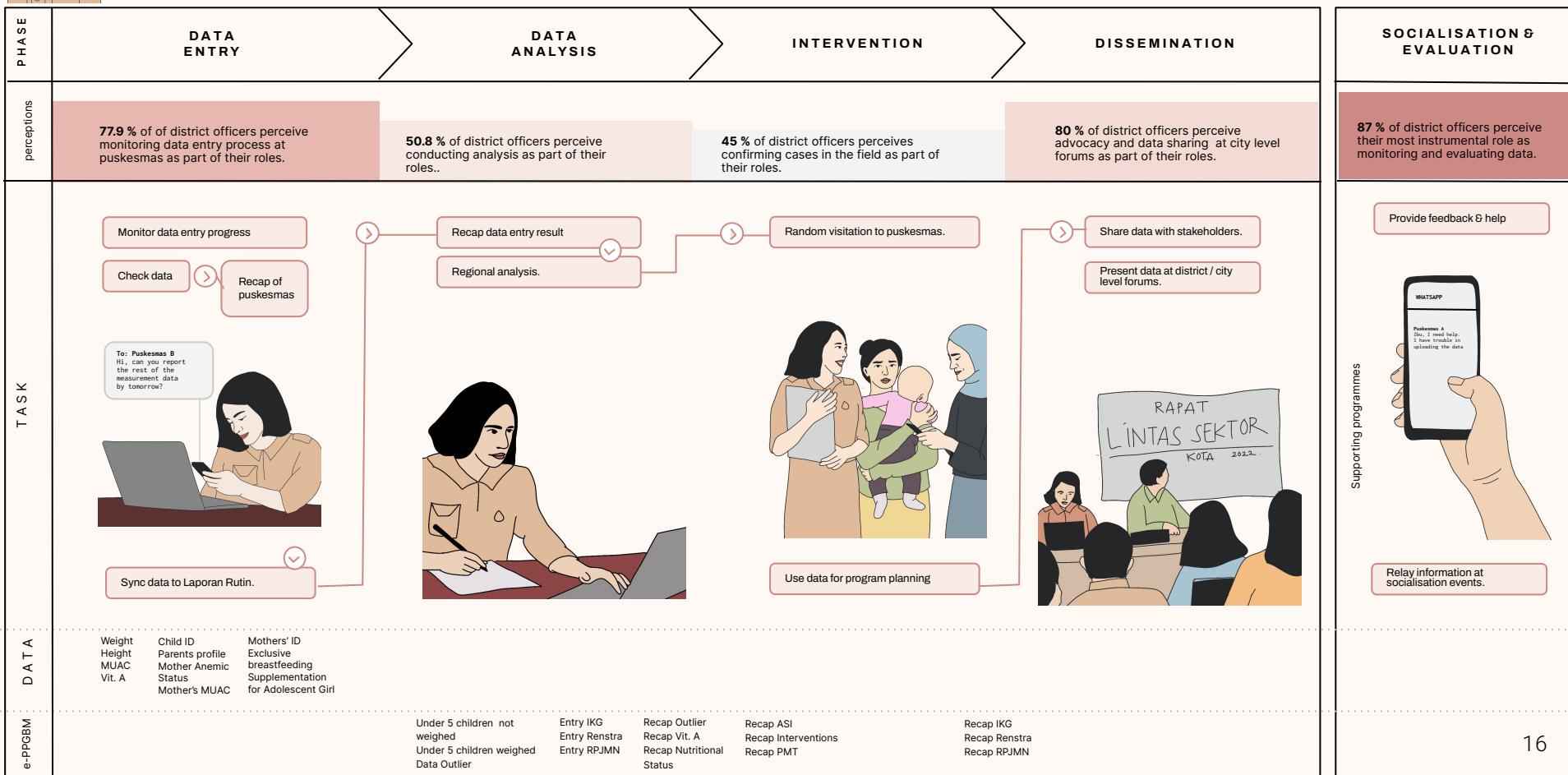


Puskesmas Nutrition Officers



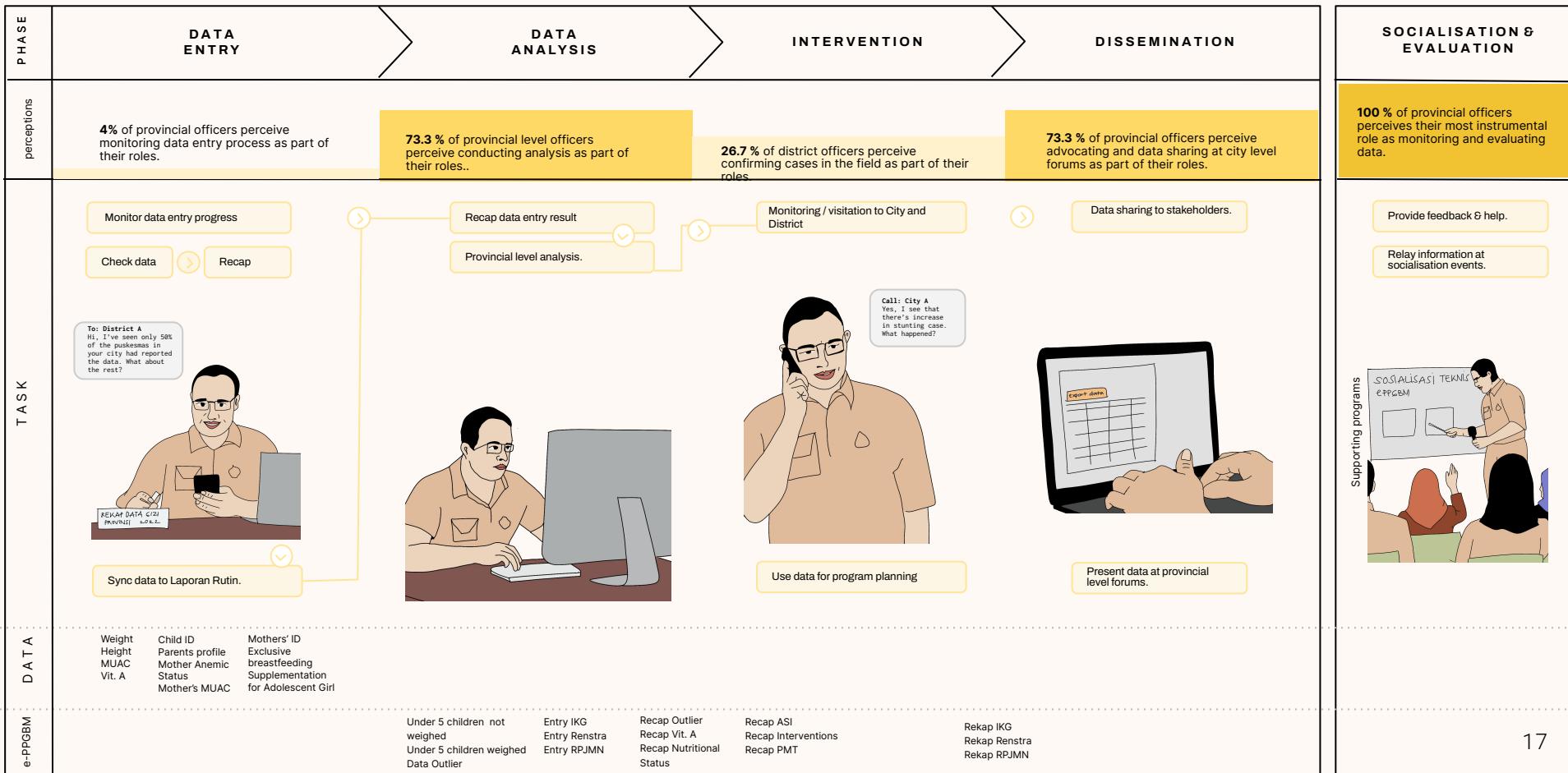


District Level Health Officers



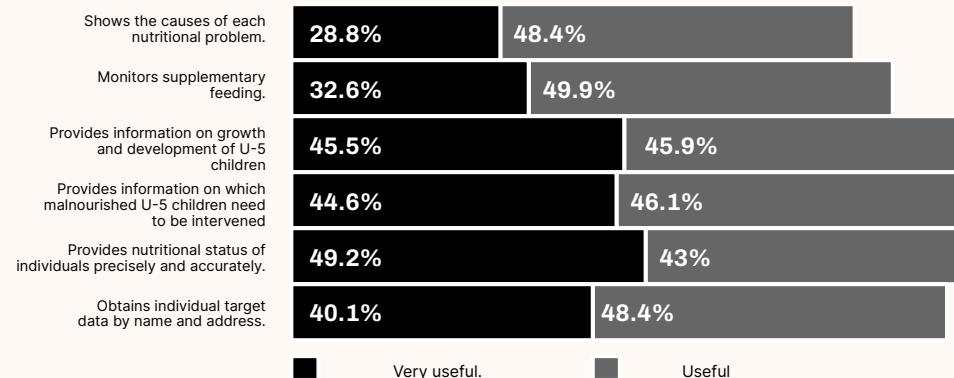


Provincial Level Health Officers



Based on surveys conducted, users report that e-PPGBM is helpful for conducting nutrition surveillance.

Puskesmas nutrition officers found e-PPGBM useful for surveillance activities, particularly for accurately identifying an individual's nutrition status.

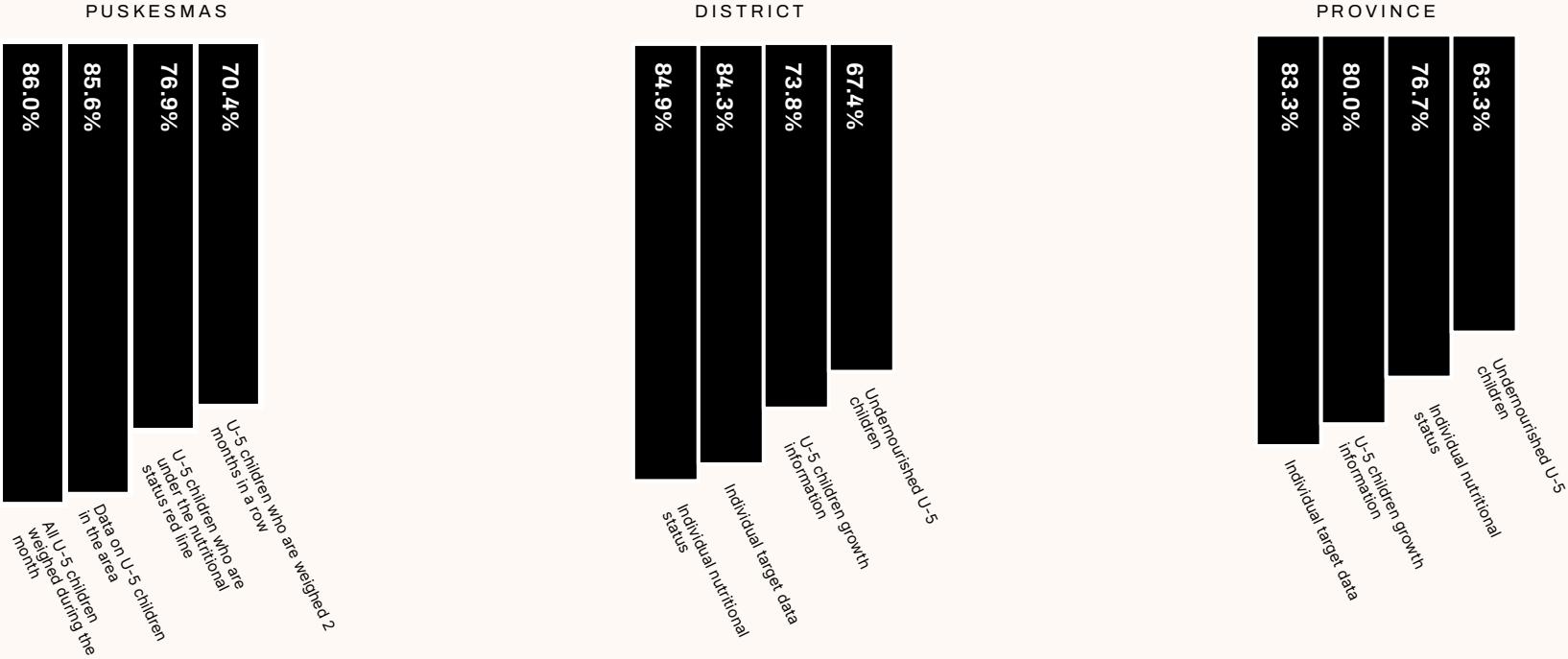


100%
of provincial health officers utilise e-PPGBM data

95.3%
of district health officers utilise e-PPGBM data

Users at the district and provincial levels utilise e-PPGBM data as the **main source** for nutritional surveillance in comparison to other information systems.

e-PPGBM users at different levels have varying perspectives on which data are more useful to inform their work.



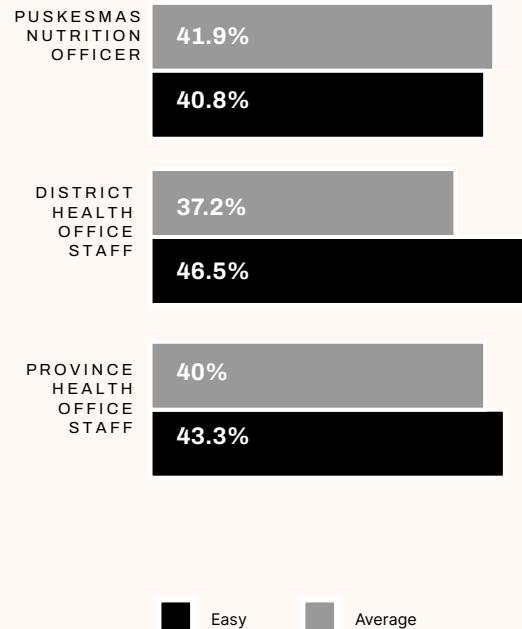
Even though puskesmas nutrition officers found e-PPGBM useful, there are several barriers that are preventing them from fully utilizing it. The most common challenge faced by users are technical errors when accessing the system and poor internet connection.



Different users have different experiences using e-PPGBM

The majority of puskesmas nutrition officers rank their experience in using and navigating e-PPGBM as average, whilst most district and province health officers describe their experience as easy*.

The *Implementation Gap Analysis* that follows in the next section will elaborate on the challenges different users face within each phase of e-PPGBM usage.



*Respondents were able to select from a 5-point scale that included: very difficult - difficult - average - easy - very easy



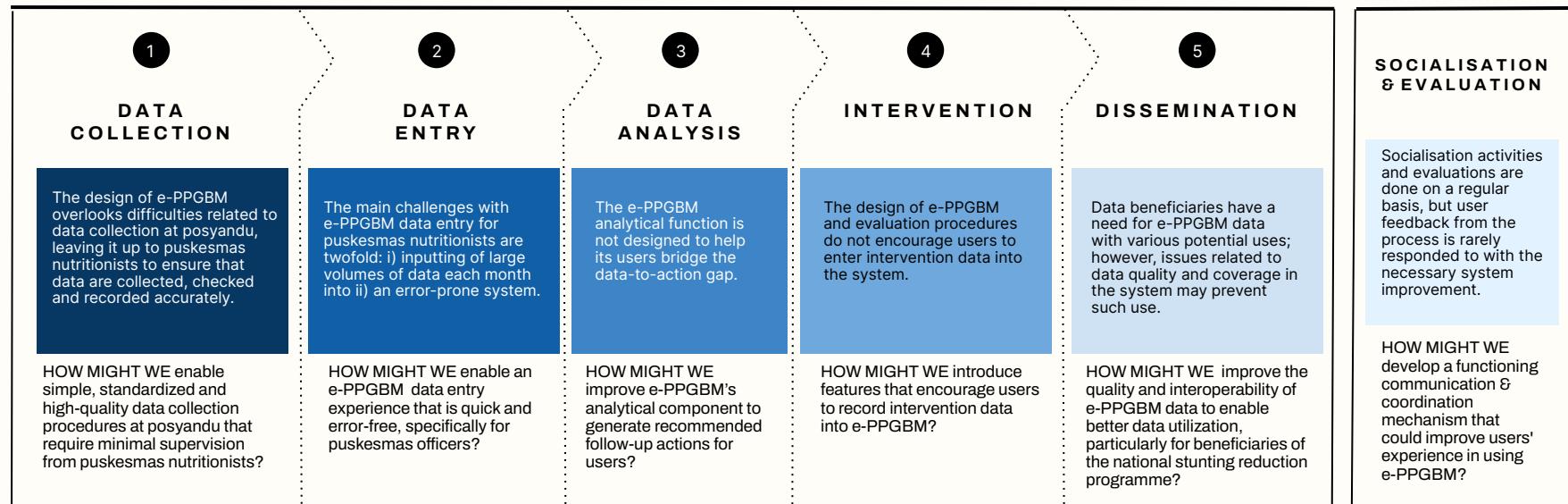
PART 03

Implementation Gap Analysis

e-PPGBM Implementation Gap Analysis

Guided by the following questions, we took a detailed look at each phase of e-PPGBM usage to gain insights on the implementation gaps.

- 01 What are the key gaps between e-PPGBM's design and implementation at the various levels of use?
- 02 What are the challenges in using e-PPGBM and what are the contributing factors?





DATA COLLECTION

INSIGHT

The design of e-PPGBM overlooks difficulties related to data collection at posyandu, leaving it up to puskesmas nutritionists to ensure that data are collected, checked and recorded accurately.



Posyandu cadres are at the frontline of data collection for e-PPGBM...

e-PPGBM is designed to collect data from communities, specifically from posyandu, through activities organized each month by posyandu cadres. Cadres are volunteers from the community who work together to monitor community health conditions and provide regular posyandu services.



... but most of them perform their tasks without clear weighing, measuring or data recording standards.

The design of e-PPGBM leaves the standards for weighing and measuring, as well as data recording to posyandu. As a result, these units often come up with their own forms, contributing to various data collection methods being used across posyandu.

During posyandu activities, most nutrition officers and posyandu cadres record data using handwritten notes in registration books and on papers. Therefore, the data is not only prone to errors due to the lack of standardization in posyandu cadres' measurements and weighing, but also transferring handwritten records into e-PPGBM can lead to errors due to illegible notes.

Puskesmas nutritionists carry a double burden in collecting data for e-PPGBM...

1

Verification of Posyandu Data

If there is a spike or an irregularity showing in the data, puskesmas nutritionists must take verification steps. This data verification process may necessitate back-and-forth coordination with posyandu cadres, U-5 children's parents, and village officers.

As a result, the verification process would delay data collection.

2

Collection of relevant data for e-PPGBM from other units within puskesmas

Puskesmas nutritionists are required to enter and update data associated with 23 indicators into e-PPGBM. Several of these 23 indicators fall under the purview of different units in puskesmas. For instance, the KIA (mother-child health) unit is in charge of the "exclusive breastfeeding of infant less than six months" indicator. The school health unit in puskesmas, on the other hand, keeps track of "weekly Iron Folate supplementation for adolescent girl".

As a result, for puskesmas nutritionists, completing the data collection process each month requires additional effort. This data collection process also relies on the ability of other puskesmas units to collect relevant data.

... juggling the tasks of providing community health services and data collection.

According to a study by the Indonesian Ministry of Health (RISNAKES 2017), 82.5 percent of puskesmas face a shortage of technical human resources. The recent CIPG's Data Governance case study report (2021) also underlined the inadequacy of human resources in terms of numbers and qualification, which impact on health sector data governance.

Many of the respondents who participated in this study were often the only nutritionist in their puskesmas, whilst in others cases, the responsibility was shared with one or two other nutritionists. The number of posyandu that are supervised by puskesmas nutritionist varies as well.

For example, we came across an instance where one nutritionist only had a few posyandu to look after, whereas in other instances, one nutritionist was responsible for around 50 posyandu.

In addition, many nutritionists are also handling the administration of COVID-19 vaccines and other pandemic-related ongoing responses.



PHASE



DATA COLLECTION

OPPORTUNITY AREA

HOW MIGHT WE enable simple, standardized and high-quality data collection procedures at posyandu that require minimal supervision from puskesmas nutritionists?



DATA ENTRY

INSIGHT

The main challenges with e-PPGBM data entry for puskesmas nutritionists are twofold: i) inputting of large volumes of data each month into ii) an error-prone system.



Users consider the amount of data entered each month to be excessive.

The issue for puskesmas nutritionists in consistently entering data into e-PPGBM is the huge volume of data that must be entered.

In addition to inputting primary data from posyandu and other units in puskesmas in to e-PPGBM, nutritionists are required to do data recapitulation in e-PPGBM to fulfill the 23 indicators required by the system.

Are the indicators in e-PPGBM enough?

73.8% district health offices mentioned that they do not need additional data or indicators in the e-PPGBM application.

While 63% provincial health offices stated they do not need additional indicators in the e-PPGBM information system.

Technical errors are commonly experienced by users during the data entry phase of e-PPGBM usage.

Whenever the data entry period is approaching (which is usually around the end of each month), the number of technical errors typically increase, possibly due to server overload.

There are also instances of data loss, though the data was successfully uploaded in e-PPGBM prior.

For users, recurring technical errors means more time and effort needed to enter data into the system.

4/5

85%

70%

80%

of puskesmas officers experience problems when using e-PPGBM.

of puskesmas officers experienced technical issues more than once in the last three months.

of district health officers mentioned that they commonly encountered technical errors.

of provincial health officers mentioned that they commonly encountered technical errors.

Other technical difficulties commonly arise in the data entry process linked to:



Transferring data of U-5 children from other puskesmas



Entering U-5 children's data without NIK (Personal Identification Number)



Searching for U-5 children's name and profile



Excluding data of U-5 children above 5 years old from the system



Data are not synchronised properly when using the "import" menu during data entry

Data entry errors could be minimised by using the import menu for data entry. At the moment, this is not commonly used due to format incompatibility.

There are two mechanisms for entering data into e-PPGBM:

1

Using the
“entry” menu

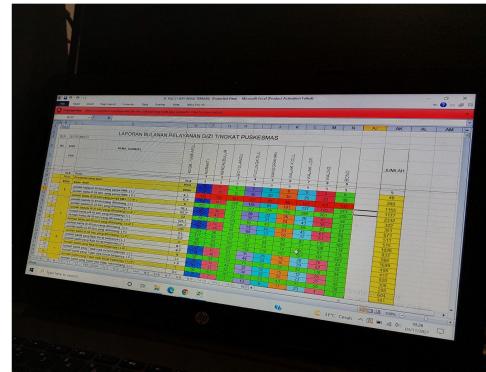
2

Using the
“import” menu

Throughout our interviews, we discovered that not all users actually notice and/or understand using the import menu. In addition, the format in which the data is collected is incompatible with the uploading option via the Import menu.

Puskesmas nutritionists generally input monthly data updates one by one for each individual in e-PPGBM, which takes more time compared to using the import menu.

INSPIRATION FROM FIELD RESEARCH



The East Java Government noticed that the e-PPGBM import feature could lessen the burden and effort needed to input data into e-PPGBM each month. To address the challenge, they developed a spreadsheet called ASP and APR with a format compatible with e-PPGBM sheet template based on their needs.

“It was such a headache, such a mess. Initially, I was trained to enter all U-5 children’s data in my area, one by one, by name, by address. Then came the ASP sheet (Aplikasi Satu Posyandu) developed by the provincial government which helped with the e-PPGBM data entry process.”

- Puskesmas officer, East Java.

PHASE

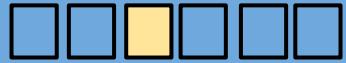


DATA ENTRY

OPPORTUNITY AREA

HOW MIGHT WE enable an e-PPGBM data entry experience that is quick and error-free, specifically for puskesmas officers?

PHASE



DATA ANALYSIS

INSIGHT

The e-PPGBM analytical function is not designed to help its users bridge the data-to-action gap.



Data analysis through e-PPGBM is mainly recapitulation.

Analysis Task 1: Recapitulation generated by e-PPGBM

In practice, data analysis conducted by puskesmas officers mainly involves recapitulation of U-5 children's weighing and measurement results in their puskesmas.

For district and provincial health offices, data analysis mainly focuses on data recapitulation and mapping nutritional situation in their area.

Data recapitulation could be generated through the e-PPGBM.

In addition to data recap, e-PPGBM also generates information on the nutritional status of individuals.

EXISTING FOCUS OF ANALYSIS

Analysis Task 2: Informing Action for Intervention

Data analysis is expected to provide an understanding of the situation(s) individuals are facing, in order to help inform what actions are required to address the problem.

Puskesmas are expected to design interventions for U-5 children with nutritional issues. While for district and provincial health offices, the expected interventions are related to programme planning and budget allocation, based on the data in e-PPGBM.

In practice, this has not been part of users' data analysis tasks.

EXPECTED FOCUS OF ANALYSIS

Data-to-Action Gap

"Usually, if a malnourished child is identified, the first step is to refer the child to a puskesmas doctor, who would review the child's medical history. Then, I would also assess the anthropometric (data) again and decide what kind of food can be given afterwards."

- Puskesmas Officer, NTT

Not all users understand how to determine specific forms of intervention based on the available e-PPGBM data

Even after an individual's nutritional status and data recap are generated by e-PPGBM, not all users understand the follow-up actions or interventions required to treat the child. From our interviews, we found that users still needed to refer to the *Anthropometry and Nutritional Surveillance Guidebook* to understand what the status of an individual means, and the appropriate interventions needed to treat the individual.

Notification feature (the bell) is available, yet rarely used.

Once data are inputted into e-PPGBM, an analysis can be automated to provide notification via the bell menu about U-5 children that require interventions. However, we found that this feature is rarely used by puskesmas nutritionist. **Why?**

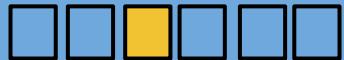
01

A redundant feature with "rekap status gizi".

02

It does not provided recommendations on follow up actions.

PHASE



DATA ANALYSIS

OPPORTUNITY AREA

HOW MIGHT WE improve e-PPGBM's analytical component to generate recommended follow-up actions for users?

PHASE



INTERVENTION

INSIGHT

The design of e-PPGBM and evaluation procedures do not encourage users to enter intervention data into the system.



Timely and accurate delivery of interventions needed for an U-5 children is as important as knowing an U-5 children's nutritional status.

However due to e-PPGBM's current implementation that is focused on data entry, users are focused on entering the basic nutritional status of U-5 children and often neglect recording the interventions that were carried out. While interventions in e-PPGBM can be reported either via the bell/notification feature or the U-5 children information menu, in practice users rarely use these two features.

According to our survey . . .

94%

of Puskesmas
Nutrition Officers

93%

of District Health
Officers

100%

of Provincial Health
Officers

... reported that **data entry coverage** is the most discussed topic during e-PPGBM evaluation meetings.

Our survey also found that **e-PPGBM users generally use the intervention reporting features (bell and U-5 children information menu) once a month at most.**

Whilst users tend to prioritize delivering interventions related to nutritional issues, they see recording these interventions into e-PPGBM as more of an optional task.

Interventions are frequently delivered through home visits, and sometimes recording the interventions directly into e-PPGBM during home visits can be difficult. Instead, the users usually record their interventions in a register book, which delays data entry into e-PPGBM and deters them from completing the task.

For puskesmas nutritionists recording interventions into the e-PPGBM is seen as an optional task, since feedback during monitoring and evaluation rarely emphasizes the importance of completing this step. Given that it is also a time-consuming task that adds another layer of data entry, **the majority of users we interviewed did not perform this task.**

When interventions are not recorded in e-PPGBM, the consequences can range from underreporting of services by puskesmas, status of individuals receiving the intervention unchanged, to the inaccurate stock record of medications and food supplements.

CONSEQUENCES

PHASE



INTERVENTION

OPPORTUNITY AREA

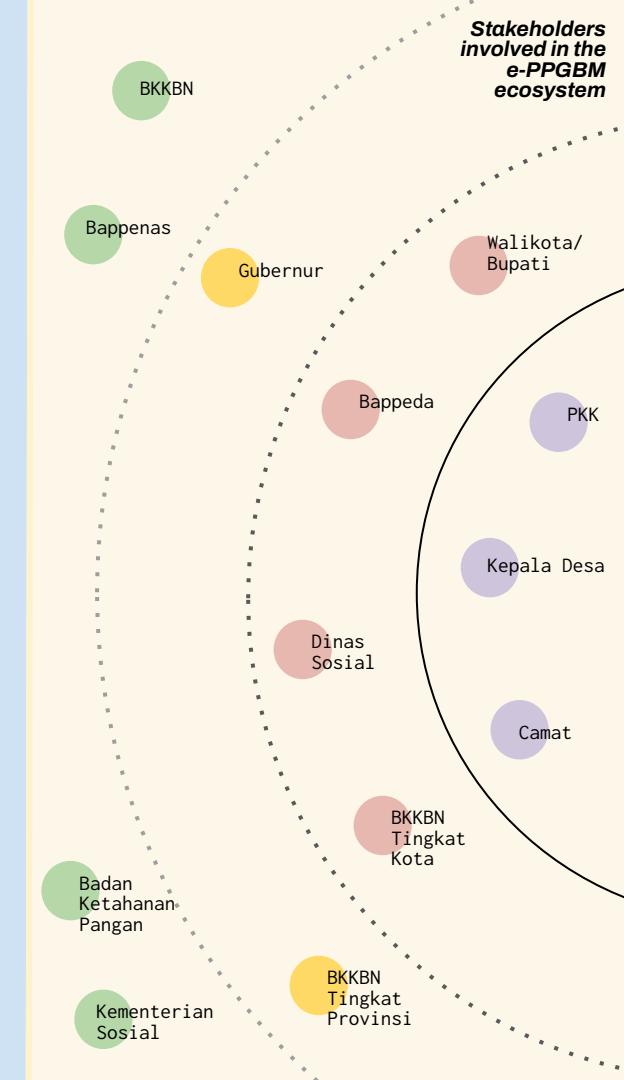
HOW MIGHT WE introduce features that encourage users to record intervention data into e-PPGBM?



DISSEMINATION

INSIGHT

Data beneficiaries have a need for e-PPGBM data with various potential uses; however, issues related to data quality and coverage in the system may prevent such use.



“The stunting rate recorded by e-PPGBM and the recent nutrition survey (*Studi Status Gizi Balita Indonesia*) differ significantly. This means making decisions based on e-PPGBM may be quite a dilemma. Priority should be given to address the issue of e-PPGBM data coverage and quality.”

- e-PPGBM data beneficiary, Jakarta

Presenting and sharing data, including accomplishments recorded using the e-PPGBM, is the most common method of disseminating e-PPGBM data. Users' participation in this activity ranges from puskesmas to the national level.

A common feedback theme from the process relates to the accuracy and coverage of e-PPGBM data. Concerns have been raised about the data collection process in posyandu, which may affect the validity of the data collected, as well as the coverage of data recorded in e-PPGBM compared to relevant national nutritional surveys.

Concerns at the national level revolve around minimum data standards in order to be used for policy-making, and the interoperability of e-PPGBM data that allows data sharing among systems and stakeholders.

With e-PPGBM having the potential of becoming a nutritional information system to support and inform Indonesia's stunting reduction programme, it is critical for the service owner to reflect on and address the concerns of stakeholders in order for the system to be used effectively.

PHASE



DISSEMINATION

OPPORTUNITY AREA

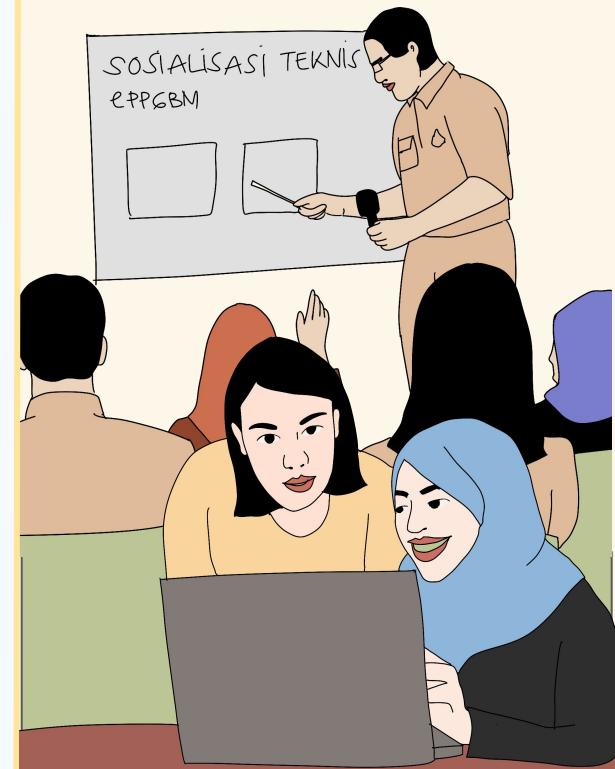
HOW MIGHT WE improve the quality and interoperability of e-PPGBM data to enable better data utilization, particularly for beneficiaries of the national stunting reduction programme?



SOCIALISATION & EVALUATION

INSIGHT

Socialisation activities and evaluations are done on a regular basis, but user feedback from the process is rarely responded to with the necessary system improvement.



More than 90% of users at all levels participated in e-PPGBM socialization activities, and more than 70% of all users participated in e-PPGBM evaluation at least once a year.

However, feedback from these processes are rarely followed up with action.

The top three feedback for improving socialization and evaluation events based on our survey include:



Adding discussion to address challenges with using e-PPGBM



Including more demonstration on navigating and using e-PPGBM



Providing technical troubleshooting assistance

The design of the e-PPGBM information and communication flow makes puskesmas officers reliant on the guidance and support of individuals at Dinas Kesehatan, who in turn rely on instruction from the Ministry of Health, making communication and troubleshooting of e-PPGBM usage difficult.

Through our interviews, we discovered that the continuing challenges that users face can lead to potential inaccurate and suboptimal use of e-PPGBM's features, as well as underreporting of data and information in the system.

INSPIRATION FROM FIELD RESEARCH

Peer to peer learning as a way of troubleshooting

"Most of the time, it took a while for Dinas to respond whenever I asked them about errors or difficulty that I was facing. So, I'd rather ask a fellow puskesmas Nutrition Officer from other puskesmas that I know. So far, she is very helpful."

– Puskesmas Nutrition Officer, Aceh

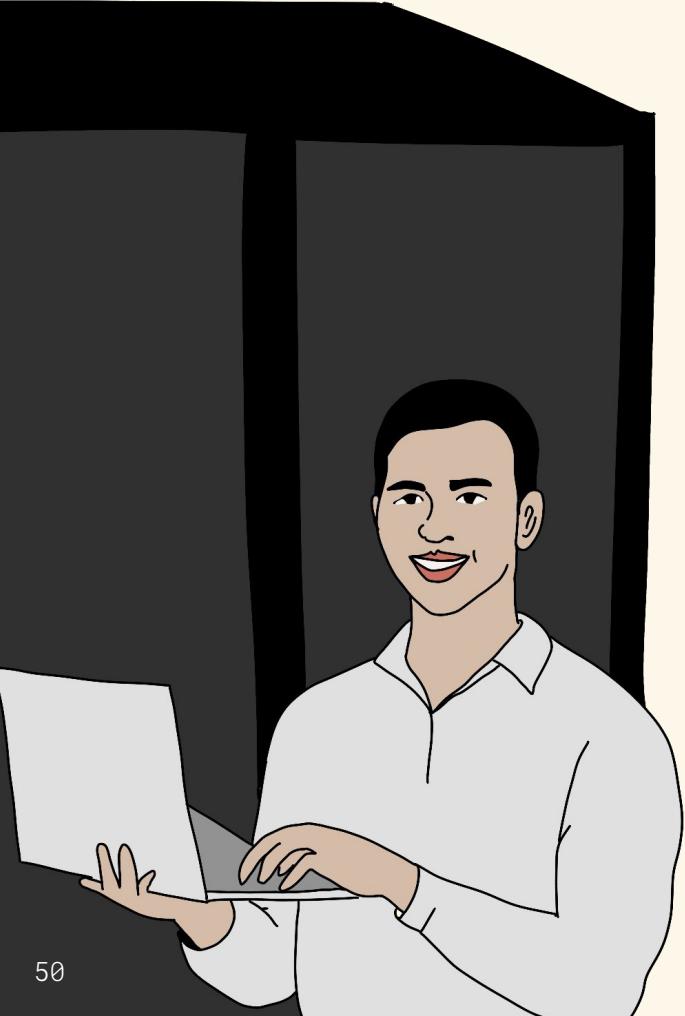
PHASE



**SOCIALISATION &
EVALUATION**

OPPORTUNITY AREA

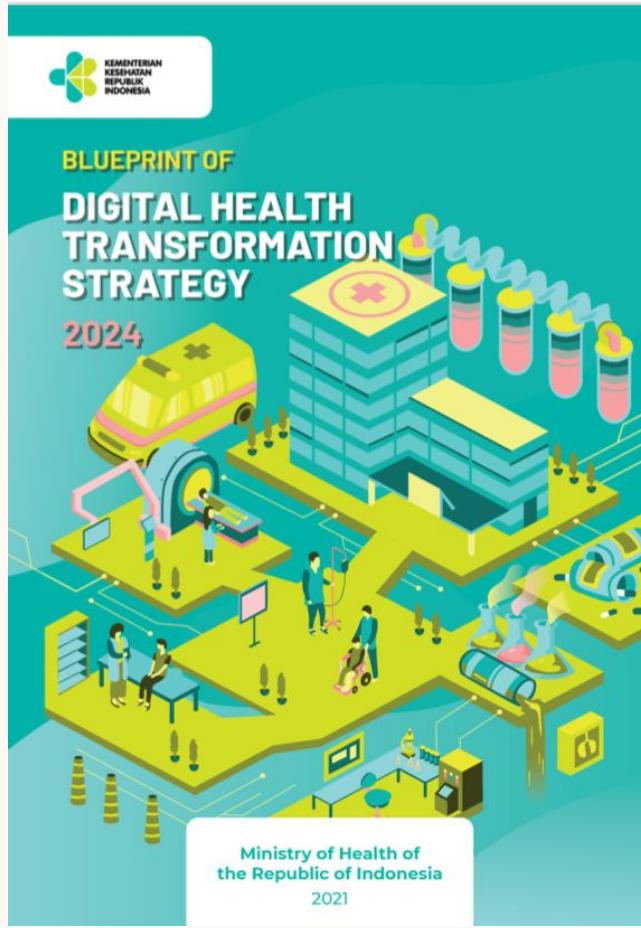
**HOW MIGHT WE develop a functioning
communication and coordination
mechanism that could improve users'
experience in using e-PPGBM?**



PART 04

Recommendations

Service Owner:
Directorate of Nutrition,
Ministry of Health



The difficulties associated with implementing e-PPGBM also reflect the broader issue of health data fragmentation, which is caused by a lack of regulation on data standardization, interoperability, and integration. Priorities for addressing these issues are outlined in the Ministry of Health's *Digital Health Transformation Blueprint*:

Service-Based Platform

Generate data in parallel with the delivery of health services, rather than through aggregated periodic reporting. The latter tends to add administrative burdens while failing to provide adequate data depth for further analysis and interventions.

Data Architecture

Standardize data by implementing international health data standards in order to improve data consistency and interoperability across multiple applications.

Platform Efficiency

Consolidate multiple reporting and information systems into a single data aggregation platform for health officers, reducing administrative burden while improving data quality.

API Service for Data Integration

Integrate multiple data sources using an API sharing mechanism to facilitate easier data sharing with stakeholders and to enable advanced data analysis.

While this transformation strategy will affect all the digital information systems in the Ministry of Health (including e-PPGBM over the next few years), we have outlined several ideas and recommendations in the following section that the Ministry of Health as the Service Owner can adopt to close current gaps related to e-PPGBM's implementation.

Recommendations to help close e-PPGBM's current implementation gaps

To complement the Ministry of Health's *Digital Transformation Blueprint*, we applied service design principles to generate recommendations that can help close the gaps related to e-PPGBM's implementation. In this case, we have included several service elements within the frontstage touchpoints, backstage, and broader ecosystem across all of e-PPGBM's service phases. Our recommendations also provide solutions in each of these areas:

■ PLATFORM IMPROVEMENT

■ SUPPORTING MECHANISM

■ POLICY ENABLERS

PHASE	OPPORTUNITY	RECOMMENDATION
1 DATA COLLECTION	HOW MIGHT WE enable simple, standardized and high-quality data collection procedures at posyandu that require minimal supervision from puskesmas nutritionists?	POSYANDU DATA RECORD TEMPLATE IMAGE-TO-EXCEL CONVERTER DATA ANOMALY ALERT FEATURE
2 DATA ENTRY	HOW MIGHT WE enable an e-PPGBM data entry experience that is quick and error-free, specifically for puskesmas officers?	RECOMMENDATION GENERATOR
3 DATA ANALYSIS	HOW MIGHT WE improve e-PPGBM's analytical component to generate recommended follow-up actions for users?	INTERVENTION FEEDBACK MECHANISM A FOCUS ON INTERVENTION DATA IN EVALUATION SESSIONS
4 INTERVENTION	HOW MIGHT WE introduce features that encourage users to record intervention data into e-PPGBM?	COORDINATION WITH NATIONAL DATA GOVERNANCE AND HEALTH DIGITAL TRANSFORMATION INITIATIVES
5 DISSEMINATION	HOW MIGHT WE improve the quality and interoperability of e-PPGBM data to enable better data utilization, particularly for beneficiaries of the national stunting reduction programme?	MODERATED Q&A PLATFORM
SOCIALISATION & EVALUATION	HOW MIGHT WE develop a functioning communication & coordination mechanism that could improve users' experience in using e-PPGBM?	

1 DATA COLLECTION

HOW MIGHT WE enable simple, standardized and high-quality data collection procedures at posyandu that require minimal supervision from puskesmas nutritionists?

SUPPORTING MECHANISM

Posyandu Data Record Template

A paper-based universal template for all posyandu in Indonesia.

Required features:

- Ability to record an individual's data by name and address;
- Compatible format with the e-PPGBM sheet format to enable quick transfer of data;
- Simple recap task. Detailed recap should be done at the puskesmas level;
- Only data relevant to e-PPGBM's requirements are collected;
- Aligned with KMS and KIA; and
- Sufficient space for handwritten notes.

- BENEFITS**
- Clearer and simpler recording process for posyandu cadres
 - Data collection is standardized
 - Reduce the supervisory burden on puskesmas nutritionists

INSPIRATION FROM FIELD RESEARCH



A puskesmas in East Nusa Tenggara provided a template for data collection at the posyandu level, which is designed in alignment with the e-PPGBM data template sheet. The use of such template made data collection and entry into e-PPGBM easier for puskesmas officers.

*Another possibility is to apply Sistem Informasi Posyandu (SIP) nationally.

2 DATA ENTRY

HOW MIGHT WE enable a quick and error-free e-PPGBM data entry experience, specifically for puskesmas officers?

PLATFORM IMPROVEMENT

Data Anomaly Alert Function

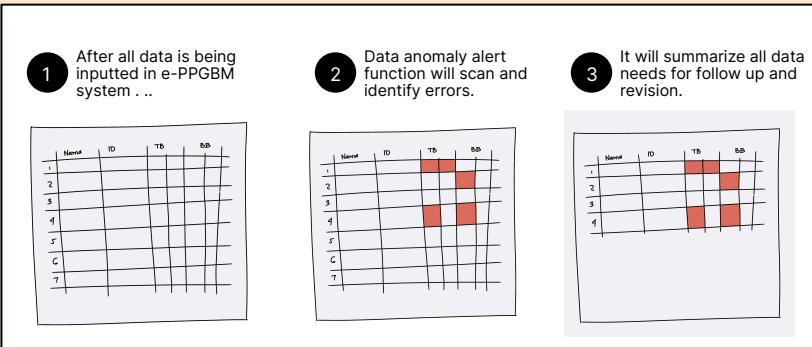
A feature in e-PPGBM which automatically identifies possible data anomaly once data are entered and directly alert users.

Required features:

- Ability to detect data anomaly after data is entered into e-PPGBM;
- User notification whenever an anomaly occurs;
- Calculation using formulas which compare new entries with historical data and trends; and
- Tick box option to inform whenever data has been verified

BENEFITS

- Assist with spotting data anomaly
- Reduce the effort needed from puskesmas nutritionists for data verification



2 DATA ENTRY**HOW MIGHT WE enable a quick and error-free e-PPGBM data entry experience, specifically for puskesmas officers?****SUPPORTING MECHANISM**

Image-to-Excel Converter

A mechanism to convert analogue posyandu records into digital sheet.

Required features:

- Ability to convert image formats (e.g. JPG) into Excel sheets with high precision; and
- Paper-based nutrition record sheets from posyandu are allowed in photo format, where it can be sent to puskesmas nutritionists, and converted into an editable sheet that is ready to be uploaded into e-PPGBM.

BENEFITS

- Simplified data reporting from posyandu to puskesmas and e-PPGBM
- Faster data reporting and entry process

ANALOGOUS INSPIRATION

Currently, Microsoft provides a feature where a picture can be inserted into a table. This feature is compatible with mobile devices, in which user could easily take a picture of a data table, then have the system translate it directly into editable Excel table.

Explore this idea further [here](#).

3 DATA ANALYSIS

HOW MIGHT WE improve e-PPGBM's analytical component to generate recommended follow-up actions for users?

PLATFORM IMPROVEMENT

Recommendation Generator

A feature in e-PPGBM that provides detailed recommendations on intervention options once data is entered and analysed by e-PPGBM.

Required features:

- Ability to generate detailed recommendations in e-PPGBM based on the nutritional status of individuals;
- Recommendations include information on the type of treatment to provide, the medications to administer, and the monitoring task that will be required; and
- Recommended interventions can be based on the MoH's *Bagan Tata Laksana Gizi Buruk* handbook (malnutrition management handbook).

BENEFITS

- Guidance for e-PPGBM users on what interventions to pursue
- Conserve time usually used for additional analysis



HOW MIGHT WE introduce features that encourage users to record intervention data into e-PPGBM?

SUPPORTING MECHANISM

A Focus on Intervention Data in e-PPGBM Evaluation Sessions

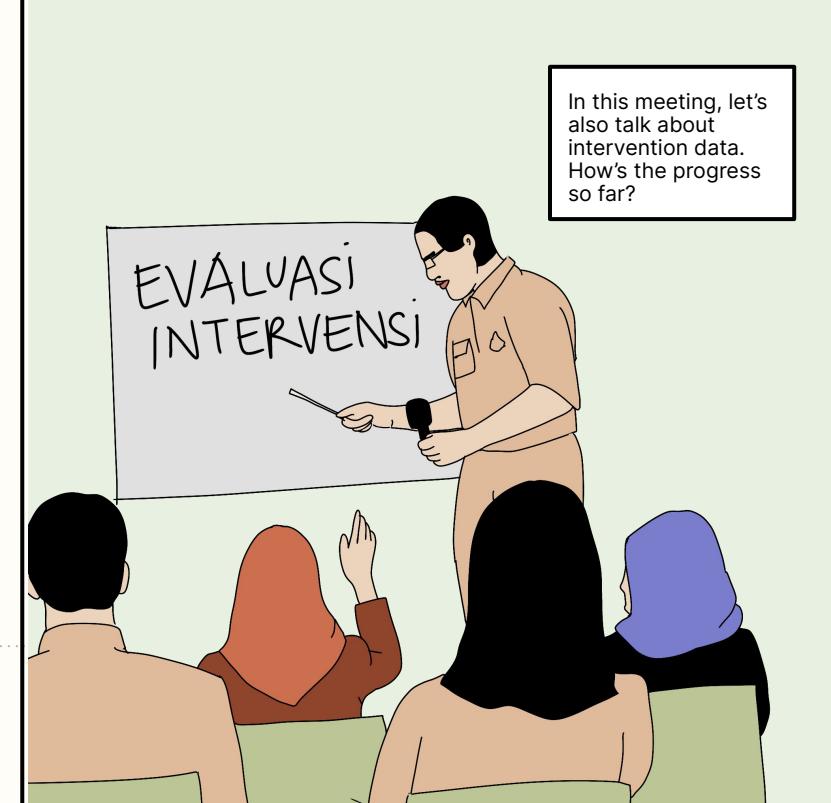
Most e-PPGBM evaluations focus on data entry achievements and technical challenges on the platform. In addition, a dedicated session to discuss specifically intervention data is proposed.

Required features:

- A dedicated session to discuss intervention data during e-PPGBM evaluation workshops; and
- Topics should include achievements related to the interventions, the importance of recording interventions into e-PPGBM, and tracking progress.

BENEFITS

- Improved understanding of the importance and requirements for recording interventions into e-PPGBM
- Users are motivated to record interventions



HOW MIGHT WE introduce features that encourage users to record intervention data into e-PPGBM?

PLATFORM IMPROVEMENT

Intervention Feedback Mechanism

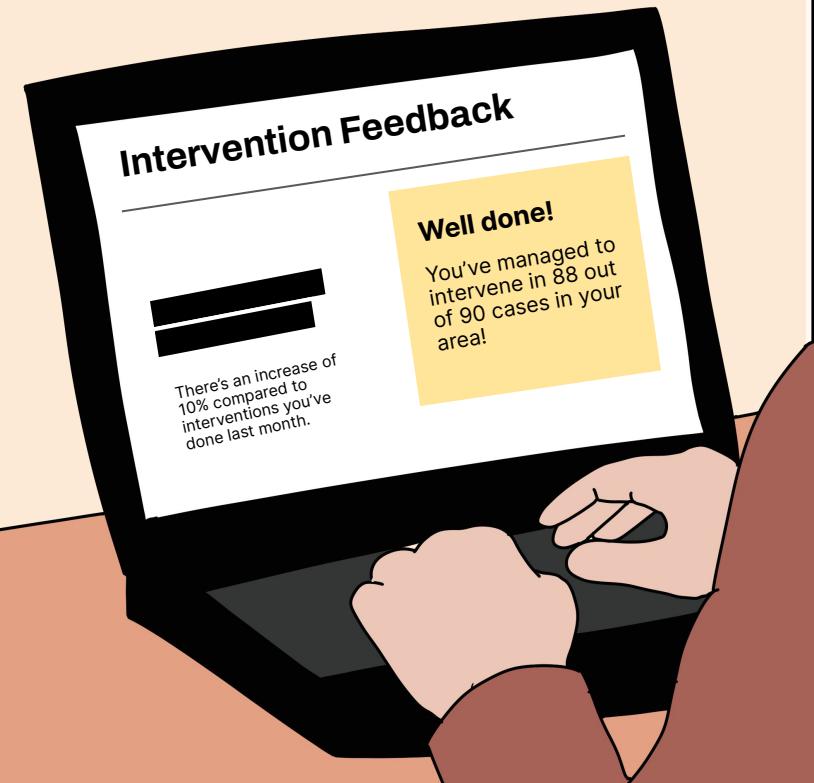
Provide feedback once intervention data are recorded into e-PPGBM.

Required features:

- Quick access for recording interventions in e-PPGBM;
- Real time feedback once interventions are recorded in the system;
- Users' achievement (interventions/total interventions required) update after recording interventions; and
- Intervention tracking.

BENEFITS

- Less effort for users to record interventions
- Intervention tracking
- More interventions recorded in e-PPGBM



5 DISSEMINATION

HOW MIGHT WE improve the quality and interoperability of e-PPGBM data to enable better data utilization, particularly for beneficiaries of the national stunting reduction programme?

POLICY ENABLER

Coordination with National Data Governance and Health Digital Transformation Initiatives

To improve e-PPGBM data quality for decision making, efforts must be aligned with the Satu Data Indonesia and Ministry of Health's Digital transformation agendas.

Furthermore, to enhance nation-wide data governance mechanisms, the priorities should focus on:

- Availability of and compliance with **official standards for data production**;
- Ensuring each data produced contains **metadata** explaining rationale and methodology behind the data; and
- Establishing common standards of **interoperability** on all data produced by government agencies

We recommend close coordination with both initiatives to align efforts geared towards data governance improvement for e-PPGBM.

BENEFITS

- Clearer data recording and collection process
- Better data accuracy and validity
- Potential data sharing with other platforms

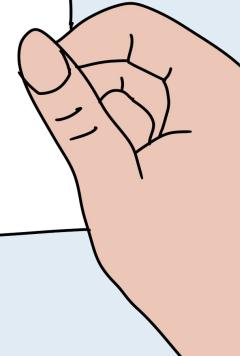
Data Standardisation for e-PPGBM will depend on:

1



SATU DATA
INDONESIA

2



HOW MIGHT WE develop a functioning communication & coordination mechanism that could improve users' experience in using e-PPGBM?

SUPPORTING MECHANISM

Moderated Q&A Platform

An online bulletin board facilitated by service owner and provincial government, where users can post questions related e-PPGBM usage.

Required features:

- Web-based discussion channel (online bulletin board);
- Resources on e-PPGBM (guidebook, success stories, updates on e-PPGBM);
- Chat channels for online discussions between users at all levels;
- Contact information of resource person/local champions; and
- Standard response time for Ministry of Health officials to address questions raised in the platform (e.g. 1 x 24 hours)

BENEFITS

- Improved channels for learning
- Additional channels for communicating and sharing with other e-PPGBM users

ANALOGOUS INSPIRATION

✉ Mari Mulai Bertanya di TanyaBOS

TanyaBOS adalah forum tanya jawab resmi dari Kemendikbudristek dengan tujuan memberi informasi yang akurat bagi sekolah dalam pengelolaan dana BOS. Kecil ataupun besarnya isu, kendala, dan kebingungan yang Anda hadapi i... baca selengkapnya



✉ Kontak TanyaBOS: tanyabos@kemdikbud.go.id

Silahkan kontak alamat email di atas jika Anda memiliki kendala teknis dalam Forum TanyaBOS



✉ Selamat datang di TanyaBOS! [Panduan Forum]

TanyaBOS adalah forum tanya jawab antara sekolah, dinas dengan tim manajemen BOS di Kementerian Pendidikan dan Kebudayaan. Forum ini dikhususkan untuk menjawab berbagai pertanyaan, isu, kendala, dan menyebarluaskan praktik c... baca selengkapnya



Sumber Dana Tidak Muncul

Kendala & Tutorial Teknis



The Ministry of Education recently launched an online bulletin board [TanyaBOS](#) where teachers and school officials can post questions related to school-related operational funding issues. There are people within the Ministry tasked as admin personnel, who are responsible to monitor and respond to the questions. Other users are also allowed to respond at their convenience.

Summary of insights and recommendations to address the main challenge within each phase of e-PPGBM usage

PHASES OF E-PPGBM	1 DATA COLLECTION	2 DATA ENTRY	3 DATA ANALYSIS	4 INTERVENTION	5 DISSEMINATION	SOCIALISATION & EVALUATION
INSIGHT	The design of e-PPGBM overlooks difficulties related to data collection at posyandu, leaving it up to puskesmas nutritionists to ensure that data are collected, checked and recorded accurately.	The main challenges with e-PPGBM data entry for puskesmas nutritionists are twofold: i) inputting of large volumes of data each month into ii) an error-prone system.	The e-PPGBM analytical function is not designed to help its users bridge the data-to-action gap.	The design of e-PPGBM and evaluation procedures do not encourage users to enter intervention data into the system.	Data beneficiaries have a need for e-PPGBM data with various potential uses; however, issues related to data quality and coverage in the system may prevent such use.	Socialisation activities and evaluations are done on a regular basis, but user feedback from the process is rarely responded to with the necessary system improvement.
OPPORTUNITY	HOW MIGHT WE enable simple, standardized and high-quality data collection procedures at posyandu that require minimal supervision from puskesmas nutritionists?	HOW MIGHT WE enable an e-PPGBM data entry experience that is quick and error-free, specifically for puskesmas officers?	HOW MIGHT WE improve e-PPGBM's analytical component to generate recommended follow-up actions for users?	HOW MIGHT WE introduce features that encourage users to record intervention data into e-PPGBM?	HOW MIGHT WE improve the quality and interoperability of e-PPGBM data to enable better data utilization, particularly for beneficiaries of the national stunting reduction programme?	HOW MIGHT WE develop a functioning communication & coordination mechanism that could improve users' experience in using e-PPGBM?
RECOMMENDATION	POSYANDU DATA RECORD TEMPLATE	IMAGE-TO-EXCEL CONVERTER DATA ANOMALY ALERT FEATURE	RECOMMENDATION GENERATOR	INTERVENTION FEEDBACK MECHANISM A FOCUS ON INTERVENTION DATA IN EVALUATION SESSIONS	COORDINATION WITH NATIONAL DATA GOVERNANCE AND HEALTH DIGITAL TRANSFORMATION INITIATIVES	MODERATED Q&A PLATFORM

Structural challenges

Structural challenges for utilizing the e-PPGBM system still occur, as is the case for the majority of national information systems in Indonesia. MoH DTO's strategy blueprint (2021) mentioned that 80% of healthcare facilities in Indonesia are currently untouched by digital technology. While the recent CIPG's Data Governance case study report (2021) underlined the inadequacy of human resources in terms of numbers and qualification, which are still a problem in health sector data governance. From our study, we identified three structural challenges which hinders the use of e-PPGBM:

Limitations of human resources in health facilities

Limitation of technological hardware (computers/laptops)

Limitation of access to quality internet

Addressing these challenges, while necessary, would necessitate more time and effort, as well as close coordination with relevant ministries and local governments.

Concluding Note

The e-PPGBM module is a component of the SIGIZI platform that enables health workers to report directly on children, pregnant mother and adolescent girls' nutritional status, generate nutritional status, and take appropriate follow-up action. The module has been in use since 2019. e-PPGBM plays a crucial role in gathering data required to track progress of the National Movement for Stunting Reduction; however initial monitoring and evaluation indicates that there are challenges in implementing the system, such as issues with underreporting of data and unclear follow up action.

To have an in-depth understanding of these challenges, Pulse Lab Jakarta collaborated with UNICEF and the Indonesia Ministry of Health to identify significant gaps in the design and implementation of e-PPGBM at various user levels and to investigate the contributing factors. This study applies a service design approach to examine the interaction between e-PPGBM as a service and its users, examining the end-to-end processes and relevant resources in order to improve service quality and generate value.

While the difficulties associated with implementing e-PPGBM are indicative of a larger policy issue related to health data fragmentation (often caused by a lack of regulation governing data standardization, interoperability and integration), we proposed recommendations at three levels: i) platform improvement, ii) supporting mechanism and iii) policy enablers). These are recommendations that the Ministry of Health as the service owner can adopt in the near future to address the current gaps in e-PPGBM's implementation.

Moving forward, implementing these recommendations is intended to improve the functions of e-PPGBM, improve user experience, and generate value by assisting health workers in their work.



References

Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia. (2018). **Laporan Riset Ketenagaan di Bidang Kesehatan 2017.** Jakarta: Kementerian Kesehatan Republik Indonesia

Direktorat Gizi Masyarakat Direktorat Jenderal Kesehatan Masyarakat Kementerian Kesehatan Republik Indonesia. (2020). **Petunjuk Teknis Sistem Informasi Gizi Terpadu (Sigizi Terpadu).** Jakarta: Kementerian Kesehatan Republik Indonesia.

CIPG (2022) **Menata Kelola Data Demi Pelayanan Publik.** Centre for Innovation Policy and Governance (CIPG) dan Yayasan TIFA

Kementerian Kesehatan Republik Indonesia. (2020). **Buku Saku Pencegahan dan Tata Laksana Gizi Buruk bagi Petugas Kesehatan.** Jakarta: Kementerian Kesehatan Republik Indonesia

Ministry of Health of the Republic of Indonesia. (2021). **Blueprint for Digital Health Transformation Strategy 2024.** Jakarta: Ministry of Health of the Republic of Indonesia.

Peraturan Menteri Kesehatan Republik Indonesia No. 14 Tahun 2019 Tentang Pelaksanaan Teknis Surveilans Gizi

Peraturan Presiden Indonesia No. 72 Tahun 2021 Tentang Percepatan Penurunan Stunting

Microsoft Insert Data from Picture.
<https://support.microsoft.com/en-us/office/insert-data-from-picture-3c1bb58d-2c59-4bc0-b04a-a671a6868fd7>

TanyaBOS. <https://tanyabos.kemdikbud.go.id/>

Annex 1: Quantitative Surveys

Hasil Analisis Survei Daring *Kajian Implementasi e-PPGBM*

PUSKESMAS



Report on e-PPGBM Implementation
Gap Survey with Puskesmas Nutrition
Officers



Hasil Analisis Survei Daring *Kajian Implementasi e-PPGBM*

DINAS KESEHATAN KABUPATEN KOTA



Report on e-PPGBM Implementation
Gap Survey with District Health
Officers



Hasil Analisis Survei Daring *Kajian Implementasi e-PPGBM*

DINAS KESEHATAN PROVINSI



Report on e-PPGBM Implementation
Gap Survey with Province Health
Officers



Acknowledgements

This research was conducted by UN Global Pulse through Pulse Lab Jakarta's team, with the generous support from UNICEF Indonesia and the Indonesian Ministry of Health.

The Pulse Lab Jakarta research team include: Aaron Situmorang (Research Coordinator), Lia Purnamasari (Design Researcher), Siti Rizqi Ashfina Rahmaddin (Research Assistant), Maesy Angelina (Social Systems Lead), and Rajius Idzalika (Data Scientist). From designing to carrying out the research, we are grateful for the insights and support we received from Sri Sukotjo, Jee Hyun Rah and Made Suwancita of UNICEF Indonesia, as well as Iwan, Dahlan Chaeron, and Andri Mursita from the Nutrition Surveillance team of Nutrition Awareness Sub Directorate in the Ministry of Health. We would like to acknowledge Dwayne Carruthers (Public Advocacy Manager, Pulse Lab Jakarta) for his editorial comments.

We express our gratitude to UNICEF field officers in Aceh, East Java, South Sulawesi, and East Nusa Tenggara for coordinating the data collection process. Additionally, we are indebted to UNICEF's implementing partners who conducted field observations and coordinated with respondents in the five cities. We are also grateful for the key informants from the Ministry of Health's Digital Transformation Office, BKBN Indonesia and Satu Data Indonesia for sharing their knowledge and experience.

We appreciate the 1677 survey respondents from pustakmas, the district, and the provincial health Office for taking the time to share their experiences via our online survey. Finally, this service design research was only made possible with the generosity of 29 health officers from the pustakmas, District and provincial health office in Aceh, East Java, South Sulawesi, East Nusa Tenggara and Papua who committed their time and energy to share with us about their experiences in using e-PPGBM. Their contributions provided valuable insights, which helped to inform our recommendations for enabling better implementation of the e-PPGBM system.

