

Impact of Technology Intervention on the Balanced Energy Protein Business Model

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MiCare is a mobile based platform introduced to replace paper based monitoring system developed as part of the market test for the Balanced Energy Protein (BEP) nutrition supplement. This case study shares the design, rollout and impact of the App in rural Pakistan.

Resource-limited environments present numerous challenges for program implementation, including outreach, demand creation, data management, and community engagement. The absence of suitable solutions often leads organisations to rely on inefficient manual processes, reducing productivity and performance. To address these issues for the Balanced Energy Protein (BEP) rural market test, a comprehensive platform called MiCare was proposed to streamline data collection, provide real-time insights, and enable targeted outreach.

Mathematica
Progress Together

BILL & MELINDA GATES foundation

HYSTRA
hybrid strategies consulting

RSPN
RURAL SUPPORT PROGRAMMES NETWORK

Project background

The World Health Organisation recommends Balanced Energy Protein (BEP) for pregnant women in undernourished populations to reduce the risk of stillbirth and babies being born small for their gestational age. To address this, the Rural Support Programmes Network (RSPN) partnered with the Gates Foundation and a network of technical assistance providers to develop and optimise business models to create a sustainable supply of BEP for pregnant and lactating women (PLW) and Married Women of Reproductive Age (MWRA) who are malnourished. RSPN piloted a business model for selling BEP supplements through a door-to-door distribution channel for six months, starting in March 2022. The market test was conducted in two rural districts, Bahawalpur and Kambar Shahdadkot (KSK), and expanded to Jacobabad in May 2023, with 100 Community Resource Persons (CRPs) in each district.

The problem

The learnings from the six-month pilot phase led to an understanding that the traditional paper-based data collection process was incompatible with a sustainable and scalable commercial model. Given the time lag between door-to-door visits and data digitisation, it would take roughly one month to provide CRPs with targeted insights and guidance regarding registered PLW. There was a need for a more timely, simple, and efficient data monitoring system to track the progress of CRPs and ensure they were reaching all their target beneficiaries. The learnings from the six-month pilot phase led to an understanding that the traditional paper-based data collection process was incompatible with a sustainable and scalable commercial model. Given the time lag between door-to-door visits and data digitisation, it would take roughly one month to provide CRPs with targeted insights and guidance regarding registered PLW. There was a need for a more timely, simple, and efficient data monitoring system to track the progress of CRPs and ensure they were reaching all their target beneficiaries.

The proposed solution

The MiCare App was conceived to support efficient data collection and sales tracking, facilitating the generation of real-time insights and informed decision-making processes. With the proposed MiCare App, CRPs would be able to record door-to-door visits and sales using smartphones provided by RSPN. This shift from the traditional paper-based monitoring system to a digital suite of apps with offline functionality aimed to reduce the time required to generate insights from four weeks to almost instantaneous, minimising the time CRPs would spend on data collection and reporting. This would also enable the program team to access real-time insights through a live Dashboard that could generate analytics and reports for CRP activities and sales.

The App was designed to ensure accurate data entry and enable instant uploading of data once a network connection became available. The CRPs would receive tailored information to improve sales performance and target visits of PLW, prioritising those in need of restocking based on the timing of their previous visits. For example, the App could highlight women who hadn't received a visit in the last two weeks.

Design and roll-out of MiCare app

Figure 1. The MiCare App Initial Interface



Using agile methodology, the team worked closely with CRPs to develop a prototype of the platform and conduct user- centric research to ensure its usability and effectiveness. The App development process was rooted in the Human-Centred Design (HCD) approach. It involved repeat field visits to deeply understand user needs and challenges. Mockups and prototypes were created iteratively, followed by extensive testing with real users to refine features and functionality. Feedback loops ensured that the App evolved in alignment with user requirements, making it practical, intuitive, and user-friendly for the target audience.

CRPs were trained to use the App to track their progress, manage inventory, and access real-time data on beneficiaries' nutritional status. The MiCare App was delivered through 4 days of targeted training for low-education and low-tech literacy enumerators. In addition to training enumerators on the user-friendly App interface and features, extensive digital literacy training tailored to equip participants with essential smartphone skills was also delivered. The CRP App also included a text-to- speech feature that helped women with lower educational literacy to use the App with more ease. This addressed the significant gap in smartphone proficiency among trainees, fostering a more inclusive and effective learning environment.

The offline functionality of the App enabled data collection in areas with limited connectivity, ensuring data efficiency during field visits, and supported multiple languages, ensuring accessibility in diverse settings. With QR code- based search for PLWs in CRP's App and visit optimization tracking, it enhanced resource allocation and follow-up care. Real-time views of CRP metrics aided tailored work plans, while subgroup filters enabled targeted outreach. The supervisors, also called Community Building Officers (CBO), and program management gained visibility into CRP progress for effective feedback, and stakeholders benefited from a Live Admin Dashboard for strategic oversight. All these features optimized operational efficiency and improved community-based interventions.

Figure 2. Offline Functionality of the App

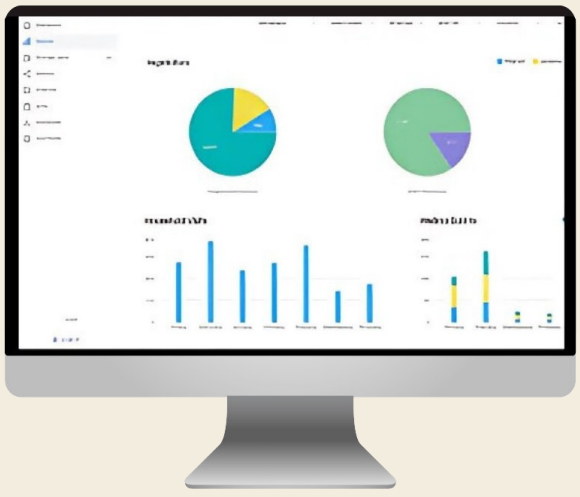
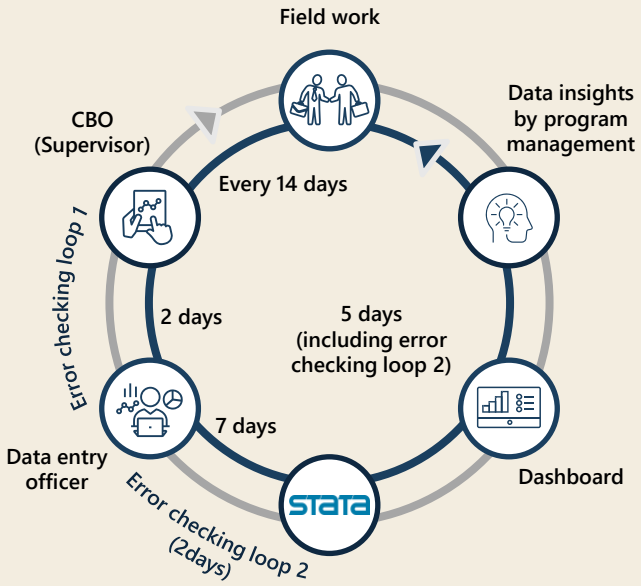
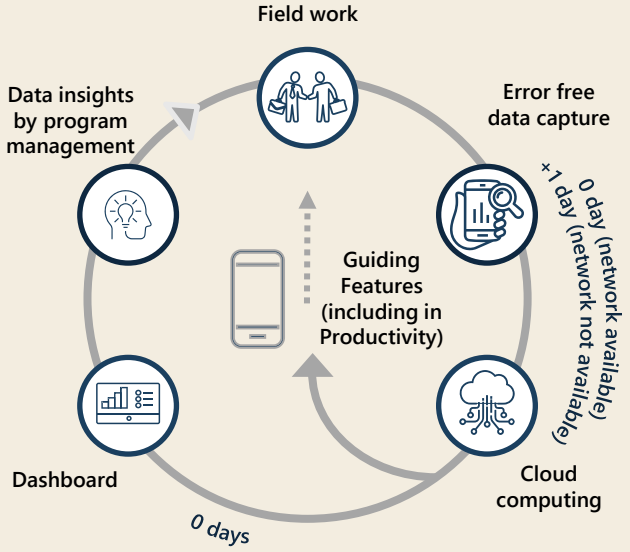


Figure 3. Methodology



BEFORE (4-WEEK CYCLE)



AFTER (0-1 DAY)

Key implementation achievements

- **Smooth Integration:** The new digitized data cycle integrated smoothly with business operations, contributing to a strong start in the market test in the new district.
- **Time Savings:** The App enabled time savings, which allowed for additional sales visits. This suggests that the App facilitated increased efficiency in conducting sales visits.
- **Rapid Data Collection:** The deployment of the digital data collection process in the expansion district (Jacobabad) enabled rapid online sales data collection, providing real- time insights into sales performance.
- **Targeting Improvement:** In the rural context, the App was planned to be introduced in the original two districts as part of a strategy to increase CRPs' targeting of pregnant women, indicating its role in improving targeting strategies.
- **Dashboard for Monitoring:** The dashboard provided stakeholders with a comprehensive view of data collected from the field, including sales figures, monthly targets, and operational metrics. This real-time visibility enabled managers to track progress, identify bottlenecks, and make informed decisions promptly.
- **Business Model Refinement:** The app's data and insights contributed to the refinement of the business model by identifying key differences in targeting and consumption patterns between rural and urban contexts.

Micare platform architecture

MiCare SUITE of Apps are connected to a server running on Elixir + Phoenix.

- **CRP** and **CBO** apps are progressive web apps. These apps can run either in the browser or can be installed on mobile phones.
- **MIS Admin Dashboard** is a web application mainly targeted to be used on desktop browsers.
- All three apps are built using **React / TypeScript**, and they communicate with the server for all transactions
- The back-end software is a **Phoenix Server** programmed with the Elixir language. The server provides all communication and storage for the three applications.
- All data is stored in a **PostgreSQL database**. The applications store and retrieve data for different transactions through the Phoenix server.
- **QR** codes are generated using cloud functions written in NodeJS. Cloud storage is used to store the generated QR codes.

Platform impact & outreach:

300+
field staff trained on digital technology until September 2023

15,000+
pregnant & lactating mothers' sales & visit data recorded monthly

10,000
pregnant & lactating mothers reached every month

78%
App users in Jacobabad do not own personal smartphone

45%
App users are 30 years old or more

72%
10 years education

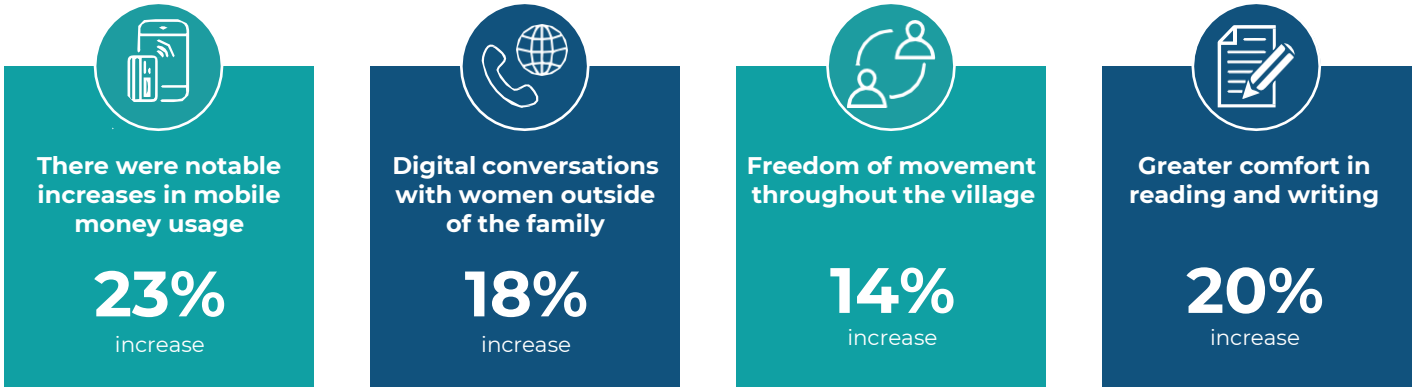
20%
5 years education

From the field

In October, the MLE team surveyed the new CRPs to understand how their lives had changed as a result of their new role. The survey asked a series of questions about the CRPs' experiences during the 30 days prior to receiving CRP training and a smartphone, and then again about their experiences across the same domains in the past 30 days. Simple comparisons were then made between the before and after periods.

- **Almost all the CRPs reported that they used their phone daily**, and it made their work and daily tasks easier.
- **There were notable increases in mobile money usage (23 percentage point increase),** digital conversations with women outside of the family (18 percentage point increase), freedom of movement throughout the village (14 percentage point increase), and greater comfort in reading and writing (20 percentage point increase).
- **The survey also included the MacArthur Scale of Subjective Social Status**, which prompts the respondents to think of their society as a ladder with 10 rungs in which the best off are on the top rung and the worst off are on the bottom rung. CRPs were asked to indicate where they stood on the social ladder both 'before' and 'after' the intervention. All respondents reported an improvement in their social status, moving up an average of four rungs over time. Taken together, these findings suggest a secondary outcome of the market test and highlight a promising benefit for CRPs.







> At first, I didn't that how to use the phone... I used to borrow a mobile from others to talk to someone. But now in an emergency, I can talk to my brother and I can do my work easily. The huge benefit is that I can show the actual price of the product to customers via the app. The app is beneficial
>
> **- CRP, Jacobabad**

APPENDIX



Figure 4. Log in screen

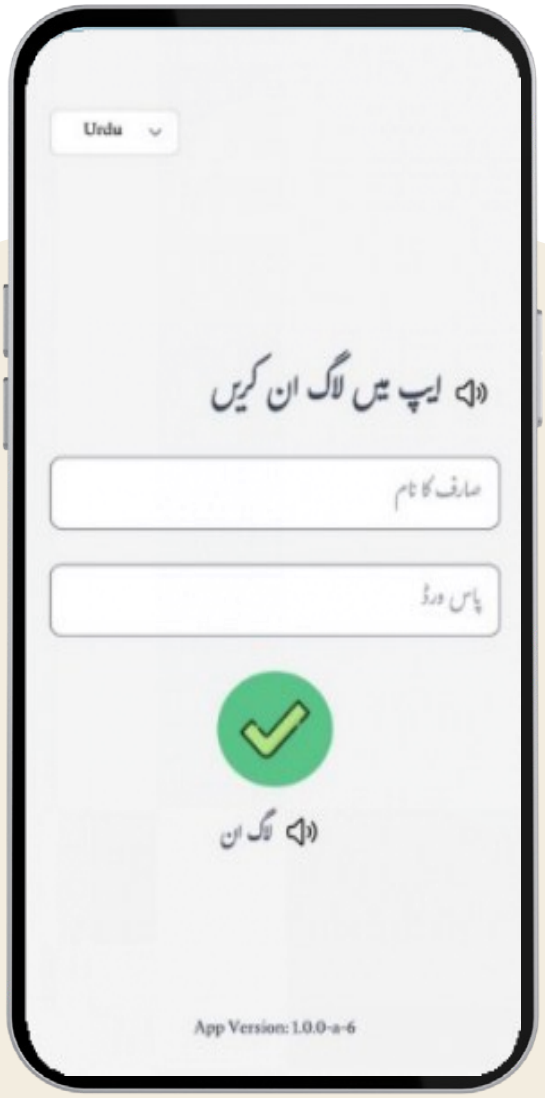


Figure 5. Example of registration process (1)

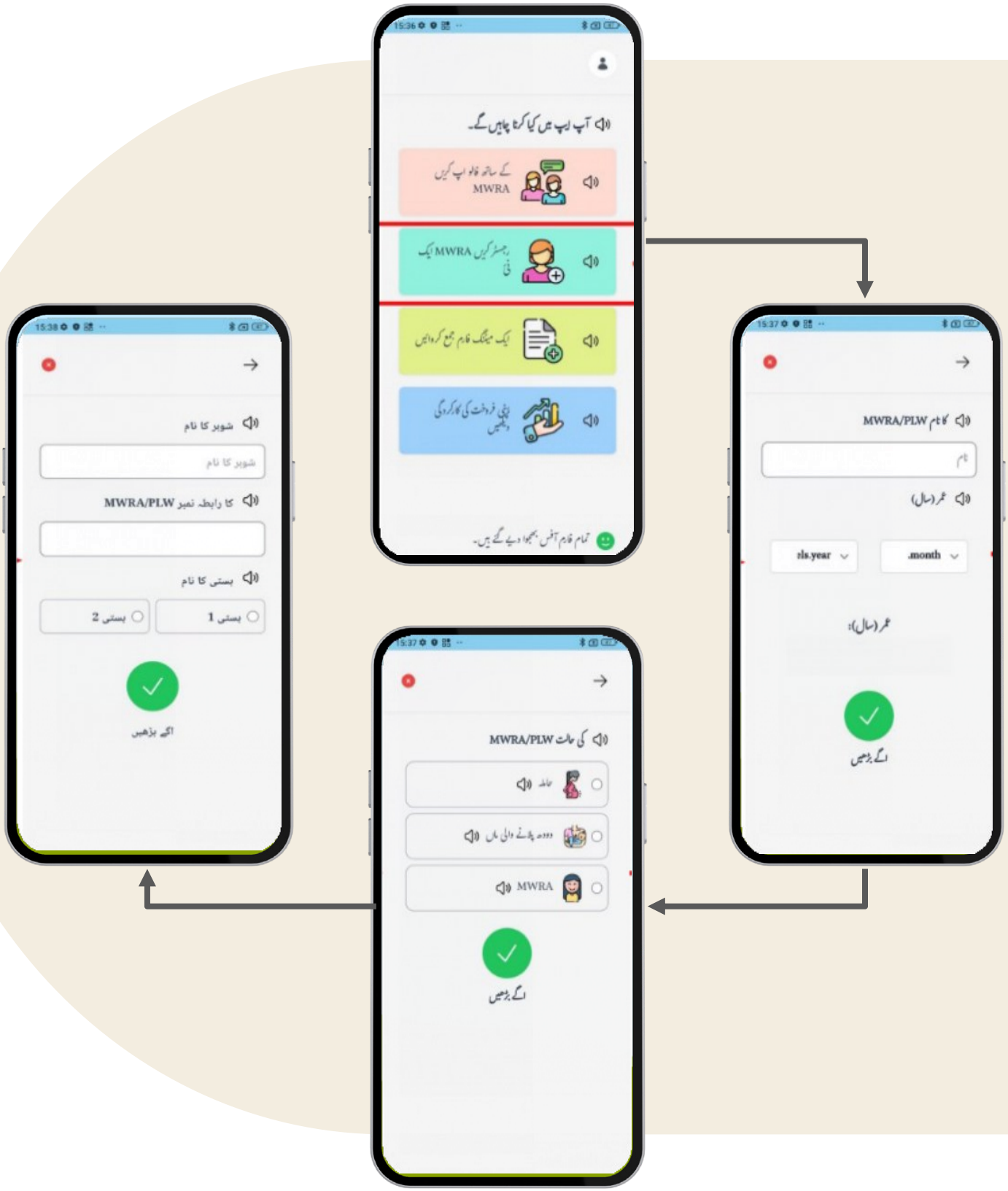


Figure 6. Example of registration process (2)



Figure 7. Example of QR code scan screen and follow-up process

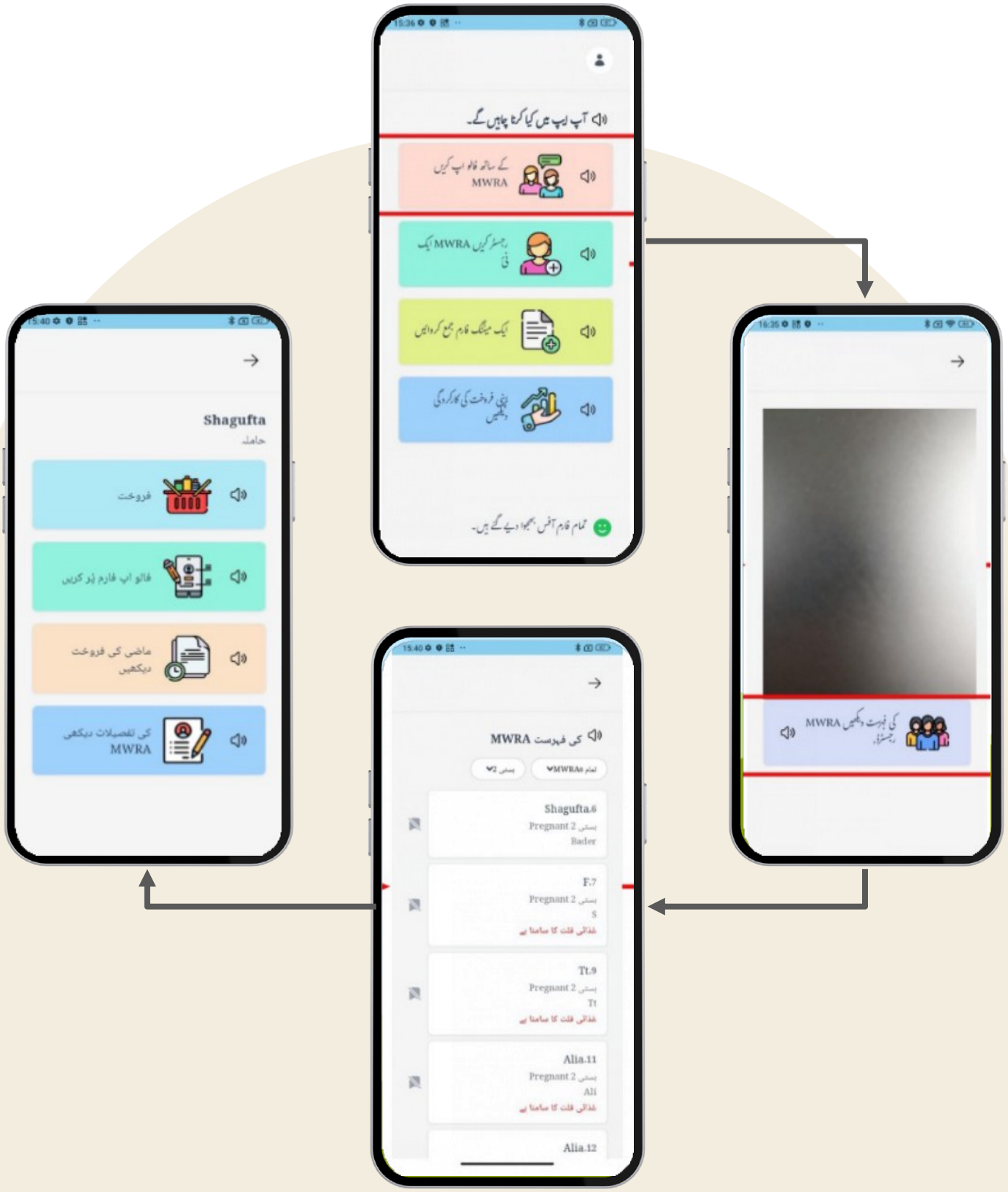


Figure 8. Example of basket of goods process



Figure 9. Example of CRP performance screen



Figure 10a. Live Dashboard

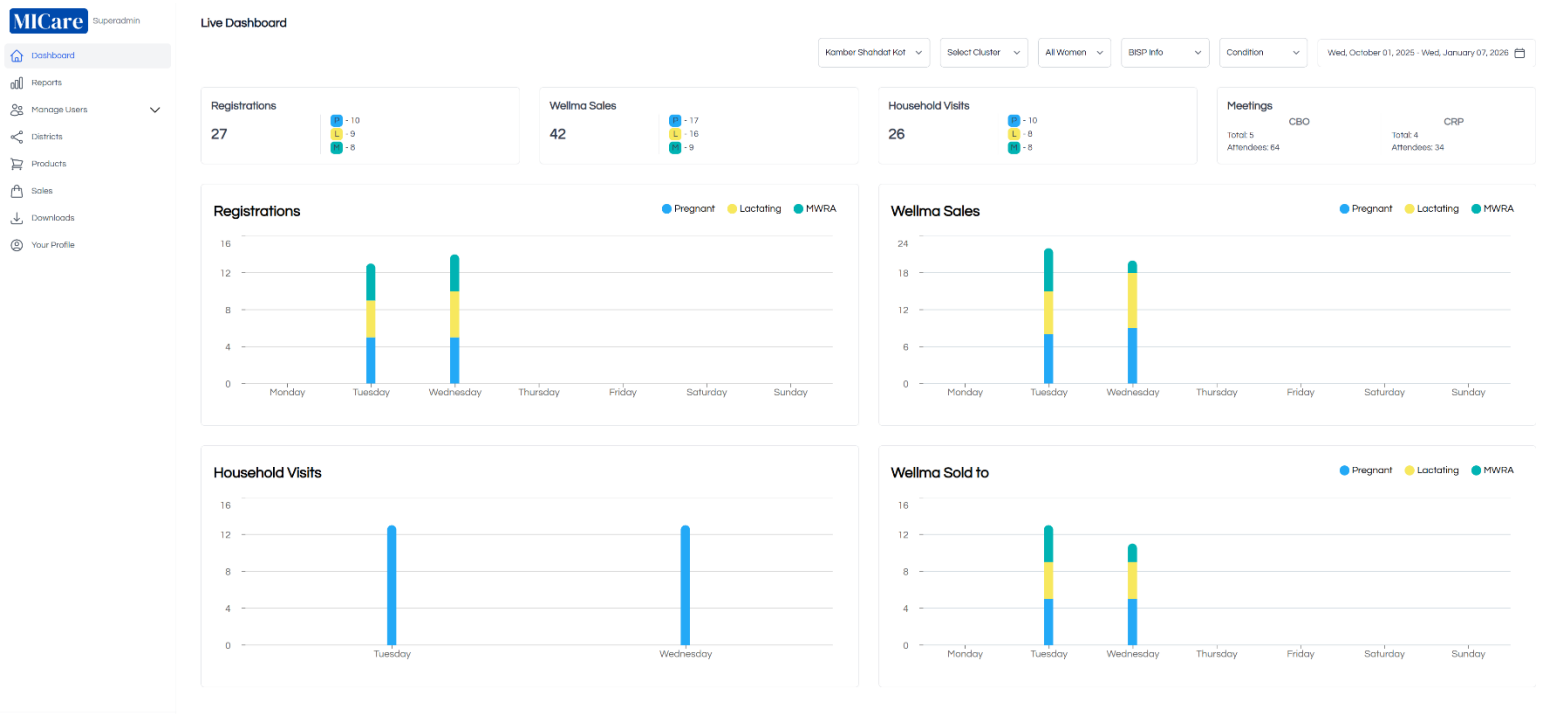
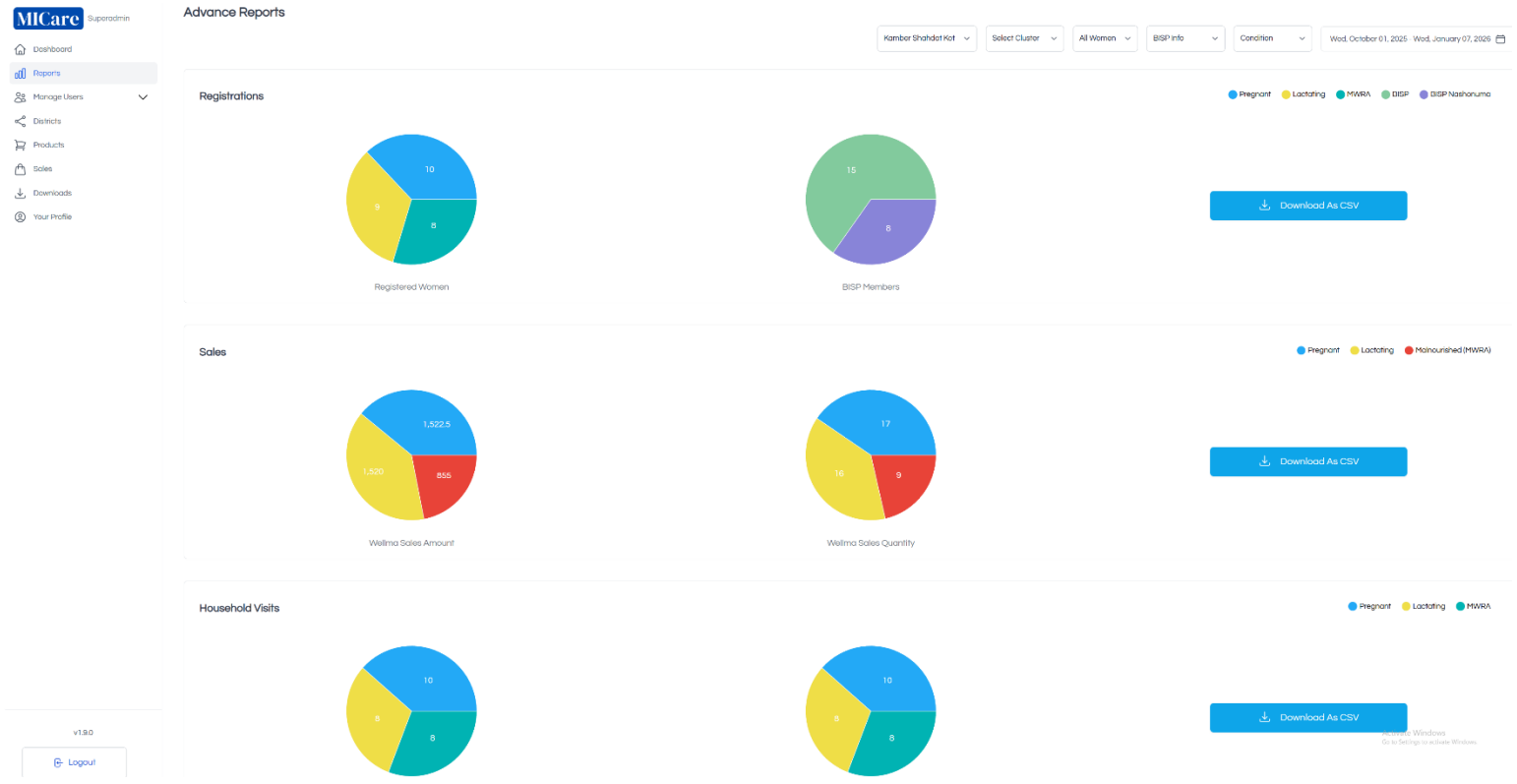


Figure 10b. Advance Reports



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