

# Surveys in the Developing World: UN Nutrition Surveys Using Digital Pen and Paper

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# About UN FAO/FSNAU

UN FAO = Food and Agriculture Organization

- *“for a world without hunger”*
- *Raise levels of nutrition*
- *Improve agricultural productivity*
- *Better the lives of rural populations*
- *Contribute to growth of world economy*

FSNAU = Food Security & Nutrition Analysis Unit

- Funded by EC and USAID among others
- Nutrition surveillance in Somalia for addressing food insecurity and malnutrition

# The Surveys

- Twice per year, FSNAU/FAO conducts nutrition and food security surveys throughout Somalia.
- Primary source of information for humanitarian response and fundraising via the UN Consolidated Appeals Process for Somalia.
- When famine was declared in 2001, primary source was FSNAU/FAO data.
- A pilot use of digital pen technology for the surveys was conducted in 2011.

# The Surveys



- Survey questions:
  - Anthropometry of children <5 years and mothers of reproductive age
  - Household dietary diversity
  - Morbidity
  - Coping strategies
  - Water, sanitation and hygiene

# The Surveys - Excerpts

**Q31 a.:** In the last three months, what is the main source of staple cereal in the household?

① = Own production ② = Purchasing ③ = Community Gifts/Donations ④ = Food aid ⑤ = Bartering ⑥ = Borrowing ⑦ = Gathering

**Q31 b.:** How many times did you receive cereal food aid in the last 6 months? ① = never ② = once ③ = twice ④ = three times ⑤ = four times ⑥ = five times

**Q32** How many meals<sup>11</sup> has the household had in the last 24 hours (from this time yesterday to ① = None ② = One ③ = Two ④ = Three ⑤ = Four +

## Coping Strategies

**Q 33.** In the past 30 days, if there have been times when people did not have enough food or money to buy food, which of the following strategies did they use? (Select *all* relevant livelihood system)

### Agropastoralist Livelihood:

In the past 30 days, if there have been times when you did not have enough food or money to buy food, how often has your household had to:	0 = Never (zero times/week)	1 = Hardly at all (<1 times/week)	2 = Once in a while (1-2 times/week)	3 = Pretty often (3-6 times/week)	4 = All the time (every day)
a. Shift from high priced cereal varieties to low priced cereal varieties?	①	②	③	④	⑤
b. Shift from high quality cereals to low quality cereals (from osolo to obo)?	①	②	③	④	⑤
c. Borrow food on credit from shop (Deyn)?	①	②	③	④	⑤
d. Borrow food on credit from another household (Aamah)?	①	②	③	④	⑤
e. Reduce home milk consumption and sell more of milk produced?	①	②	③	④	⑤
f. Reduce the number of meals in a day by adults?	①	②	③	④	⑤
g. Stop all home milk consumption and sell all milk produced?	①	②	③	④	⑤
h. Rely on food donations (gifts) from the close relatives (Qaraabo)?	①	②	③	④	⑤
i. Rely on food donations (gifts) from the clan/community (Kaalmo)?	①	②	③	④	⑤

“How many times did you receive cereal food aid in the last 6 months?”

# The Surveys - Excerpts

## WATER, SANITATION AND HYGIENE

### Q34-40 Access to water (quality and quantity)

Q34a What is the household's main source of drinking water?

**Protected sources:** ① = Household connection    ② = Standpipe (Kiosk/Public tap/  
Taps connected to a storage tank)    ③ = Protected Shallow well (covered  
with hand pump/motorized pump)  
④ = Tanker    ⑤ = Spring    ⑥ = Bottled water    ⑦ = Rooftop rainwater

**Unprotected sources:** ⑧ = Berkads    ⑨ = River/stream    ⑩ = Dam/Pond (Balley)    ⑪ = Open Shallow well    ⑫ = other (specify) \_\_\_\_\_

Q35a If the household has no access to protected water sources (if the answer to Q34a is 8, 9, 10, 11 or 12), what is the main reason?

① = Not Available    ② = Distance too far    ③ = Security Concerns    ④ = Cannot afford    ⑤ = Queuing time is too long    ⑥ = Other reasons (specify) \_\_\_\_\_

Q35b If you get your water from a protected water source (if the answer to Q34a is 1, 2, 3, 4, 5, 6 or 7), **How many days in the last month were you NOT able to get water from the protected source?**    ① = None    ② = 1-5 days    ③ = >5 days

Q35c **What was the reason for not getting water?**    ① = couldn't afford    ② = source dried up    ③ = machine broke down    ④ = others

Q36 What is the average time taken per TRIP to and from the main water source (*including waiting and collecting time*)?

① = Less than 30 minutes    ② = 30 to 60 minutes    ③ = More than 1 hour

Q37 **Most days (on average) how much water do you collect for the household**

“If the household has no access to protected water sources, what is the main reason?”

# UN FAO – “Digital Pen” Pilot

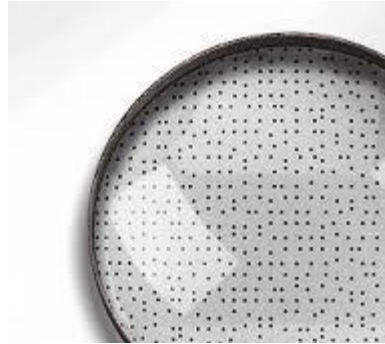
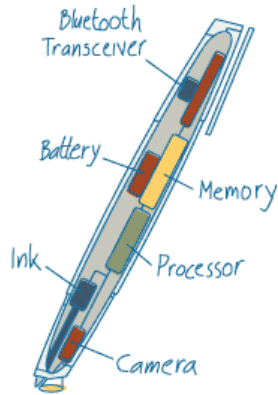
- Physical security is a major concern in Somalia
- Theft is a real possibility when carrying electronics like PDAs or Tablets
- The digital pen is considered most physically secure – not obvious that technology is in use from a distance, and digital pen can be tucked into pocket

# Anoto Functionality Digital Pen





# Collection Methods: Digital Pen



Mi-Forms

File Edit View Tools Help

Page 1

Home Page (Melissa [local user]) 9061254

No Validation Errors  
- Reducizam Pen Demo Form  
- Low Confidence Fields  
- Subject Number

**Follow-Up Visit - Reducizam Treatment Concerns Questionnaire**

PROTOCOL: ABCXYZ Subject: 9 0 6 1 2 5 4

Please answer the following questions about your experiences with Reducizam liquid weight loss treatment since your last visit.

1. How easy to understand were the instructions for taking this medication?

Very easy  Easy if read carefully  Some difficulty  
 Very difficult  I didn't get instructions

2. What did you think of the taste of the liquid medication?

Previous Next Next Low Confidence Finish

Subject Number

t: 9 0 6 1 2 5 4

9 0 6 1 2 5 4

# Verification of Digital Pen Data

Mi-Forms

Page 1

Home Page (cdpierr (local user)) Nutrition Assessment Household Questionn

No Validation Errors  
FSNAU - Nutrition Assesse  
No Low Confidence Fields

**NUTRITION ASSESSMENT HOUSEHOLD QUESTIONNAIRE, OCTOBER, 2011-IDP**

QNO: 12-3

Household Number  Date 16 / 03 / 2012 Team Number  Cluster Number  Cluster Name Towa District: 17

**Q1-7 Characteristics of Household**

Q1. Household size<sup>1</sup> (i) Today  (ii) In the last 30 days  Q2. Number of children less than 5 years (0-59 months) Today?

Q3. Household head?  = Male  = Female

Q3b. Marital status of care giver  
 = Married & staying with spouse  = Married but not staying with spouse for 6 months or more  = Widow/Widower  = Divorced  = Never married

Q3c. Highest level of mother's/caregiver's education:  = None  = Primary/Intermediary  = Secondary  = Tertiary (college/university)

Q4a. How long has this household lived in this locality?  = Resident  = IDP <6 Months  = IDP >6 Months  = Returnee (within the last 6 months)  = Refugee  = Migrant

b. Are you hosting any recently (in the last 6 months) internally displaced persons?  = No  = Yes

d. If yes, Number of persons

Q5. How many mosquito nets does the household have?  = none  = one  = two  = three  = 4 or more

Q6. What was the source of the net?  = NGO  = Health Centre  = Purchase

Q7. What is the household's main source of income?  = Animal & animal product sales  = Crop sales/farming  = Trade  = Casual labor  
 = Salaried/wage employment  = Remittances  = Self-Employment (bush products/handicraft)  = Gifts / zakat  = Others, specify \_\_\_\_\_

Previous Next Next Low Confidence Finish

Team Number

5

BEFORE EXPORTING TO DATABASE






# Digital Pen Usage







# Digital Pen Usage






# What We Learned Along the Way

	Digital Pen	Manual Data Entry
<b>Speed</b>		Slower, because entry is done after data collection.
<b>Immediacy of Data for Analysis</b>		Hiring of, training of and entry by data entry clerks create delays.
<b>Cost</b>		Data entry clerks must be employed.
<b>Number of Errors</b>		Clerks make mistakes.
		 = winner for criterion





# What We Learned Along the Way

	Digital Pen	Manual Data Entry
<b>Supervision</b>		Requires full time supervision.
<b>Data archiving</b>		Data is saved in one format, which is later scanned for archiving.
<b>Human Error</b>		Human error is evident.
<b>Patterns</b>	Requires unique patterns for printing, which if not used will lead to errors and overwriting when pen is docked.	

# What We Learned Along the Way

	Digital Pen	Manual Data Entry
<b>Templates</b>	Requires a template for entry that has to be designed.	Requires a template for entry that has to be designed.
<b>Questionnaire Printing Cost</b>	Printing the questionnaires is expensive (requires color), and they cannot be photocopied.	
<b>Data Cleaning Ease</b>		Data cleaning has to be done after the data entry is complete.
<b>Validation</b>		Only a few validation checks can be realized.

# What We Learned Along the Way

	Digital Pen	PDA
<b>Use in Sunlight</b>		Reflections interfere when working outdoors.
<b>Cost</b>		Upfront hardware investment is higher.
<b>Redundancy</b>		If technology fails, survey fails.
<b>Appropriateness for checkboxes</b>		Less appropriate.



# Summary of Digital Pen at UN FAO

- Favored because of physical security.
- Less expensive than manual data entry because of data cleaning time.
- Data processing was reduced from **3 weeks to 5 days** in pilot.
- Character recognition was **95% accurate**.
- Digital Pen and Mi-Forms software more accurate than manual data entry.
- Printing is more expensive and time consuming than manual entry solution.

# Afterward

- Rollout delayed due to security situation – FSNAU not permitted to go into Southern Somalia.
- As of February 2012, “Famine outcomes no longer exist in Southern Somalia, but nearly a third of the population are unable to meet essential food and non-food needs.”
- For more information about Mi-Co, visit