**Supplemental Table 1: Components of the theory of change and some examples (list not exhaustive of the examples of activities)**

| Assumptions                                                                 | Examples                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Providers are engaged with the project and willing to document participants | record using electronic platform (PNMS)                                                                                                                                                                                   |
| CHW are engaged in the program and willing to collect weekly and/or monthly | follow up data as required for the project                                                                                                                                                                                 |
| Data collectors are engaged and willing to collect data at different time   | points                                                                                                                                                                                                                     |
| Rationale                                                                  | Evidence from systematic reviews that mhealth can be effective in improving maternal health services                                                                                                                                 |
|                                                                             | Evidence form the literature indicate cost is an impeding factor in accessing MNCH in Africa                                                                                                                                 |
|                                                                             | Contextual evidence illustrates difficult in accessing and reaching health facilities during emergency                                                                                                                     |
| Intervention                                                                | Training of health care providers on using PNMS                                                                                                                                                                              |
|                                                                             | Training of CHW on using the mobile app                                                                                                                                                                                     |
|                                                                             | Training of women on using the mobile app to communicate with providers                                                                                                                                                     |
|                                                                             | Women are provided e-vouchers and mobile phones                                                                                                                                                                              |
|                                                                             | Awareness campaigns on family planning, ANC, skilled birth delivery, exclusive breastfeeding conducted by intervention coordinators                                                                                                                                 |
|                                                                             | Women received reminder text messages,                                                                                                                                                                                        |
|                                                                             | Transporters trained on using GIS for geo navigation and geo-localization                                                                                                                                                   |
|                                                                             | Women received and can listen to uploaded family planning messages embedded within the app                                                                                                                                    |
| Indicators                                                                  | Number of providers trained on using PNMS                                                                                                                                                                                   |
|                                                                             | Number of CHW trained                                                                                                                                                                                                       |
|                                                                             | Number of ANC visits                                                                                                                                                                                                        |
|                                                                             | Number of skilled birth delivery                                                                                                                                                                                           |
|                                                                             | Number of participants enrolled                                                                                                                                                                                             |
|                                                                             | Number provided e-vouchers and mobile phones etc.                                                                                                                                                                              |
| Intermediate outcomes                                                      | Increase awareness on family planning,                                                                                                                                                                                        |
|                                                                             | Change in providers attitude in using electronic platforms and mhealth                                                                                                                                                      |
| Long term outcomes                                                         | Improve access and utilization to emergency services in the intervention areas                                                                                                                                               |
|                                                                             | Improve quality of care delivery in the intervention area                                                                                                                                                                   |
|                                                                             | Reduce maternal mortality deaths in the intervention area                                                                                                                                                                    |
| Impact                                                                     | Improve access and utilization to emergency services in the district                                                                                                                                                       |
|                                                                             | Improve quality of care delivery in the district                                                                                                                                                                              |
|                                                                             | Reduce maternal mortality deaths in the district                                                                                                                                                                              |