Workforce Optimization Tool

User Guide

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Overview of this guide

• This user guide follows the same flow as the tool and each slide has a legend representing the tabs of the Excel tool
  – The red box indicates the reference to the tab in the tool

• The user guide is organized by Phases (tabs) and follows the sequential order of the steps. Each phase is a separate section in the user guide and starts with an overview slide

• This slide gives a high level overview of the steps in the process using a staircase graphic. The top right corner of each slide is tagged to reference the step of the phase
The Excel tool prompts the user when and where to enter data and tells the user what data is needed for each step.

Overview of standard functions of input sheets

Elements of an Input Sheet

Every input sheet states the objective and data requirements needed to complete the steps.

The user is prompted to follow sequential “Steps” that are bolded and numbered within the spreadsheet.

The tool incorporates color coding to assist the user throughout the spreadsheet:

- **Orange Cells** – User enters data
- **Blue Cells** – Cells have been populated with data provided by the users
- **Green Cells** – Instructions to the user
Click on the tab to review the instructions

Phase1A
Mapping the SC

Phase1B
SDP Categorization

Phase1C
Current Staffing

Phase2A
Supply Chain Indicator

Phase2B
Treatment Gap Indicator

Phase3
Activity & Timing

Output
Scenario Planning

Output
Combined
Phase 1: Mapping the Supply Chain

Overview

**Step 1**
- Select the number of supply chain levels from drop down
- Number of nodes will be populated after Step 5

**Step 2**
- Preliminary optional step for Phase 1B
- Enter the name of all the levels in the supply chain
- Select “Y” to categorize the lowest level of SC

**Step 3**
- Preliminary optional step for Phase 1C
- Allows for granular analysis of results

**Step 4**
- Give information around nodes of supply chain for all levels
- Give connection information, if available

**Step 5**
- Enter consumption data (forecasted or historical) to get demand based staffing
- For best results, data should be for lowest level of SC

**Step 6**
- Preliminary optional step for Phase 1B
- Enter the name of all the levels in the supply chain
- Select “Y” to categorize the lowest level of SC

Number of nodes will be populated after Step 5.

Give information around nodes of supply chain for all levels.

Give connection information, if available.

For best results, data should be for lowest level of SC.
Phase 1A: Mapping the SC

Step 1 and Step 2

1.1 The number of **levels** signify the various touchpoints that product goes through after entering the country and before reaching the end patient.

1.2 Selecting the number of levels adjusts the tool for selected value.

2.1 The user types in the names of various levels of supply chain involved.

2.2 The names that are entered here flow throughout the tool, and are used to select level for input or output.

2.3 The number of nodes will be auto-populated after user completes Step 5A.
Step 3 and Step 4

3.1 The user selects “Y” if the lowest level of SC aren’t all consistent in terms of SC activities
   - For example, if the SC activities and time to complete activities for a urban hospital are different from a rural health clinic, the user may want to categorize these to input different activities or timings for them

3.2 If user selects “N”, all activities and their average time will be considered same for all nodes

4.1 The user should select “Y” if they have information on current staffing across different roles for each node and level
4.2 If “Y” user is required to go to "Phase 1C: Current Staffing" tab to input information
4.3 Giving current staffing as an input allows user to perform comparative analysis of current situation and optimized results better hence drawing better insights from tool
Phase 1A: Mapping the SC

Step 5 – Supply chain links

A.1 Select “Y” if:
- The user has visibility to the hierarchy between various levels of SC i.e. Information on which node of level 1 supplies to which node of level 2 and so on
- Paste the information in Step 5B in form of linear mapping (see B.1 for an example). Ensure that all entries for 1 node occur together in list

A.2 Select “N” if:
- The user doesn’t have the SC hierarchy
- Step 5B prompts user to in feed the names of each node for all SC levels
- This option reduces the accuracy of volume dependent staffing for levels at which consumption data is not entered

B.1 Illustrative input (Mapping)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1N1</td>
<td>L2N1</td>
<td>L3N1</td>
</tr>
<tr>
<td>L1N1</td>
<td>L2N1</td>
<td>L3N2</td>
</tr>
<tr>
<td>L1N1</td>
<td>L2N2</td>
<td>L3N3</td>
</tr>
<tr>
<td>L1N2</td>
<td>L2N3</td>
<td>L3N4</td>
</tr>
<tr>
<td>L1N2</td>
<td>L2N3</td>
<td>L3N5</td>
</tr>
</tbody>
</table>

B.2 Illustrative input (Node names)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1N1</td>
<td>L2N1</td>
<td>L3N1</td>
</tr>
<tr>
<td>L1N2</td>
<td>L2N2</td>
<td>L3N2</td>
</tr>
<tr>
<td></td>
<td>L2N3</td>
<td>L3N3</td>
</tr>
<tr>
<td></td>
<td>L3N4</td>
<td>L3N5</td>
</tr>
</tbody>
</table>
Phase 1A: Mapping the SC

Step 6 – Consumption input

A.1 The user is provided a dropdown of levels input in Step 2 to select level at which consumption data is available.

A.2 Consumption units can either be the quantity ordered or quantity received.

A.3 If data is available for multiple levels user should prefer lowest level available for best results.

A.4 The user can input forecasted demand to get information for future staffing.

A.5 User then inputs the consumption data in Step 6B.

Illustrative input

<table>
<thead>
<tr>
<th>Level 3</th>
<th>Annual consumption (number of units/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L3N1</td>
<td>28</td>
</tr>
<tr>
<td>L3N2</td>
<td>73755</td>
</tr>
<tr>
<td>L3N3</td>
<td>23830</td>
</tr>
<tr>
<td>L3N4</td>
<td>1269</td>
</tr>
<tr>
<td>L3N5</td>
<td>222</td>
</tr>
</tbody>
</table>

Clicking “Submit” triggers a macro which might take ~1 min of wait time.
Phase 1B: Segmentation sheet

Optional step for better results

1.1 If user wants to classify based on type of node, e.g., Hospital, Clinic, health post etc.

- The user is required to input the name of categories he wants to classify the nodes into
- The user needs to manually classify each node into one of three categories input earlier in “Final Categorization”
- In this case Demand based segmentation is for reference

1.2 If user wants to segment nodes based on volume flowing through them

- The user is required to input the percentile boundaries for High, Medium, Low categories
- In the above example, all SDPs forming the top 40 percentile of total demand are categorized as High and so on

Demand segmentation to be considered after clicking “Calculate”
### Optional steps for better results

The staffing information at most granular level helps to generate better insights in comparative analysis on output tab.

**Similar matrix for all levels is visible in “Current Staffing tab”**

<table>
<thead>
<tr>
<th>National WH</th>
<th>Total</th>
<th>Plan</th>
<th>Source</th>
<th>Deliver</th>
<th>Enable</th>
</tr>
</thead>
<tbody>
<tr>
<td>National WH - North</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National WH - South</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Staffing information to be populated here.

Auto populated column based on Step 5B input.
Phase 2: Optimization Objective Indicators

Overview

Step 1
• Select whether the required inputs are available or not

Step 2
• Select the SC level at which the data is to be entered

Step 3
Input data for Optimization Objective

Phase 2A*
The tab is pre set to collect for stock out rates but can be updated to support any Supply Chain KPI

Phase 2B
The tab is set for calculating the treatment gap for the selected program and redistribute staffing accordingly

*User should keep in mind that other SC KPIs that are considered “good” when minimized fit best with this model
Phase 2: Selecting the benchmark

**Step 1 & 2 – Common**

1.1 The user selects “Y”, if required data is available.

1.2 If “N”, user can manually select the benchmark in Phase 3

2.1 The user should select one of the levels entered in Phase 1 at which the required data is available

2.2 If data is available at some other level, user can use proxies to get data for at least one of SC level

2.3 Benchmark in Phase 3 will be auto suggested for level selected in Step 2, for other levels user needs to select benchmark manually
### Phase 2A: Stock out Indicator

**Step 3 – Stock Outs**

#### 3.1 Zonal WH
- **3.1.1** Auto populated field from what the user entered in Phase 1A

#### 3.2 Stock Out Rate
- **3.2.1** The user enters the stock out rate for all the nodes
- **3.2.2** In case stock out rate is not available, user can input another supply chain KPI which needs to be minimized for SC optimization

#### 3.3 Categorization
- **3.3.1** Categorization is done automatically based on user input
- **3.3.2** This column is for user reference

#### 3.4 Suggested node for benchmark
- **3.4.1** The node with minimum stock out rate is suggested as the benchmark

<table>
<thead>
<tr>
<th>Zonal WH</th>
<th>Anambra</th>
</tr>
</thead>
</table>
**Phase 2B: Treatment Gap Indicator**

**Step 3 – Treatment Gaps**

**Step 3: Enter Data to calculate treatment gap**

### User Input Fields

- **3.1** Zonal WH
- **3.2** Total Population
- **3.3** % Population affected
- **3.4** Current # of people receiving treatment

### Auto Populated Fields

- **3.5** Suggested node for benchmark
  - Zonal WH: Anambra

#### Requirements:

3.1.1 Auto populated field from what the user entered in Phase 1A

3.2.1 Enter total population for the region covered by a particular node

3.3.1 Enter the prevalence % that is related to demand entered in Phase 1A - Step 6

3.4.1 Current number of patients receiving treatment from the SC

3.4.2 Treatment data should relate to demand in Phase 1A – Step 6

3.5.1 The node within top 40 percentile of “Total patients” and min. “gap in treatment” is suggested as the benchmark

Click “Calculate” to know the updated benchmark suggestion
Phase 3: Activity & Timing

Overview

Step 1
- Select basis for benchmark selection
- Benchmark selection for remaining nodes

Step 2
- Activity Input
- Map activities to standard SC categories

Step 3
- Current Staffing information for benchmark node

Step 4
- Information on general working hours for workers in each category

Step 5
- Categorize each category as Volume dependent or independent
- Give info on general activity timings for each session or shipment
### Visual overview

#### Step 1: How do you want to select your benchmark?

<table>
<thead>
<tr>
<th>Treatment Gap</th>
<th>National WH</th>
<th>Zonal WH</th>
<th>Uetsoro</th>
<th>SDP High</th>
<th>BNE40/1</th>
<th>SDP Medium</th>
<th>BNE24/1</th>
<th>SDP Low</th>
<th>BNE10/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggestions</td>
<td>Suggestion</td>
<td>Suggestion</td>
<td>Suggestion</td>
<td>Suggestion</td>
<td>Suggestion</td>
<td>Suggestion</td>
<td>Suggestion</td>
<td>Suggestion</td>
<td>Suggestion</td>
</tr>
</tbody>
</table>

**Click on “+” sign to follow Steps 2-5 individually for each level**

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#### Step 2: Select benchmark, enter the core SC activities and map it standard SC categories

<table>
<thead>
<tr>
<th>Supply chain activity by level</th>
<th>Activity category</th>
</tr>
</thead>
<tbody>
<tr>
<td>National WH</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>Zonal WH</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>Uetsoro</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>SDP High</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>BNE40/1</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>SDP Medium</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>BNE24/1</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>SDP Low</td>
<td>Suggestion for benchmark</td>
</tr>
<tr>
<td>BNE10/1</td>
<td>Suggestion for benchmark</td>
</tr>
</tbody>
</table>

---

#### Step 3: Enter the staffing information for selected benchmark

<table>
<thead>
<tr>
<th>No. of headcounts for each category</th>
<th>% time allocated</th>
<th>Avg working hours / W/E / day</th>
<th>Working days / week</th>
<th>No. of holidays / total</th>
<th>Workload Indicator</th>
<th>Frequency of activity</th>
<th>Avg time (hrs) / activity</th>
<th>Avg. units / shipment</th>
<th>Avg. Time spent (hrs) / shipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>National WH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deliver</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enable - Contractual Agreements</td>
<td>5</td>
<td>100%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume dependent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Enable - Data &amp; Info</td>
<td>2</td>
<td>100%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Plan - SC</td>
<td>3</td>
<td>50%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Enablis - Procurement</td>
<td>1</td>
<td>100%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Plan - Procurement</td>
<td>2</td>
<td>50%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume dependent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Enablis - Performance</td>
<td>1</td>
<td>100%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Plan - Procurement</td>
<td>1</td>
<td>100%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Return - to Supplier</td>
<td>3</td>
<td>33%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Return - from Client</td>
<td>3</td>
<td>33%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
<tr>
<td>Ensure good WH practices / audit</td>
<td>3</td>
<td>33%</td>
<td>8</td>
<td>5</td>
<td>30</td>
<td>Volume independent</td>
<td>Monthly</td>
<td>2600</td>
<td>5000</td>
</tr>
</tbody>
</table>

---

Add input for highlighted cells after selecting type of workload.
Phase 3: Activity & Timing

Step 1 – Benchmark selection

1.1 The user should select the option based on the major objective to be achieved

1.2 Based on this selection the benchmark node from Phase 2A or Phase 2B will be populated as benchmark

1.3 The node at which Stock Out/Treatment data has been entered is auto populated and is highlighted in blue

1.4 The user is required to select benchmark for orange cells from dropdown for his reference
### Step 2 – Activity Input

**Step 2: Select benchmark, enter the core SC activities and map it standard SC categories**

#### 2.1 Supply chain activity by level

<table>
<thead>
<tr>
<th>National WH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product dispensing and counseling</td>
</tr>
<tr>
<td>Capture consumption</td>
</tr>
<tr>
<td>Update stock cards / system</td>
</tr>
<tr>
<td>Forecasting</td>
</tr>
<tr>
<td>S&amp;OP Meeting (cross functional meeting to validate forecast)</td>
</tr>
<tr>
<td>Generate and place order to WH</td>
</tr>
<tr>
<td>Unload delivery &amp; verify received product against paperwork</td>
</tr>
<tr>
<td>Stock product in pharmacy / facility</td>
</tr>
<tr>
<td>Expiry management (FEFO) and disposal</td>
</tr>
<tr>
<td>Physical inventory count / audit</td>
</tr>
<tr>
<td>Physical inventory audit</td>
</tr>
<tr>
<td>Ensure good WH practices / audit</td>
</tr>
</tbody>
</table>

#### 2.1.1 The user should enter the activities taking place at the selected facility

#### 2.2.1 Map each activity to standard SC activities from drop down

- **Suggestion for benchmark**
  - Deliver

- **Enable**
  - Plan
  - Source
Phase 3: Activity & Timing

Step 3 & 4 – Staffing and Current working hours input

**Step 3: Enter the staffing information for selected benchmark**

<table>
<thead>
<tr>
<th>3.1</th>
<th>3.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of headcounts for each category</td>
<td>%time allocated</td>
</tr>
</tbody>
</table>

- **3.1.1** The user enters current staffing at benchmark for each activity or at activity category level based on availability
- **3.2.1** Enter in 100% for all if staffing is entered at activity level
- **3.2.2** If staffing is entered at activity category level then allocate the time for each activity

**Step 4: Enter general working hours information**

<table>
<thead>
<tr>
<th>4.1</th>
<th>4.2</th>
<th>4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg working hours / HC / day</td>
<td>Working days / week</td>
<td>No. of holidays / year</td>
</tr>
</tbody>
</table>

- **4.1.1** Enter average working hours for a worker per day
- **4.2.1** Enter average working days per week
- **4.3.1** Enter planned holidays for the year in focus

These inputs together help determine the capacity of workers for each activity category.
Phase 3: Activity & Timing

Step 5 – Activity classification and timing

Step 5: Enter the optimal numbers for that particular activity based on whether it is volume dependent or not

<table>
<thead>
<tr>
<th>Workload Indicator</th>
<th>Volume Independent</th>
<th>Volume dependent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency of activity</td>
<td>Avg. time (hrs) /activity</td>
</tr>
<tr>
<td>Volume dependent</td>
<td>Monthly</td>
<td>2000</td>
</tr>
<tr>
<td>Volume independent</td>
<td>Monthly</td>
<td>2000</td>
</tr>
<tr>
<td>Daily</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Weekly</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Monthly</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Quarterly</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Yearly</td>
<td></td>
<td>2000</td>
</tr>
</tbody>
</table>

5.1 Categorize each activity as volume dependent or independent (refer to next slide for explanation)

5.2 Select the frequency for volume independent activities from drop down

5.3 Enter average time taken each time the selected activity takes place

5.4 Enter average units being handled during each activity

5.5 Enter time taken to do each activity for selected number of units
Step 5 – A note on activity classification

Volume Independent

Activities that are supposed to happen on a fixed schedule irrespective of demand and it take similar amount of time every time.

Example, Training sessions for workers, planning sessions for demand forecast

Volume dependent

Activities for which time taken is directly proportional to number of orders/shipments received are classified under this.

Example, Time for unloading the truck with 10000 units is double the time taken for 5000 units
Overview

Set constraints and objectives for each level of SC

Output for selected level

Benchmark staffing for reference

Click to update Output combined tab for selected objectives and constraints for all levels
Constraints and Objectives

A: Select level to be optimized
- National WH
- Zonal WH
- SDP

Select Level
From the drop down list the user will see the levels in their supply chain
Choose a level in which to see the outcome of the scenario

B: Select scenario for optimization
- Current State Forecasting / Constrained
- Optimal Staffing / Unconstrained
- Current State Staffing / Constrained
- Forecast Staffing / Constrained

Optimal Staffing/Unconstrained
Select scenario to know best case staffing

Current State Staffing
Enter the constraint in highlighted cells as total number of current employees

Forecast Staffing
Enter in number of maximum employees budgeted for

C: Select the objective for optimization
- Match staffing to demand
- Match staffing to demand
- Minimize treatment gap
- Minimize stock outs

Match Staffing Demand
Ensure uninterrupted product flow based on demand

Minimize Treatment Gap
Staff with priority given to facilities which have the largest treatment gap

Minimize Stock Outs
Staff with priority given to facilities which have the largest stock out rate
Level and scenario selection

**A: Select level to be optimized**

- National WH
- Zonal WH
- State WH
- SDP

The user should select the level at which to see the output.

**B: Select scenario for optimization**

- Optimal Staffing / Unconstrained
- Current State staffing / Constrained
- Forecast Staffing / Constrained

**B.1.1**

The unconstrained scenario is selected to know the optimized staffing without any cap on maximum employees.

**B.2.1**

- The user should select this option if they want to redistribute the current workforce in an optimal way.
- As an additional step the user enters the total number of employees for the level selected in **Step A**.

**B.3.1**

- The user should select this option if they have input the forecast demand in Phase 1 – Step 6.
- As an additional step the user inputs the maximum workers that can be staffed at level selected in **Step A**.

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Objective selection for optimization

This is the default objective which optimizes the staffing to meet demand at each node entered in Phase 1-Step 6

This objective gives user option to assign weightage to distribution based on treatment gaps demand based staffing. **Valid only for level selected in Phase 2B**

This objective gives option to assign weightage to distribution based on stock out rate and to demand based staffing. **Valid only for level selected in Phase 2A**

Sum should add up to 100%
Output Scenario Planning

Output for selected level

Click on “+” at top to look at current staffing by roles

<table>
<thead>
<tr>
<th>Zonal WH</th>
<th>Current Staffing</th>
<th>Recommended Staffing</th>
<th>Current staffing comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Plan</td>
<td>Source</td>
</tr>
<tr>
<td>Abuja</td>
<td>402</td>
<td>100</td>
<td>72</td>
</tr>
<tr>
<td>Gambe</td>
<td>144</td>
<td>18</td>
<td>46</td>
</tr>
<tr>
<td>Sokoto</td>
<td>56</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Anambra</td>
<td>119</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>Cross River</td>
<td>84</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>Lagos</td>
<td>224</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

Current staffing based on inputs on Phase 1C

Optimal staffing output based on scenarios and objectives selected

Optimally staffed if the gap between current and optimized is less that 50%
Output for all levels

- Combined output for all levels can be seen together along with current staffing by each category
- Combined tab can leveraged as direct staffing plan roll outs for entire country
Thank You

Promoting sustainable workforce excellence in health supply chain management