Enabling Digitalization Strategies using Time and Motion Study (TMS)

Global Workshop on Digital Public Infrastructure: Accelerating Action

World Bank HQ, Washington D.C
September 13, 2023
3:30 pm - 4:30 pm
Presentation Outline

1. Time and Motion Study Simulation Game using Bricks
2. What is Time and Motion Study (TMS)?
3. Overview of TMS Methodology
4. Application of TMS in the Philippines
5. Key Takeaways
6. Acknowledgement
Let’s Play!

TMS Simulation Game Using Bricks
Game Main Objectives

1. Produce as much output as you can within two (2) minutes for each scenario.
2. Three scenarios will be played throughout the game
The Finished Product

Note: No need to follow the color of the bricks
Measuring Performance per Scenario

Productivity

• A measure of the effective use of resources, usually expressed as the ratio of output to input

\[
\text{Productivity} = \frac{\text{Outputs}}{\text{Inputs}}
\]
Performance Board per Team

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
<th>Input (Personnel)</th>
<th>Output</th>
<th>Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>With additional Personnel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3 personnel with process improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Game Roles per Team

<table>
<thead>
<tr>
<th>No.</th>
<th>Game Role</th>
<th>Participants needed per role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assemblers</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Delivery and Recorder</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Process Observers</td>
<td>15</td>
</tr>
</tbody>
</table>
Table Set-up and Flow per Team

STAGE

Assembler 1
Assembler 2
Assembler 3
Delivery & Recorder

Stopwatch
Screen
Assembler 1 Materials
Assembler 2 Materials
Assembler 3 Materials
Delivery and Recorder Instructions

Instructions
1. Scan QR code using your mobile phone or tablet.
2. Go to your assigned Team sheet
Delivery and Recorder Instructions

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Input</th>
<th>Output</th>
<th>Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td></td>
<td>0.00</td>
</tr>
</tbody>
</table>

Instruction:
Count and record the output of the Team for each scenario.
Scenario 1: 3 Workstations – 3 Assemblers

Station 1

Assembler 1

Station 2

Assembler 2

Station 3

Assembler 3
Scenario 2: 3 Workstations – 4 Assemblers

Station 1

Assembler 1

Station 2

Assemblers 2 and 3

Station 3

Assembler 4
Scenario 3: 3 Workstations – 3 Assemblers

Station 1
Assembler 1

Station 2
Assembler 2

Station 3
Assembler 3
Game Debriefing.
What does this mean in real life processes?
 Scenario 1: Applying for permits

1. Submit and verify requirements
2. Encoding information from forms
3. Issue business permit
Scenario 2: Registering for a government service

Filling-out forms → Encoding information from forms → Evaluating encoded information
Scenario 3: Bank account opening

1. Fill-out application form
2. Scan PhilID
3. Activate and issue ATM card
Time and Motion Study (TMS)

- Time and Motion Study is a systematic and scientific approach used to analyze and improve the efficiency of work processes by:
  - Breaking down the activities and tasks,
  - Measuring them, and
  - Evaluating their impact on performance (Service and Customer).
Customer Centricity: Seeing impact and value to Customer

• Customer centricity is an approach and philosophy that places the customer at the core of all business decisions and operations.

• The customer's needs, preferences, and satisfaction should be the primary focus of any organization’s strategies and activities.
Lean Thinking: Learning to see value and non-value

KINDS OF ACTIVITIES:

VALUE ADDED
- EMPHASIZE!

NON-VALUE ADDED
- NECESSARY WASTE
- PURE WASTE

MINIMIZE!
ELIMINATE!
Value Adding Activities

- Creation of Guarantee Letter
- Verification of presented ID
- Screening Process
- Issuance of assistance
Non-value adding
Lean Thinkers view of any activity

- Value Adding (5%)
- Necessary but non-Value Adding (35%)
- Non-Value Adding (60%)

We can focus on this!
Time and Motion Study Key Findings in the Philippines
### Key Findings (Performance)

The following is the potential range of improvement in customer experience time per sector involved in the study:

<table>
<thead>
<tr>
<th>Sector</th>
<th>Potential Range of Percentage (%) Improvement in Customer Experience Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Government Sector</td>
<td>41.94% – 73.47%</td>
</tr>
<tr>
<td>Financial Sector</td>
<td>33.56% – 60.94%</td>
</tr>
<tr>
<td>Social Protection Sector</td>
<td>47.53% – 78.56%</td>
</tr>
</tbody>
</table>
Key Findings (Outcome)

1. PhilSys will enable the efficient delivery of services (or assistance) to the intended clients (beneficiaries, constituents, customers).
   - RPs can quickly and accurately verify their customer’s identity.
   - RPs can take advantage of the verified information from PhilSys to eliminate the need to capture information multiple times from Clients.
   - RPs can reduce incidents of erroneous client data from multiple encoding.

*RP = Relying Parties. These are institutions or organizations given access to PhilSys
Key Findings (Outcome)

2. Digital transformation initiatives of Relying Party can be enabled by PhilSys, specifically on innovating customer experience.

3. RPs can maximize the full benefit of PhilSys integration by improving both their processes and IT infrastructure.

4. RPs can enjoy quick wins by using PhilSys check to authenticate their client without the need for further documentation.
Overview of TMS Methodology

Case study: Application & Issuance of New Business Permit
Define the High-Level Process Scope: Application and Issuance of New Business Permit

**SUPPLIER**
Applicant
City Treasury Office

**INPUT**
- Application Form
- Documentary Requirements

**PROCESS**
Application and Issuance of Business Permit

**OUTPUT**
Business Permit

**CUSTOMER**
Applicant

**START**
Accomplish application form and submit with other documentary requirements

Accomplish application form and submit with other documentary requirements

Proceed to interview and document verification

Secure Zoning Assessment from MPDO and Building Inspection Assessments from Engineering Office

Secure Tax Order of Payment and settle amount due to the Treasury Office

Pay Fire & Safety Inspection Fee to Fire & Safety Sector

Receive Business Permit from the BPLO

**END**
Data Gathering Set-up
Current Customer Journey Map
Application and Issuance of New Business Permit
Current Customer Journey Map
Application and Issuance of New Business Permit

Current Customer Experience Time: 1 Hour and 20 minutes
Observation 1: Applicants must go to the different offices and secure the required documents for a business permit.

- **Applicants must queue at each office, adding to the total experience time.**
Observation 2: Each office retrieves almost the same client information for checking and recording.
Current Process Flow

1. BPLO
2. MPDO
3. Municipal Engineering Office
4. Treasury Office
5. Photocopy Station
6. Bureau of Fire Protection
7. Treasury Office
8. BPLO
Where can PhilSys (National ID) be integrated?
Application and Issuance of New Business Permit Current Process
Co-creating the future state with stakeholders
Proposed Process with PhilSys Integration - Application & Issuance of New Business Permit

Authenticate the identity of the business and the owner.

1. **Authenticate Identity**
   - New Business Application Information (Updated)
   - New Business Application Database

2. **Encode Information**
   - Demographic Information

3. **Print & Issue**
   - Business Permit
   - Business Plate

Encode other details and pay amount due.

1. **Authenticate Identity**
   - New Business Application Information (Updated)

2. **Encode & Verify**
   - Other Business Information

3. **Pay Amount**
   - Due to Treasury Office

Issue business permit

1. **Authenticate Identity**
   - Basic Authentication

2. **Issue Permit & Plate**
   - To Client

**Processing Time**
- 1.12 min
- 0.28 min
- 0.25 min
- 0.0 min
- 1.72 min
- 1.22 min
- 1.65 min
- 7.42 min
- 0.43 min
- 0.57 min
- 1.13 min

**Total Average Experience Time**
- 15.78 mins

**Total Ave Waiting**
- 2.08 mins

**Total Ave Processing Time**
- 13.70 mins
### PhilSys Integration Impact on Total Customer Experience Time

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Current Performance (h:mm:ss)</th>
<th>Expected performance of the proposed process (h:mm:ss)</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Customer Experience Time</td>
<td>1:20:50</td>
<td>0:15:47</td>
<td>80%</td>
</tr>
</tbody>
</table>
## PhilSys Integration Impact on Cost per Transaction

<table>
<thead>
<tr>
<th>Cost Components</th>
<th>Baseline</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expected</td>
<td>% Difference</td>
</tr>
<tr>
<td>Manpower</td>
<td>₱42.65</td>
<td>₱12.19</td>
</tr>
<tr>
<td>Utilities</td>
<td>₱1.49</td>
<td>₱0.52</td>
</tr>
<tr>
<td>Materials</td>
<td>₱13.00</td>
<td>₱12.14</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>₱57.13</td>
<td>₱24.85</td>
</tr>
</tbody>
</table>

### Estimated Cost Performance of Applicant

<table>
<thead>
<tr>
<th>Cost Components</th>
<th>Baseline</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expected</td>
<td>% Difference</td>
</tr>
<tr>
<td>Customer time</td>
<td>₱72.19</td>
<td>₱14.59</td>
</tr>
<tr>
<td>Utilities</td>
<td>₱0.00</td>
<td>₱0.00</td>
</tr>
<tr>
<td>Transportation</td>
<td>₱24.00</td>
<td>₱24.00</td>
</tr>
<tr>
<td>Materials</td>
<td>₱19.55</td>
<td>₱1.83</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>₱115.74</td>
<td>₱40.41</td>
</tr>
</tbody>
</table>
Presentation to the Relying Party
Application of TMS to other sectors
Sectors, Relying Party, and Use Case Involved in the Study

<table>
<thead>
<tr>
<th>Sector</th>
<th>Relying Party</th>
<th>Use Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>Bank A</td>
<td>1. In-Branch Savings Account Opening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Digital Account Opening</td>
</tr>
<tr>
<td></td>
<td>Bank B</td>
<td>1. In-Branch Savings Account Opening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Cash Agent Account Opening</td>
</tr>
<tr>
<td>Local Government</td>
<td>LGU A</td>
<td>1. Application and Issuance of New Business Permit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Application for Marriage License Process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Non-Marital Child or Children to Use the Surname of the Father Process</td>
</tr>
<tr>
<td></td>
<td>LGU B</td>
<td>1. Application and Issuance of New Business Permit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Rice Subsidy</td>
</tr>
<tr>
<td>Social Protection</td>
<td>Social Program A</td>
<td>1. AICS Process</td>
</tr>
</tbody>
</table>
Local Government Sector
## Impact on Customer Experience Time

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LGU A</strong></td>
<td>Application and Issuance of New Business Permit</td>
<td>1:12:21</td>
<td>0:19:12</td>
<td>73.47%</td>
</tr>
<tr>
<td></td>
<td>Rice Subsidy Process</td>
<td>3.72 Months</td>
<td>2.16 Months</td>
<td>41.94%</td>
</tr>
<tr>
<td><strong>LGU B</strong></td>
<td>Application and Issuance of New Business Permit</td>
<td>0:34:52</td>
<td>0:17:46</td>
<td>49.04%</td>
</tr>
<tr>
<td></td>
<td>Application for Marriage License Process</td>
<td>1:11:51</td>
<td>0:32:50</td>
<td>54.31%</td>
</tr>
<tr>
<td></td>
<td>(excluding 10 Days for Posting to the Public)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-Marital Child or Children to Use the Surname of the Father Process</td>
<td>0:51:21</td>
<td>0:28:06</td>
<td>45.28%</td>
</tr>
</tbody>
</table>
## Impact on Cost for both Relying Party (RP) and Client

<table>
<thead>
<tr>
<th>Local Government Unit</th>
<th>Process / Use Case</th>
<th>Current Cost Performance (Php)</th>
<th>Proposed Cost Performance (Php)</th>
<th>Percentage (%) Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RP</td>
<td>Client</td>
<td>RP</td>
</tr>
<tr>
<td><strong>LGU A</strong></td>
<td>Application and Issuance of New Business Permit</td>
<td>62.41</td>
<td>115.50</td>
<td>27.98</td>
</tr>
<tr>
<td></td>
<td>Rice Subsidy Process</td>
<td>36.64</td>
<td>48.36</td>
<td>22.04</td>
</tr>
<tr>
<td><strong>LGU B</strong></td>
<td>Application and Issuance of New Business Permit</td>
<td>28.80</td>
<td>49.35</td>
<td>14.61</td>
</tr>
<tr>
<td></td>
<td>Application for Marriage License Process</td>
<td>57.13</td>
<td>115.74</td>
<td>24.85</td>
</tr>
<tr>
<td></td>
<td>Non-Marital Child or Children to Use the Surname of the Father Process</td>
<td>41.08</td>
<td>211.16</td>
<td>24.45</td>
</tr>
</tbody>
</table>
Financial Sector
## Impact on Customer Experience Time

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank A</td>
<td>In Branch Personal Savings Account Opening Process</td>
<td>0:36:59</td>
<td>0:24:34</td>
<td>33.56%</td>
</tr>
<tr>
<td></td>
<td>Digital Account Opening Process</td>
<td>24:17:44</td>
<td>12:09:36</td>
<td>49.95%</td>
</tr>
<tr>
<td></td>
<td>(1 day waiting for activation code)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank B</td>
<td>In Branch Regular Deposit Account Opening Process</td>
<td>0:29:07</td>
<td>0:11:22</td>
<td>60.94%</td>
</tr>
<tr>
<td></td>
<td>Cash Agent Basic Deposit Account Opening Process</td>
<td>0:06:52</td>
<td>0:03:39</td>
<td>46.84%</td>
</tr>
</tbody>
</table>
## Impact on Cost for both Relying Party and Client

<table>
<thead>
<tr>
<th>Bank Name</th>
<th>Process / Use Case</th>
<th>Current Cost Performance (Php)</th>
<th>Proposed Cost Performance (Php)</th>
<th>Percentage (%) Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank A</td>
<td>In Branch Personal Savings Account Opening Process</td>
<td>28.21</td>
<td>17.96</td>
<td>36.34%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>77.00</td>
<td>61.22</td>
<td>20.48%</td>
</tr>
<tr>
<td>Bank A</td>
<td>Digital Account Opening Process</td>
<td>4.21</td>
<td>2.19</td>
<td>47.98%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22.44</td>
<td>12.20</td>
<td>45.63%</td>
</tr>
<tr>
<td>Bank B</td>
<td>In Branch Regular Deposit Account Opening Process</td>
<td>44.43</td>
<td>6.12</td>
<td>86.23%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>61.00</td>
<td>38.45</td>
<td>36.96%</td>
</tr>
<tr>
<td>Bank B</td>
<td>Cash Agent Basic Deposit Account Opening Process</td>
<td>8.70</td>
<td>5.04</td>
<td>42.07%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.94</td>
<td>3.57</td>
<td>48.56%</td>
</tr>
</tbody>
</table>

Technopolis

Harvesting for Change
Social Protection Sector
## Impact on Customer Experience Time

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Program A</td>
<td>Cash Outright Process (COR)</td>
<td>7:34:15 (excluding 4 days rescheduling time)</td>
<td>*1:37:22</td>
<td>78.56%</td>
</tr>
<tr>
<td>Social Program B</td>
<td>Community Assembly Validation Process</td>
<td>0:40:02</td>
<td>0:21:00</td>
<td>47.53%</td>
</tr>
</tbody>
</table>

*OpenG2P Assumptions:
1. Complete documents submitted in OpenG2P
2. No change in the payment process
3. Interviews and assessments are done in person.
4. Only OpenG2P is being used. (No CRIMS, and Google Sheets)
Key takeaways from TMS

1. TMS helps in objectively identifying and quantifying the impact of PhilSys on the RP’s processes.

2. Collaboration among stakeholders (Customers, RP/Process Owners, PhilSys, and WB) makes TMS work.

3. Pursuing TMS enables customers and process owners the opportunity to challenge legacy practices that are no longer necessary.

4. TMS opens the door for innovating our service processes and maximizing the impact of integrating the PhilSys.