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Budget and resources for building LMIS - LABOUR MARKET INFORMATION ANALYTICS PLATFORM

ASEAN TVET Council Regional Policy Dialogue on
Labour Market Information System for Better TVET Policy

Session 2

Speaker (Mohd Firdaus Zaini, Principal Assistant Director)

30 – 31 May 2023

Outline



01 Introduction

02 12th Malaysia Plan Initiative

03 Labour Market Information Analytics Platform

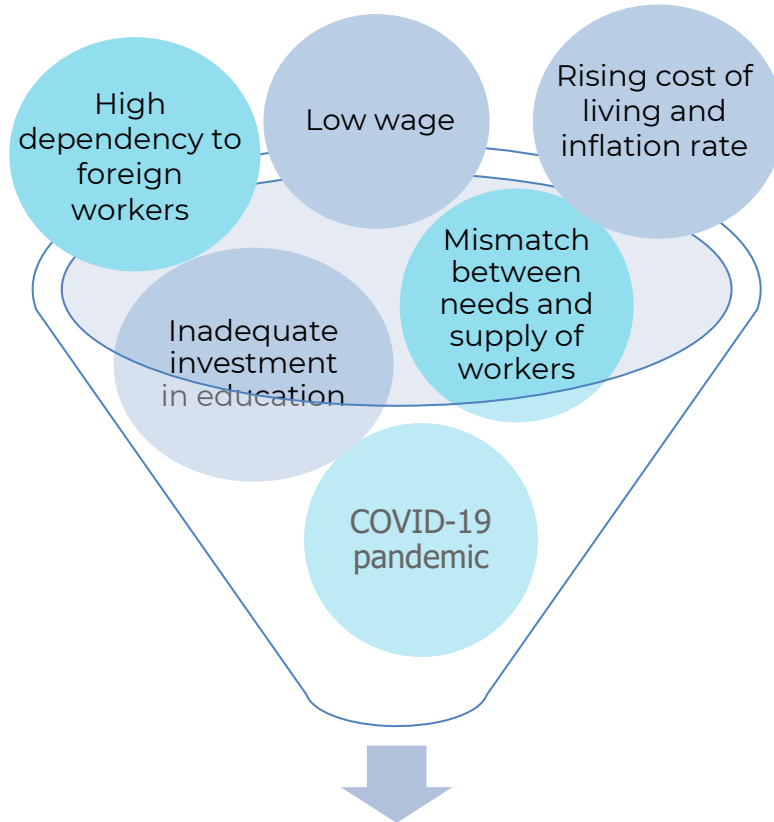
04 Sources & Existing Challenges

05 Critical Success Factor

Introduction: Existing Issues

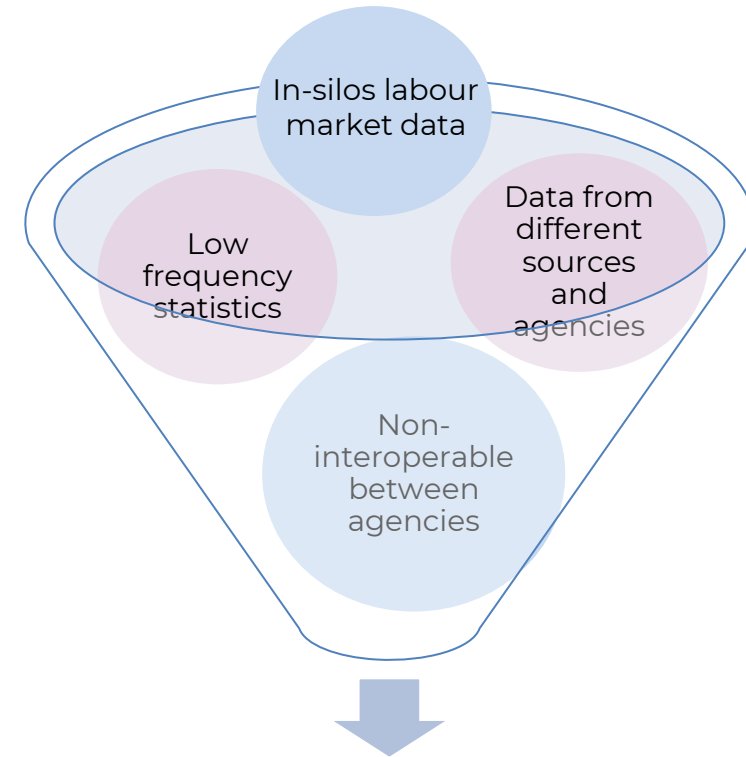


Issues on labour market structure



- Lower compensation of employee
- Low productivity
- *Labour Mismatch*

Labour market data environment



- Difficulty in measuring and monitoring the current development of the labour market.
- Labour market statistics that are not comprehensive and frequent
- Underutilization of administrative data

Main Sources of Labour Market Data



Censuses and surveys using household approach

- Population & Housing Census

- Monthly Labour Force Survey

- Salaries & Wages Survey

Censuses and surveys using establishment approach

- Quarterly Employment Survey
- Quarterly Services Survey
- Monthly Manufacturing Survey

- Monthly Distributive Trade Survey
- Wholesale and Retail Trade Census
- Economic Census and Survey

Administrative data



38 ministries/agencies have been identified as potential administrative data sources

Big Data

Advertisement
of job
vacancies

Media articles

Social Media

However,
coherence
across sources
is necessary



Concepts & definitions
Classifications
Time reference
Methodology



**LABOUR
STATISTICS**



LABOUR POLICIES

Sources of
labour
market data
in Malaysia

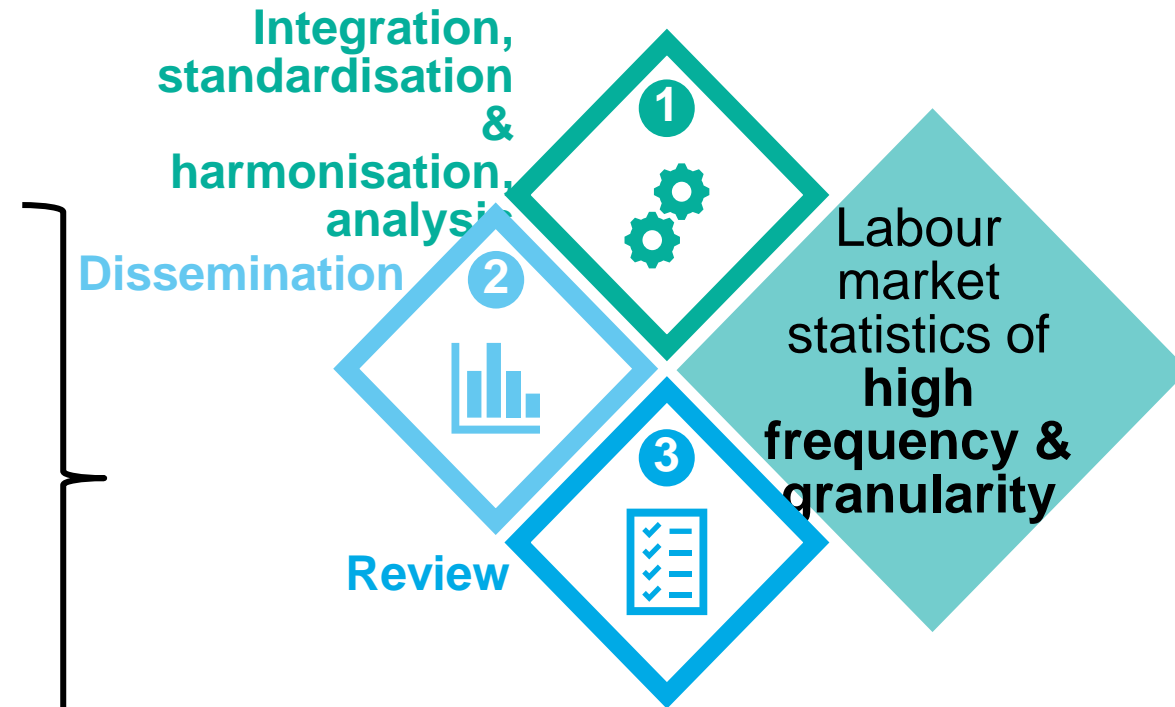
Challenges in Labour Market Data



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Source	Advantages	Disadvantages
Census / Survey	<ul style="list-style-type: none"> • Can be designed to meet data requirements directly 	<ul style="list-style-type: none"> • Time lag • Sampling and non-sampling error • Data granularity
Administrative data	<ul style="list-style-type: none"> • Real-time • Leverage on available data • Save costs and time • Data granularity 	<ul style="list-style-type: none"> • Not designed for statistical purposes (typically in diverse formats) • Need to consider data sharing governance
Big data	<ul style="list-style-type: none"> • Real-time • No burden of respondent 	<ul style="list-style-type: none"> • High volume • Unstructured/ semi-structured • Complex



12th MP initiative: Development of Labour Market Information Analytics Platform



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TWELFTH MALAYSIA PLAN

2021-2025
A PROSPEROUS, INCLUSIVE, SUSTAINABLE MALAYSIA



Strategy A2

Strengthening the Labour Market Support System

Systems to support labour market will be strengthened by enhancing labour market information infrastructure and promoting responsive workforce training. Measures will also be undertaken to introduce social protection for gig workers and increase compliance with labour laws and regulations. These efforts will improve the efficiency of the labour market.

Enhancing Labour Market Information Infrastructure

A sound labour market information infrastructure is crucial to strengthen the labour market. In this regard, a labour market data framework will be developed to guide planning, development and implementation of labour market policies and initiatives. The framework will facilitate collection and harmonisation of data from traditional and emerging sources for central analytics, as shown in Exhibit 10-5. The labour market information infrastructure will also include an analytics platform to provide insights for empirical-based policy decision. This platform will incorporate predictive modelling, which uses machine learning technology to better understand the dynamics of the labour market. This will also assist policy makers in addressing labour market challenges, including skills mismatch, as well as the needs for better employment forecast based on sectors or region and tracking of foreign workers.

Exhibit 10-5

Central Analytics Platform for Labour Market Support



The development of the Labour Market Information Analytical System (LMIAP) is an initiative under the Twelfth Malaysia Plan (12th MP) which is to realign the labour market for inclusive and sustainable growth.

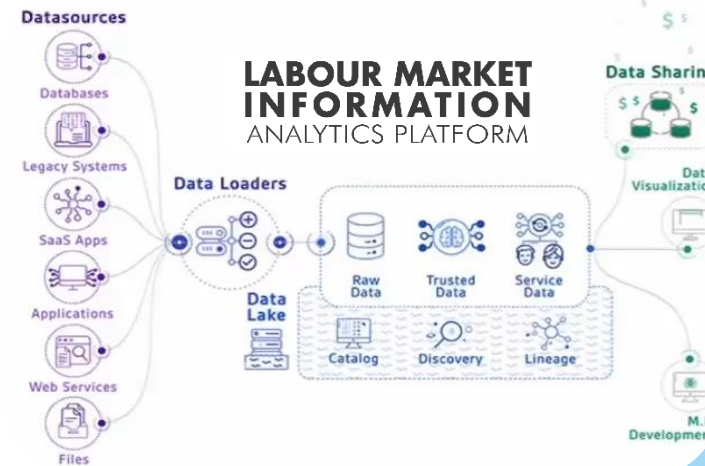
Length of project: 2022-2025

TARGET

Objectives

(Strategy A2 RMKe-12)

- Platform for **collecting and harmonizing data** obtained from traditional and new emerging data sources for centralized analytics.
- Using projection models based on **machine learning technology**; and
- Helps **policy makers to address challenges** in the labour market.



OUTCOME

Labour Market Indicators

99 Main Indicator

128 Supporting Indicator

Administrative Data Sharing

Ministries/Agencies

Phase 1	Phase 2
25 Agencies 107 data set	13 Agencies 30 data set

12th MP initiative : Proposed Features of the System



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1 | Standardisations and harmonisations of concepts, definitions, codes and classification

2 | Centralising of the statistical information systems which are maintained by the respective agencies for their administrative purposes.

3 | Adoption of modern database, cryptography, privacy-preserving, and privacy-enhancing technologies.

4 | Real time data transfers between agencies whereby data processing and dissemination are conducted fully on system with minimal human intervention.

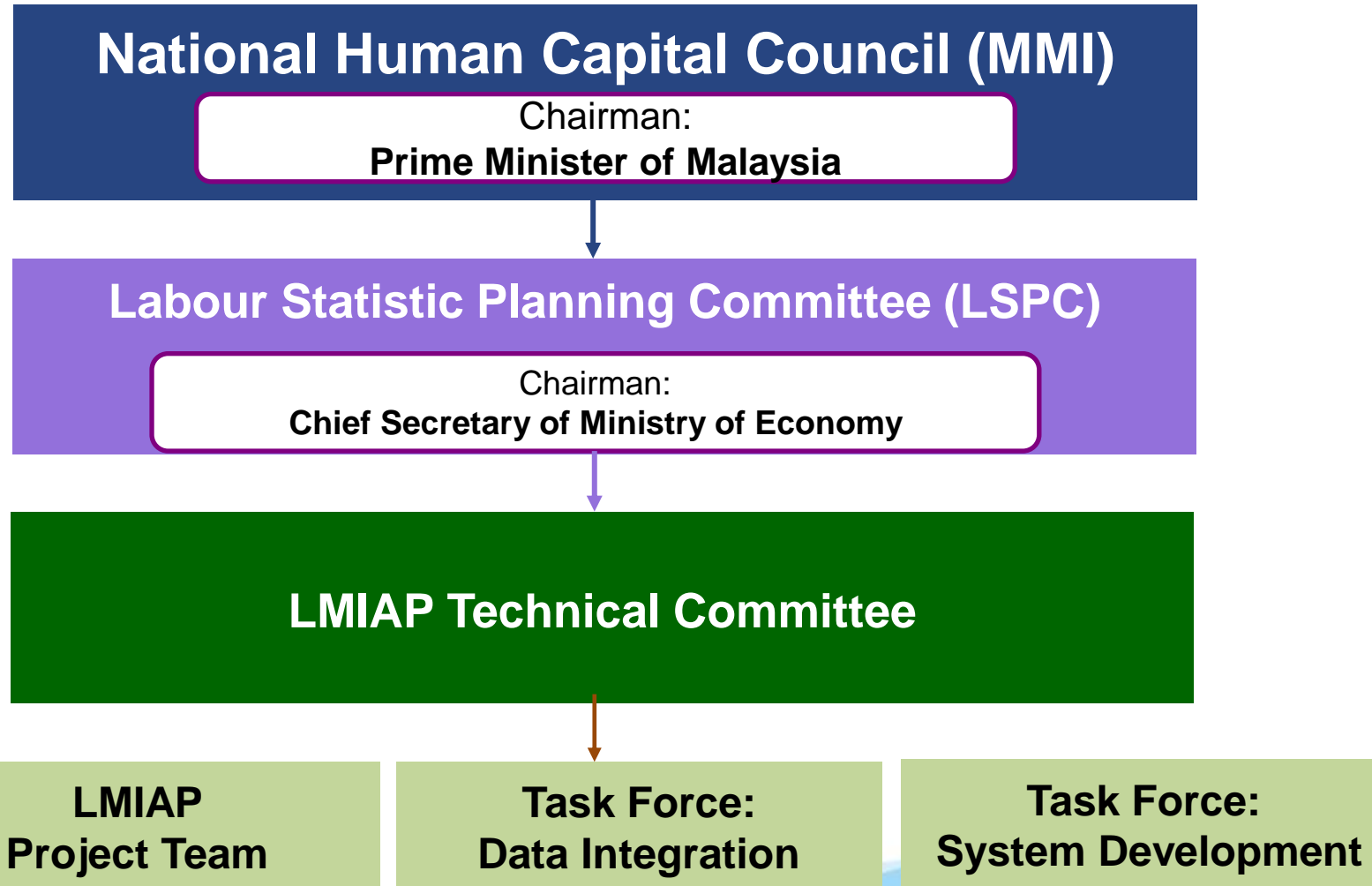
5 | Integrity and consistency checks for multiple data sources to produce highly accurate and reliable labour market statistics.

6 | Analytics platform with econometric modelling capabilities to acquire and analyse labour market information comprehensively and holistically.

7 | Future Thinking (forecasting) and Scenario Planning for Labour Market



LMIAP: Governance



LMIAP: Main Component



Labour Market Information Analytics Platform (LMIAP)

Product/Output

Main page

1. LMIAP Portal
2. User registration and management
3. Feedback management
4. Helpdesk
5. Publication/ Article

Visualisation and dashboard

1. Labour Productivity
2. Labour Demand
3. Labour Supply
4. Potential Labour Supply
5. 227 indicators

Tabulation for Publication

1. Data
2. Weighting
3. Cleaning
4. Export
5. Conversion
6. Split and Merge

Table Builder

1. Labour Productivity
2. Labour Demand
3. Labour Supply
4. Potential Labour Supply
5. 227 indicators

Monitoring of OGA and DOSM

1. Data Gap Monitoring
2. Data Retrieving scheduler and monitoring
3. Data lineage
4. Notification
5. Executive Summary
6. Dashboard OGA

Administration

1. Modul Login
2. Access Control level
3. Dashboard
4. Management
5. Single Sign On (SSO)
6. Token Management
7. CMS
8. Audit trail
9. Management of data sharing terms of reference

Analytics & Modelling

Data Request

1. Data connector
2. Ad-hoc query

Data Mining and Statistical Analysis

1. Obtain
2. Scrub
3. Explore
4. Model
5. Interpret
6. Data Mining

Supply and Demand

1. Data Preparation
2. Forecasting
3. Supply chain
4. Evaluation

Forecasting and Simulation

1. Obtain
2. Scrub
3. Explore
4. Model
5. Interpret

Data collection, storage, transformation and processing

Data Collection

1. Data Collection Upload
2. Data Collection API
3. Internal DOSM Application
4. Data lineage
5. Scheduler

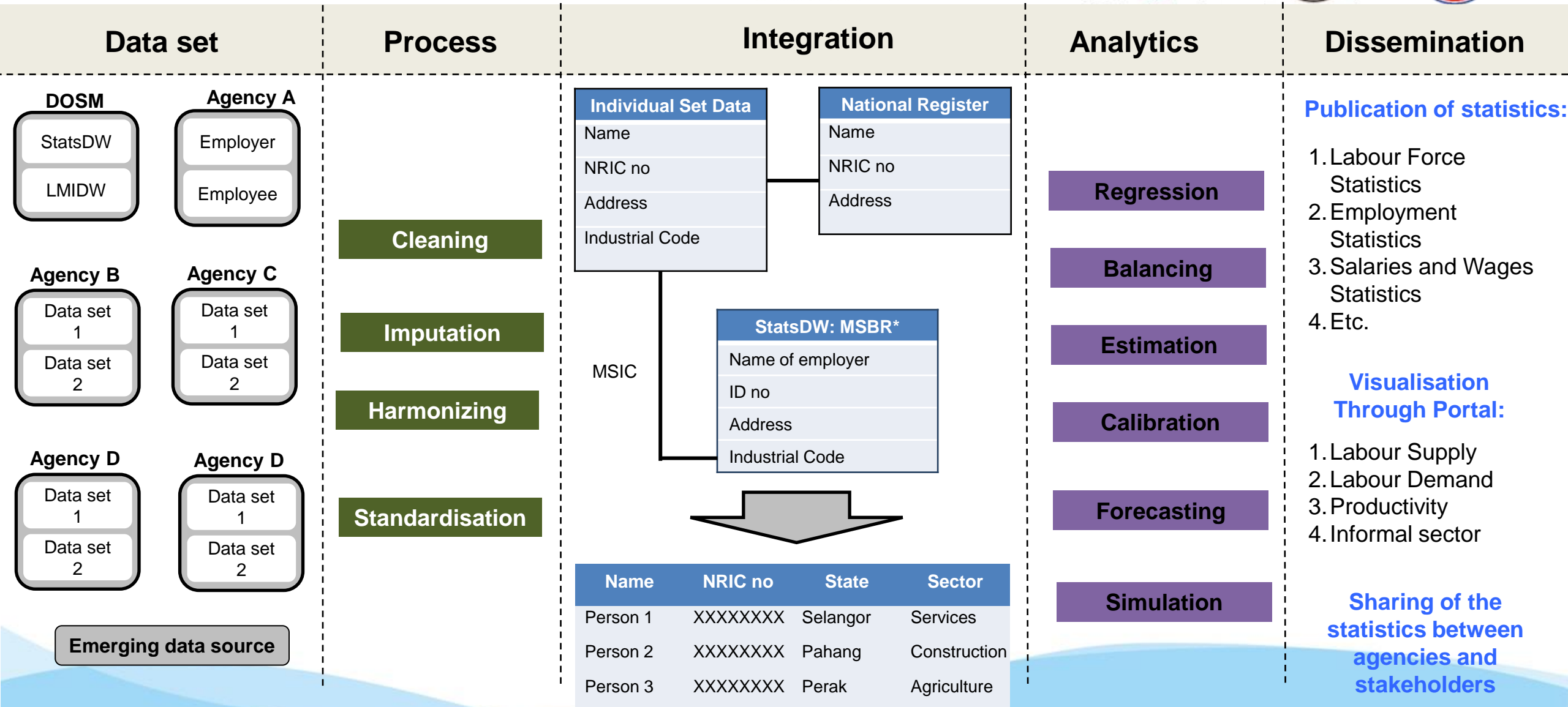
Data Review and Validation

1. Data quality
2. Design Strategies
3. Refine
4. Deliver

Metadata Management

1. Statistical Data and Metadata
2. Data Documentation Initiative

LMIAP: Architecture



Note:
*MSBR: Malaysian Statistical Business Register

LMIAP: Expected Output



Type of indicator	No. of Indicator	Example Output
Main Indicator	99	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>A. Labour Cost Statistics</p> <ul style="list-style-type: none"> • Wages index • Salary and wages • Payroll tax <p>B. Labour Force Statistics</p> <ul style="list-style-type: none"> • Unemployment rate • Labour force participation rate • Employed persons • Labour underutilization • Underemployment by skills </div> <div style="width: 48%;"> <p>C. Employment Statistics</p> <ul style="list-style-type: none"> • Filled job • Vacancies <p>D. Productivity</p> <ul style="list-style-type: none"> • Labour productivity per hours work • Labour productivity per employment </div> </div>
Supporting Indicator	128	<ul style="list-style-type: none"> • Number of job seekers by age group, qualification, gender, etc • Number of expatriate by sector, state, etc
Total	227	

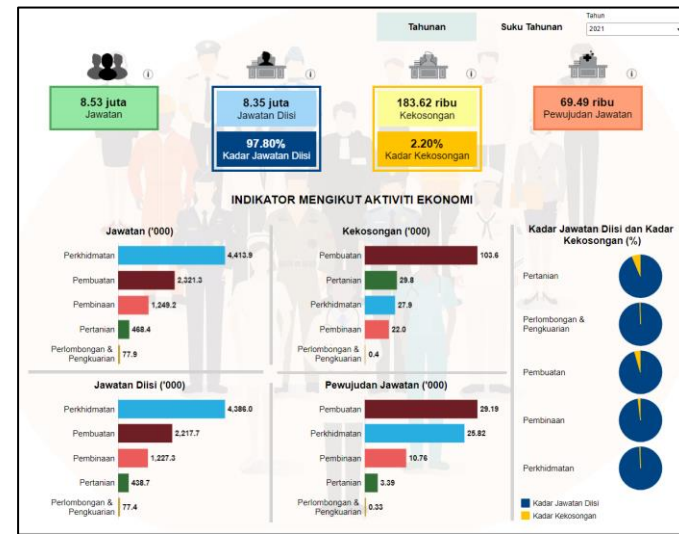
LMIAP: Expected Output (Cont.)



Portal



Dashboard



Statistics

Jadual 10a: Purata Gaji & Upah Bilanan Siswazah Bekerja mengikut Kumpulan Umur, Malaysia, 2016 - 2020

Table 10a: Mean Monthly Salaries & Wages of Employed Graduates by Age Group, Malaysia, 2016 - 2020

Kumpulan Umur / Age Group	2016	2017	2018	2019*	2020*
Jumlah Total	4,331	4,676	4,897	5,020	4,489
5-24	1,978	2,146	2,320	2,367	1,849
25-34	3,386	3,479	3,707	3,655	3,371
35-44	5,329	5,705	5,822	5,843	5,336
≥ 45	6,992	7,978	8,199	7,954	6,920

Jadual 10b: Penengah Gaji & Upah Bilanan Siswazah Bekerja mengikut Kumpulan Umur, Malaysia, 2016 - 2020

Table 10b: Median Monthly Salaries & Wages of Employed Graduates by Age Group, Malaysia, 2016 - 2020

Kumpulan Umur / Age Group	2016	2017	2018	2019*	2020*
Jumlah Total	3,539	3,559	3,936	4,300	3,815
5-24	1,800	1,800	2,112	2,086	1,550
25-34	3,000	3,000	3,381	3,450	3,028

Jadual 1: Statistik utama tenaga buruh, Malaysia, Suku Pertama 2017 - Suku Kedua 2021

Table 1: Principal statistics of labour force, Malaysia, First Quarter 2017 - Second Quarter 2021

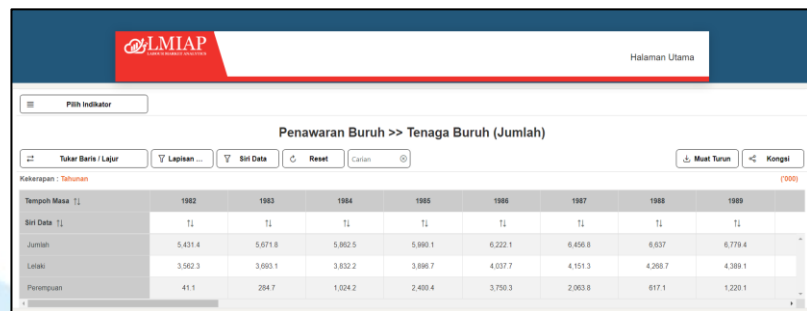
Tahun Year	Kadar penyertaan tenaga buruh / Labour force participation rate (%)			Tenaga buruh / Labour force ('000)			Bekerja / Employed ('000)			Penganggur / Unemployed ('000)	Kadar pengangguran / Unemployment rate (%)
	Jumlah Total	Lelaki / Male	Perempuan / Female	Jumlah Total	Lelaki / Male	Perempuan / Female	Jumlah Total	Lelaki / Male	Perempuan / Female		
2017 I	67.7	80.1	54.2	14,870.1	9,188.1	5,682.1	14,355.9	8,876.2	5,479.7	514.2	3.5
2017 II	67.7	80.0	54.2	14,926.4	9,208.6	5,717.7	14,414.8	8,883.9	5,530.9	511.6	3.4
2017 III	67.9	80.1	54.6	15,000.2	9,242.6	5,757.6	14,484.0	8,932.2	5,551.7	516.2	3.4
2017 IV	68.0	80.1	54.8	15,089.9	9,278.2	5,811.0	14,580.5	9,011.7	5,568.8	507.8	3.4
2018 I	68.2	80.3	55.1	15,192.3	9,379.9	5,812.4	14,633.6	9,116.4	5,707.2	506.9	3.3
2018 II	68.4	80.5	55.3	15,275.3	9,485.9	5,789.4	14,747.2	9,235.6	5,711.6	511.1	3.3
2018 III	68.5	80.6	55.5	15,381.3	9,544.6	5,836.9	14,856.8	9,374.1	5,782.7	524.4	3.4
2018 IV	68.6	80.7	55.6	15,449.9	9,618.8	5,831.1	14,933.4	9,137.4	5,796.0	516.5	3.3

The statistics can be published regularly

Data Sharing

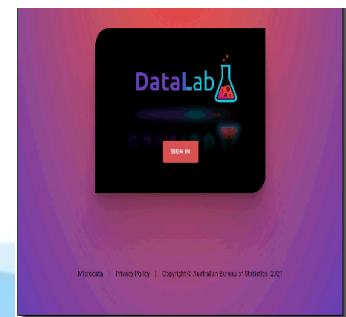
Sharing of the data between agencies and stakeholders

Table Builder



Users can tabulate a more dynamic indicators

Data Mining



Selected users can get access to anonymised micro data and analysis

Sources and Existing Challenges



Sources Needed

Financial

Budget for developing LMIAP is under 12th Malaysia Plan and also funded by central bank.

Data

Availability of labour market data from different sources such as census/survey data, administrative data, big data to help address issues of labour market

Human Resource

Equipped with needed skills such as:

- a. Statistics
- b. Labour market and economics
- c. Statistical tools (SPSS, STATA, SAS)
- d. Data science
- e. Data management tools
- f. ICT

Infrastructure

- System that meets the needs of the project
- Implementation of Big Data and Artificial Intelligence Technology
- Laptop and computers that equipped with required software
- Software that are easy to use and user friendly

Existing Challenges

Existing challenges in accessing and maintaining necessary resources:

- Infrastructures and resources
- Limitation technology
- Skill needed

Successful strategies or practices:

- Capacity building and training by providing education and training
- Skill development program, vocational training and awareness campaigns can equip people with the knowledge and tools to overcome resource-related challenges

Critical Success Factor



a) Source

- i. Sufficient human resources with a set of skills in **statistics, economics, data science and ICT**
- ii. Adequate development and operational allocations
- iii. **Availability of data** from data providers that meet user requirements and international standards

c) Collaborative network

- i. **Continuous objective understanding between project owners, contractors and data providers**
- ii. **Focused, dedicated and skilled project team**
- iii. **Capacity building** in data provider agencies
- iv. **Involvement of SMEs** in the early stages of the project
- v. Ongoing communication between the project owner, contractor and data provider

b) Technology

- i. Data integration system that meets standards and **dynamic**
- ii. Availability of data sharing system in the agency
- iii. System adaptation (adaptability)
- iv. Implementation of **Big Data and Artificial Intelligence technology**

d) Strategy

- i. **High level of support** and commitment from upper management
- ii. **Resolution** of legal barriers to data sharing
- iii. **Standardization** and harmonization of data concepts and definitions in agencies
- iv. **Continuous monitoring** through regular monitoring meetings
- v. Data management and metadata
- vi. Data cleaning and transformation using appropriate software using available server capacity
- vii. **Active involvement and commitment** of project owners and data providers throughout the project implementation period



THANK YOU