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Projet BI

BBS Statistical DW : Industry Business Wing

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1 Context of the Project

The Bangladesh Bureau of Statistics (BBS), in collaboration with the Korea International Cooperation Agency (KOICA), has initiated a large-scale national modernization program aimed at strengthening the statistical information system of Bangladesh.

Currently, statistical data related to industry, trade and business activities are distributed across several ministries, public institutions and directorates. These data sources are characterized by heterogeneous formats, inconsistent definitions of indicators, limited historical depth and weak interoperability, which significantly limits cross-domain analysis and decision support.

To address these challenges, the **Statistical Data Warehouse Project** aims to design and implement a centralized Business Intelligence (BI) platform that enables the collection, integration, storage and analytical exploitation of national statistical data. The project relies on a modern BI architecture based on Data Warehousing principles, ETL processes, OLAP cubes and interactive dashboards.

This platform is intended to support strategic decision-making for policymakers, facilitate monitoring of national development plans, ensure compliance with international reporting standards (including SDGs), and improve public access to official statistics.

Within this framework, the overall system is structured into thematic BI modules, each corresponding to a major statistical domain. Our group is responsible for the **Industry & Business module**, which plays a critical role in measuring economic performance, industrial productivity, internal market dynamics and external trade flows.

2 Project Objectives

The Industry & Business BI module must comply with the following functional and technical requirements :

2.1 Functional Requirements

— Integrate data from multiple heterogeneous sources related to industry, internal trade and external trade.
— Harmonize statistical definitions, nomenclatures and classifications (ISIC, HS codes, geographic codes, time granularity).
— Provide a multidimensional analysis framework enabling slicing, dicing, drill-down and roll-up operations.
— Deliver reliable and validated indicators for national monitoring and reporting.
— Support historical analysis and trend monitoring.
— Enable automated generation of statistical reports and dashboards.

2.2 Technical Requirements

— Design a dedicated **Datamart** for the Industry & Business domain.
— Implement robust **ETL processes** ensuring data quality, consistency and traceability.
— Build **OLAP cubes** to support complex analytical queries.
— Develop interactive dashboards and reporting views using Microsoft BI tools.
— Ensure scalability to support future data sources and indicators.

3 Industry & Business Module Description

The **Industry & Business** module consolidates all industrial, trade and enterprise-related indicators needed for national monitoring. It integrates the following subdomains :

3.1 Industry Submodule

The Industry submodule focuses on measuring the structure, performance and economic contribution of industrial activities at national and regional levels. It provides key indicators required for monitoring productivity, employment, investment and value creation in the industrial sector.

Key Indicators / KPIs

- **Number of industrial establishments** : Measures the total number of active industrial units, providing insight into the size, density and structural evolution of the industrial sector.
- **Total employment** : Represents the total number of workers employed in industrial establishments, reflecting the sectors contribution to job creation.
- **Total wages and salaries** : Captures the total compensation paid to employees, allowing analysis of labor costs and income distribution within the industrial sector.
- **Industrial fixed assets value** : Measures the value of long-term tangible assets (machinery, buildings, equipment), indicating the level of industrial investment and production capacity.
- **Capital stock** : Represents the accumulated value of productive assets over time, used to assess industrial sustainability and long-term growth potential.
- **Raw material consumption** : Quantifies the volume or value of raw materials used in production, enabling analysis of production efficiency and input dependency.
- **Energy consumption** : Measures energy usage by industrial activities, supporting productivity analysis as well as environmental and energy-efficiency assessments.
- **Intermediate consumption** : Represents the value of goods and services consumed during the production process, excluding fixed assets, and is essential for value-added calculations.
- **Gross Output** : Measures the total value of goods produced by the industrial sector before deducting intermediate consumption.
- **Gross Value Added (GVA)** : Represents the net contribution of industry to the economy, calculated as Gross Output minus Intermediate Consumption.
- **Industrial Tax** : Measures taxes paid by industrial activities, providing insight into fiscal contribution and public revenue generated by the sector.

Analysis Axes

- **Time** : Enables temporal analysis of industrial performance across years, quarters or months to identify trends and cycles.
- **Industry classification (ISIC)** : Allows comparison and aggregation of indicators by standardized industrial activity categories.

— **Establishment size** : Segments industrial units by size (small, medium, large) to analyze structural differences and productivity levels.
— **Ownership type** : Distinguishes between public, private and foreign-owned establishments to assess ownership impact on performance and investment.
— **Geographic location** : Enables spatial analysis at division or district level to identify regional disparities and industrial concentration.

3.2 Internal Business Submodule

The Internal Business submodule analyzes domestic market dynamics, price behavior and commercial activity, supporting the monitoring of inflation, supply conditions and market performance.

Key Indicators / KPIs

— **Retail price index** : Measures changes in prices at the retail level, reflecting inflation trends affecting consumers.
— **Wholesale price index** : Tracks price variations at the wholesale level, providing early signals of inflationary pressures.
— **Price variation rate** : Measures the rate of change in prices over time, useful for short-term market monitoring.
— **Price volatility** : Captures the degree of price fluctuation, indicating market instability or supply-demand imbalances.
— **Volume of goods sold** : Represents the total quantity of goods sold, reflecting market demand and commercial activity.
— **Stock levels** : Measures available inventory, enabling analysis of supply adequacy and distribution efficiency.
— **Number of markets covered** : Indicates the scope and representativeness of price and market data collection.

Analysis Axes

— **Time** : Allows monitoring of price evolution and market dynamics over different periods.
— **Product category** : Enables analysis by type of goods to identify sector-specific price behavior.
— **Market type** : Distinguishes between retail and wholesale markets to analyze pricing structures.
— **Geographic location** : Supports regional price comparisons and detection of spatial disparities.
— **Market** : Allows detailed analysis at individual market level.

3.3 External Business Submodule

The External Business submodule focuses on international trade flows, external competitiveness and economic openness.

Key Indicators / KPIs

- **Total imports value (USD)** : Measures the total value of goods imported, reflecting dependency on foreign markets.
- **Total exports value (USD)** : Measures the total value of exported goods, indicating international market performance.
- **Import growth rate** : Captures the rate of change in imports over time, highlighting trade expansion or contraction.
- **Export growth rate** : Measures export performance dynamics and competitiveness.
- **Trade balance** : Represents the difference between exports and imports, indicating surplus or deficit.
- **Import share of GDP** : Measures the relative importance of imports in the national economy.
- **Export share of GDP** : Measures the contribution of exports to economic output.

Analysis Axes

- **Time** : Enables temporal analysis of trade trends and seasonality.
- **Product classification (HS code)** : Allows standardized analysis by product type in international trade.
- **Trade flow** : Distinguishes imports from exports for directional analysis.
- **Partner country** : Enables analysis of trade relationships and geographic diversification.
- **Product type** : Groups products into consumer goods, raw materials and capital goods.
- **Account type** : Differentiates trade by institutional sector (private, government, semi-government).
- **Transport mode** : Allows analysis of logistics patterns and transport infrastructure usage.

4 Multidimensional Matrix

		Time	Establishment	Employment	AssetType	Region	Market	Composition	Account	Routes
Industry	IndustrialCost	x	x							
	NonIndustrialCost	x	x							
	IntermediateConsumption	x	x							
	GrossOutput	x	x							
	IndustrialTax	x	x							
	RawMaterialCost	x	x							
	EnergyCost	x	x							
	TotalPersonEngaged	x	x	x						
	SalaryandWages	x	x	x						
	CashBenefits	x	x	x						
	NonCashBenefits	x	x	x						
	SocialSecurityCost	x	x	x						
	OpeningValue	x	x		x					
	Depreciation	x	x		x					
	CapitalExpenditure	x	x		x					
	NetFixedAssets	x	x		x					
Internal Business	MarketSales	x	x				x			
	Price	x	x				x			
External Business	Imports	x				x		x	x	x
	Exports	x				x		x	x	x

FIGURE 1 – MultiDimensional Matrix