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Use of ICT for statistical reporting in Viet Nam's Ministry of Agriculture and Rural Development

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Abstract

The statistical system for the Agriculture and Rural Development sector is a part of the Government statistical system, including almost Departments under the Ministry of Agriculture and Rural Development (MARD), provincial Departments of Agriculture and Rural Development, district agricultural-economics offices, and statistical staffs in communes across the country. In 2010, the Minister of Agriculture and Rural Development issued statistical indicators and two statistical reporting regimes: (i) one applied for the provincial Departments and (ii) other applied for units under the Ministry. In this system, the Centre for Informatics and Statistics (CIS) is the focal point to implement all statistical activities including online-report statistical software to improve the quality of monthly statistical reports. Since the early 2012, an average of 55 in the total of 63 provincial Departments have applied the online-report statistical software. Benefits of the application are to provide on-time data and accurate data and to save manpower. Users with their passwords can access the system easily anywhere in the world. In the near future, the software is intended to enlarge district-level and commune-level.

1. The Introduction of the Statistical system for the Agriculture and Rural Development
The statistical system for agricultural sector includes departments, centres under the Ministry of Agriculture and Rural Development (MARD), provincial Departments of Agriculture and Rural Development (DARD), district agricultural-economics offices, statistical staffs working for communes in the whole country (Figure 1).

1.1. Central level (MARD)
The Center for Informatics and Statistics (CIS) is the focal point to implement all statistics activities (collecting, analysing, reporting) in the agricultural sector (within MARD, under MARD, and local state agricultural authorities).

Statisticians of different Units of MARD have to report to CIS as directed by the report regime signed by the minister of MARD
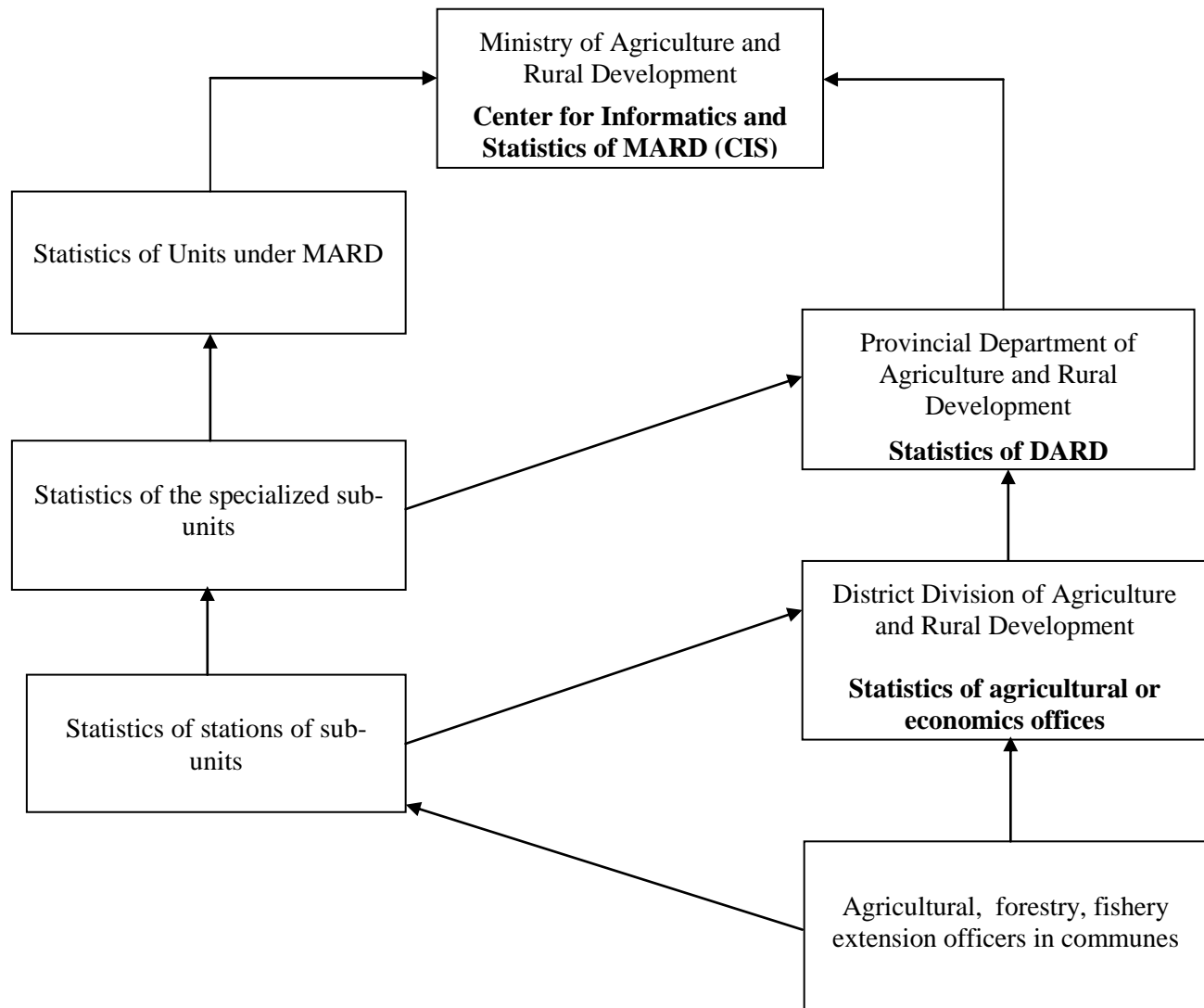
1.2 Local Level
At provincial level, all provincial Departments of Agriculture and Rural Development (DARD) have statisticians, some working for the Division of Plan and Finance (67%), Administrative Offices (20.6%), and other divisions including Crop Production and Policy. Some Departments, for instances in Vinh Long and Vinh Phuc provinces established the Information Center for Agricultural and Rural Development to implement their statistical activities. Statistics of DARD has to report to MARD (via CIS) and to the Provincial People Committee

At district level, the country has nearly 600 districts/towns having agricultural or economics offices. There are part-time statisticians working for these offices. They report to Provincial DARD and the Distict People Committee

At commune level, there is usually a part-time statistician who has responsibility to collect and compile statistical reports sent to commune and district leaders. These statisticians also work for surveys conducted by higher level authorities. Statisticians can be veterinarians, extension officers and fishery technicians.

At the village level, village leaders often take on the task of collecting statistical data as required by the communes in rural areas and to act as implementing censuses and statistical surveys concerning activities socio-economic areas.

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                    │ Ministry of Agriculture and │
                    │     Rural Development        │
                    │  Center for Informatics and  │
                    │   Statistics of MARD (CIS)   │
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Figure 1: Organisational Chat of the Statistical system for the Agriculture and Rural Development sector

2. Statistical indicators and reporting regime Agriculture and Rural Development

In 2010, shortly after the Prime Minister issued the National Statistical Indicator System, with the efforts of the Statistical system for the Agriculture and Rural Development, Minister. Ministry of Agriculture and Rural Development issued the same time the system of statistical indicators and 02 statistical reporting regimes: (i) statistical reporting regime applied to the provincial Departments of Agriculture and Rural Development and (ii) statistical reporting regime applied to units of the Ministry of the Decision No. 3201/QD-BNN-KH November 26, 2010.

2.1. Statistical Indicator System of the Ministry MARD

Statistical Indicator System Agriculture and Rural Development consists of 186 targets spread across 20 sectors, which is one of the ministries of the largest and most diverse compared with other ministries. At the time, frequency of collection on a monthly basis up to 33 indicators, each of collection on a yearly is up to 110 indicators and collection crop or 6 months consisting of 27 indicators ... It is simply that the frequency of collection, compilation and reporting is quite a lot and diverse, so this requires large resources to meet. This is a prerequisite to the application of information technology to improve efficiency and to overcome ss human resource constraints of the system.

2.2. Statistical reporting regime

Statistical reporting regime apply to Provincial DARD includes five reporting: (i) Monthly report on the progress of agriculture and forestry salt and fishing; (ii) Quarterly reports on the implementation of capital basic construction sector; (iii) report preliminary results of the first 6 months; (iv) The report estimated annual production results and (v) report preliminary results of annual production.

Statistical reporting regime applicable to the units under the Ministry include relatively a lot of input tables (Department of crop production: 5 tables; Department of Livestock: 10 tables; General Department of Forestry: 19 tables; General Department of Fisheries: 10 tables; Department of Plant Protection: 8 tables; Department of veterinary: 10 tables; General Department of Water Resources Management: 15 tables; Departments of the commercial processing of agricultural, forestry, fishery and salt: 17 tables; Department of quality management of agriculture, forestry and fisheries: 2 tables; Department of Economics Cooperation and Rural Development: 31 tables; Department of Construction work management: 1 table; Department of Planning: 4 tables; Department of Organization and Personnel 7 tables; Department of Finance 1 tables; Department: of Science, Technology and Environment: 8 tables; Department of International Cooperation: 3 tables; National Centre for Water Supply and Sanitation: 3 tables; Unit of innovation and business management: 12 tables; National Center of Agricultural Extension: 4 tables.

3. Introduce statistical reporting software agriculture and rural development sector

3.1. The needs to build statistical reporting software for agriculture and rural development sector

- Improving the quality and efficiency of collecting statistics:

    + The statistics from the provinces from 2011 and earlier are collected and sent to the Centre by mail, fax. Report form electronic files are different formats, professional staff at CIS take more time for the processing of data analysis. Therefore, the standardized form and method of update data required to build statistical reporting software system.

    + The statistics units of lower level have to send the report to different management agencies creating overlaps, gaps for all levels must be reported as the local unit. This also makes the complexity, sometimes delays and confusion in the process of statistical reports. It is also urgent to build online reporting software system by which the reporter must enter data in standard form then software analyse and integrate data according to the different needs of the users and based on a decentralized which can access directly into the system to receive reports as required.

- Improve the quality of statistical data storage: Prior to 2011. The database statistics is managed by various units such as the Center for Informatics and Statistics, the units under Ministry of Agriculture and Rural Development. In order to have good preservation of this data and to meet the requirements

of multiple information users, the need to integrate the creation of data warehouse which is stored centrally in the unit responsible for information technology. This will create the conditions to ensure the safety of information and facilitate the agencies and individual to synthesize analysis data as needed.

Thus, application of Information Technology to build an online-report statistical system is urgent requirement of the statistical system for the Agriculture and Rural Development sector, it overcomes the current limitations of the system and help to raise quality of statistical work at the same time contribute to improving the capacity and efficiency of human resources in the system.
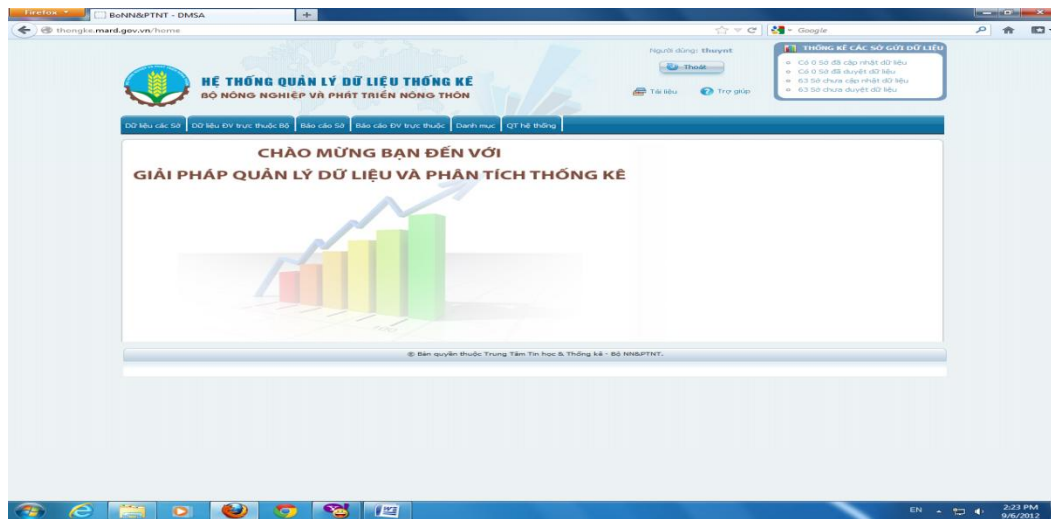
3.2. Technology application in statistical database of the Agriculture and Rural Development sector

The Statistical database of the Agriculture and Rural Development sector is built on Web-based environment. This is installed on the server located at the Center for Informatics and Statistics. To access the system, users through internet to connect to address *http://thongke.mard.gov.vn* or access the Portal of the Ministry of Agriculture and Rural Development at the addess: http://www.mard.gov.vn then click on the window titled statistical database software is placed on the portal home page (see Figure 2,3,4,5). Technological solutions are applied as follows:

- Database management system Microsoft SQL Server 2008

- Online reporting Building system reporting Service

- The operating system on Windows 2008 Advanced Server

- Middleware: IIS - Internet Information Server

- Program Tool Microsoft Visual Studio.Net

- Programming Languages: C #

- Integrate on the web portal based on Microsoft Office SharePoint Server 2007 that the Center for Informatics and Statistics has bought the copyright.

Figure 2: Layout of the web portal of the Ministry of Agriculture and Rural Development

Figure 3: Layout of the online statistical reporting system after logging on.

3.3. Main users of the MARD statisticsl database

- Leaders of the Ministry of Agriculture and Rural Development

- Leaders and experts from the Center for Informatics and Statistics

- Leadership and specialist units under the Ministry ofMARD and relevant

- Leaders and experts from the Department of Agriculture and Rural Development, Agriculture or Economic divisions in Districts, in the future users can develop to the commune level.
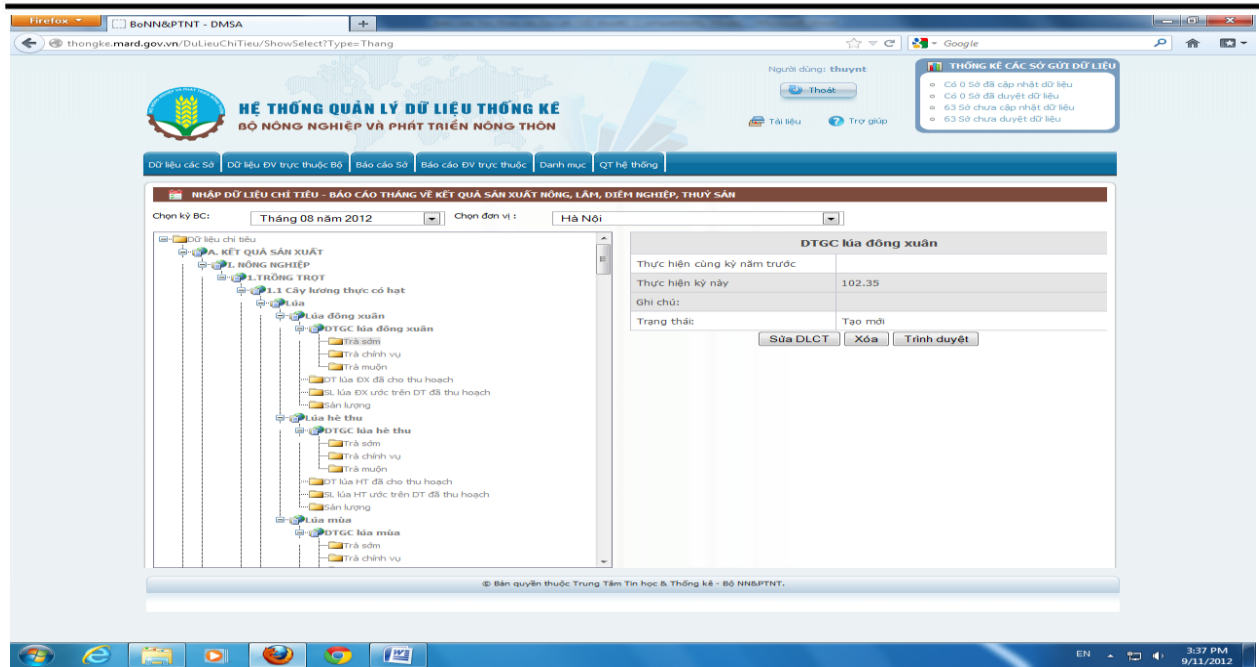
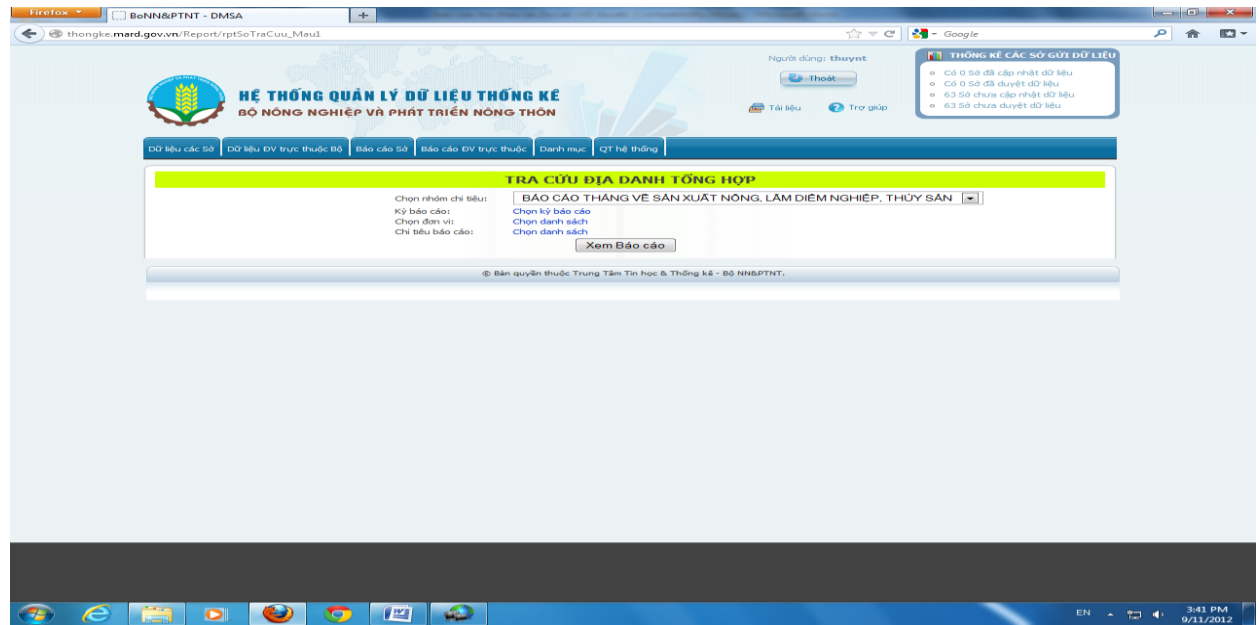**Figure 4: Interface Active monthly reporting indicators of the Departments of Agriculture and Rural Development**.

Figure 5: The lookup synthesized Interface according to the group information, the reporting period, place name reporting indicator

3.4. The main functions of the software

3.4.1. Data entry function

This is a function that the units assigned statistical report data entry as prescribed in 2 statistical reporting regime Agriculture and Rural Development introduced above. Users can choose 3 ways to enter data:

Enter each indicator;

Enter multiple indicators;

Import from Excel.

3.4.2. Information searching functions

Includes fixed form search, optional search, text search and statistical reporting units search:

- Fixed form search: By type of reporting period, there are separate tables in each reporting period that users can look for each of these reports;

- The optional search: Users can look for the optional reports by the reporting unit fields, the reporting period, the place-name (country, region, province, etc.); indicator ...

- Looking up units reporting: In order to check the updated report of the units.

3.4.3. Administrative function

Management function is divided into two parts system management and list management.

3.4.3.1. System Administration

System management is related issues such as password changes, user group management, user management, set indicator for the unit, varying reporting list management and document list management. Detailed functions are as follows:

- Change password: To apply to all users who use this function to change personal information such as name, change password, etc.;

- Manage user groups: The system administrator will use this function to create, edit, and delete user groups and decentralize to user groups including menu decentralization and reporting decentralization

User Management: The administrator can add, edit, delete, reset the password or search user account in user's units.

- Set indicators for the unit: The system administrator has the right to manage (add, edit, delete) all indicator groups, the statistical indicators based on the need of the sector; unit administrator have the right to assign indicators for the user's unit, based on the statistical needs of each field in the unit.

3.4.3.2 Management of the list

The function of this item includes a variety of categories for database management:

- A list of planned indicators: The administrator can add, edit, delete, select the corresponding planning indicator list to appear in the annual import plan.

- List of indicators report: The system administrators rely on this function to add or remove indicators required report by reporting unit, reporting time

- List of reporting period: From this function the administrator will add new, edit and delete a certain reporting period.
- A list of reporting units: Administrators rely on this function to add or remove reporting unit.
- Details general categories: Administrators can add, edit and delete a list of indicators to be detailed.

4. Current operation of the Software

4.1. Current application scale of software

Software is deployed to all 63 provinces in the country and 19 units of the Ministry. Currently the software has been developed to pilot the Agriculture and Rural Development (Economics) divisions belong to Vinh Phuc province.

4.2. Quantity and quality of online reports

To date, average 55/63 Department of Agriculture and Rural Development has reported by online software.

4.3. Results achieved when implementing the report via software

- Simplify the reporting procedures from the units to the Ministry of Agriculture and Rural Development: In the past, the Center for Informatics and Statistics collects statistical data with different formats from the local mainly via the official dispatch, fax, email and then staff at the Center for Statistical entered directly into the computer and processed by the simple office software. This is thanks to the online reporting system, reporting, data update from the unit to Center was simple, according to a form consistent with the standard data formats and transaction 100% paper sheets. Shortest transaction time.
- The processing, synthesizing statistical data was implement automation at the request of statistical staff, so that the processing time is shortened with high accuracy. - The storage of information is more safe and secure
- The search for, access and sharing of statistical information is done quickly and easily, especially it overcomes the state of a unit must report to different other units in the system.

5. Conclusions and recommendations

- Application online statistical reporting system is positive direction trailer which bring high effect to statistical work, it should be encouraged to implement
- In order to successfully deploy information technology applications in the statistical reports, standardizing the statistical information, uni-forming reporting form and reporting is the most important condition
- The online reporting system of the Ministry of Agriculture and Rural Development has been implemented in scale from the provincial level and above, so the reports from commune and district levels to the still done manually according to traditional methods. In the future, Centre for Informatics and Statistics will submit a plans to the Ministry of Agriculture and Rural Development continues to invest in expanding the system to the district level and develop the similar statistical reporting system to the manufacturing sector by the general Department, the Department...