

## Official Statistics and Modern Technologies Revolution (Palestinian Case)

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### Abstract

**Globalization** and **Modernization** those two magical words reshaped our lives in all aspects. Those two terms made our lives changed dramatically, where we start to hear new daily words that we didn't use to hear before such as: big data, metadata, spatial data, paradata, tweets and many others. The National Statistical Offices worldwide have to adapt themselves with such changes, which may oblige them to rethink and to develop their ways of works, their ways of thinking and their relations with users and stakeholders, taking into consideration that the National Statistical Offices are no longer the only players in the new world of data.

The paper will focus on the importance of applying the modern techniques in producing and disseminating official statistics which enhance data quality in different aspects (relevance, accuracy, timeliness...etc.). The paper will assess Palestinian experiences in terms of prospective and consequences, challenges and obstacles, recommendations and lessons learned from using modern techniques (such as: tablets, GIS, data visualization, web bases databases) in producing and disseminating the statistical findings derived from censuses and surveys within the context of the exceptional circumstances that have been faced by the State of Palestine.

The paper will also demonstrate a case from PCBS experience during the last decade in using data visualization and GIS technology and how PCBS managed to improve its system of dissemination since last census in 2007 in addition to its policy on keeping up with the latest technologies; especially, the extensive ongoing preparations for the third population, housing and establishment census 2017.

The results of this paper will aim to draw the attention of public sector in general and private sector in particular to the great importance of using those types of modern technologies and applications to facilitate the communications and to take benefit of such technologies to reduce the gap between those two sectors.

**Key words:** Geographical Information System (GIS), visualization, Dissemination, Quality.

## Introduction:

**Data visualization** is a general term that describes any effort to help people understand the significance of data by placing it in a visual context. Patterns, trends and correlations that might go undetected in text-based data can be exposed and recognized easier with data visualization software<sup>1</sup>.

**Globalization** is a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and human physical well-being in societies around the world<sup>2</sup>.

**Official Statistics:** are statistics published by government agencies or other public bodies such as international organizations as a public good. They provide quantitative or qualitative information on all major areas of citizens' lives, such as economic and social development, living conditions, health, education, and the environment<sup>3</sup>.

Official Statistics result from the collection and processing of data into statistical information by a government institution or international organization. They are then disseminated to help users develop their knowledge about a particular topic or geographical area, make comparisons between countries or understand changes over time. Official Statistics make information on economic and social development accessible to the public, allowing the impact of government policies to be assessed, thus improving accountability.

This paper will focus on the policy that Palestinian National Statistical System (NSS) adopted for dissemination taking into consideration the international developments in that regard and the user needs. Moreover, this paper will give an examples on the applied techniques from the different dissemination methods used. Along with conclusions and recommendations for future development in the NSS dissemination policy.

## National System Dissemination Policy:

Palestinian Central Bureau of Statistics since its establishment on 1993 worked on make the accurate and the updated statistical data and indicators available for all, via implementing of censuses and periodic and specific surveys to build a well established and comprehensive data bases to give a clear picture on the Palestinian people on several aspects politically, economically, socially and geographically.

PCBS continue to provide the interested users with the available statistics in several ways and tools; periodic, publications, workshops, conferences or by disseminating the statistical maps on the internet and many other ways to disseminate the data for a wide range of interesting users either institutions or individuals.

PCBS developed its dissemination polices since 2014, that aims to develop methods for dissemination of statistics in the Palestinian society and cope with the latest technologies and professional developments to

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<sup>1</sup> <http://searchbusinessanalytics.techtarget.com/definition/data-visualization>

<sup>2</sup> <http://www.globalization101.org/what-is-globalization/2016>. The Levin Institute- The State University of New York/ developed by Silicon Valley

<sup>3</sup> [https://en.wikipedia.org/wiki/Official\\_statistics](https://en.wikipedia.org/wiki/Official_statistics)

ensure that all beneficiaries have access to the Palestinian official statistics according to international recommendations and standards and in a manner that fulfills national needs <sup>4</sup>.

The main trends of the said policy are focused on accessibility where the statistical products respond to user's needs and maximize benefits to reach effective accessibility in terms of easy access, present in different forms via various media, user friendly, and provide additional information "metadata". In other hand, the dissemination policy take into consideration the partnership by involving all statistical system components like ministries and governmental institutions as well as the non governmental institutions and the privet sectors to harmonize the work of all components in the production and dissemination of official statistics.

The Palestinian official statistics dissemination policy applies traditional professional and technical principles, derived from the policy pillars that identify the relationship with the beneficiaries. It also identifies the role of official statistics producers, and the principles are; (Relevance, Quality, Coordination, Independence, Egalitarian in dissemination, Impartiality, Free of charge and Confidentiality of personal data).

PCBS tried to minimize the reliance on the traditional printed copies and CD's and focus more on online dissemination. The main dissemination channels that adopted for the NSS are as follows:

#### **PCBS' Portal and Statistical Calendar:**

PCBS Web Portal was developed as a window to disseminate the official statistics, and published the data bases in different subjects. A statistical calendar was uploaded in the web portal which shows the statistical outputs in all over the year in date and time of publishing.

#### **Customers' Services Section and Reception Section at PCBS:**

The customers' services section is the official institution's body responsible for reception of and responding to statistical requests. A highly qualified employees of customers' services section that possess the statistical experiences to quickly and transparently provide the requested information immediately or direct users to particular statistical departments.

#### **Special Traditional Newsletters:**

The statistical system provides monthly newsletters to the interested beneficiaries, in both paper and electronically with the most updated statistical activities and outputs.

#### **Library:**

PCBS library include many statistical sciences that cover the needs of statisticians and researchers for PCBS employees and from outside the statistical offices. It includes many books and documents in Arabic and in English in addition to periodicals published annually. It is also includes audiovisual and electronics material, classified according to Diwi's decimal system of classification.

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<sup>4</sup> Palestinian Central Bureau of Statistics. Dissemination Policy 2014. Ramallah- Palestine.

### **Scientific Research Center:**

To enhance the statistical data usage in researches and enable researchers access various information in accordance to the standards that protect the confidentiality of individual data, as per the statistical law for the year 2000. Many institutions and agencies benefit from such data, which enable them devise policies and decisions on scientific and informed basis.

### **Public Use Data File (PUF):**

PCBS provides raw data packages for public use after treatment and rehabilitation to ensure confidentiality of personal data individuals and institutions as per statistical laws.

### **Social Media:**

Social media help communicate with a large number of users and locate new customers and users in addition to preserving current users. Social media enable users have quick access to information that goes beyond the traditional search of information. Use of social media also helps in improving the reputation of statistics and increasing people and users' confidence in statistical figures. PCBS created its Facebook, Twitter, Instagram, LinkedIn sites, in addition to YouTube account that specialized in display of visual presentations of the statistical system including TV interviews, films, and statistical presentations.

### **Interactive Maps and Atlases:**

The use of Maps in general and the statistical maps in particular are an important way of data dissemination, where it considered an easy and clear method of presenting of the information to the users. PCBS take into consideration this issue and developed this part of data dissemination by provide the needed computer PC's, software's and training courses, where an interactive mapping atlas were developed as result of the important developments on Geographical Information System (GIS) electronic software were improved which give the opportunities to do the studies and analyzes the data by link it with the geographical sites and disseminate it electronically. The main objectives of using the GIS using the internet are; giving a geographical and statistical information in a clear and a comprehensive way where the users can make the comparison between the current situation and the past and draw the future, and this method reduce the needed time and efforts for the researchers and users either institutions or individuals and assist them to understand the problem and try to link it geographically and analyze it.

### **Atlas of Palestine:**

Atlas of Palestine is an electronic website designed and publish by PCBS in 2006 to disseminate statistical data on the Internet through the maps.

Statistical data of many indicators are collected and published through the Atlas. These indicators include statistics in many subjects such as education, health, labor force, gender, housing, population, etc.

Maps on this atlas has a time series and including massive data on all subjects and also updates annually by PCBS.

ESRI ArcGIS Software are used in preparing and publish those statistical maps such as ArcGIS ArcMap, ArcGIS ArcIMS and ArcGIS Server.

### **Geo-database Dissemination Web Application:**

PCBS developed an interactive Web application to publish Population, housing and establishments Census 2007 data. New technology is used in preparing and developing this application more than the Atlas. Microsoft Silverlight APIs and ESRI ArcGIS Server software were used.

More than 150 Census indicators on many geographical levels are included and published in this system.

The objectives and goals of adopting GIS Web based dissemination system in the Statistical work are:

- dissemination of surveys and censuses statistical data in an electronic way.
- Keep pace with the technological development in the process of dissemination of statistics, through the adoption of the latest methods used in the dissemination of data.
- Publication of statistics in an attractive way makes it easier for users to understand the statistical information in a clear and easy way
- Linking statistics with geographical location through the use of GIS software in the production of geographical dissemination system.
- Provide the possibility for users of the system to obtain statistical information in the easiest ways by providing dynamic tools on the electronic system to filter the information and get them on maps easily readable.
- Use several means to represent statistical data on the dissemination system through representation at various geographic levels using different scientific methods (graduated colors, groups, charts, tables, etc.).

### **Data Visualization Techniques:**

PCBS developed an interactive visual techniques that do not require previous knowledge in statistics or in reading of statistical figures. Such techniques enable PCBS to reach different users, mainly the general public and students with an appropriate and interesting methods. Below are some examples of data visualization that developed by PCBS and its partners:

- Two Films were produced: (Karmel's visit to Palestinian Central Bureau of Statistics, <https://youtu.be/fxoDXHfEXd4>), MICS Film: (<https://youtu.be/3kzf2hBh5m4>)

- Seven TV Short Flashes where produced and presented on Palestine TV.:  
Economics: (<https://www.youtube.com/watch?v=uAjog4v0IHQ&feature=youtu.be>)

Un employment: (<https://www.youtube.com/watch?v=BE5JbP48EmQ&feature=youtu.be>)

Education: ([https://www.youtube.com/watch?v=6O\\_EiNH4ySA&feature=youtu.be](https://www.youtube.com/watch?v=6O_EiNH4ySA&feature=youtu.be))

Youth: (<https://www.youtube.com/watch?v=ZtwbtbCYx6E&feature=youtu.be>)

Energy: (<https://www.youtube.com/watch?v=MyWIPtgz-Dk&feature=youtu.be>)

Poverty:

(<https://www.youtube.com/watch?v=5zDbWXFpsRQ&feature=youtu.be#<https://www.youtube.com/watch?v=5zDbWXFpsRQ&feature=youtu.be>>)

Population: (<https://www.youtube.com/watch?v=dLCCAgIOKSk&feature=youtu.be>)

- Interactive web portal for students in the schools was developed.
- Design a cartons characters especially adopted for PCBS.
- Produced an interactive game for students and it uploaded in the students web portal.

<http://www.pcbs.gov.ps/students/index.php>

- Several info-graphics were produced in different subjects and 5 of them were printed and disseminated on PCBS facebook page.

- Animation films on population and olive presses were produced and uploaded in the students web portal.
- A special program on the education statistics were produced and presented on Palestine TV channel.

### Conclusions:

- The demand on the statistical data is increasing worldwide. The NSS has to provide data in all aspects of life.
- The NSS has to cope with the needs of users and reach a wide range of statistics.
- The NSS has to cope with the dissemination developmental techniques.
- Data visualization is very important to present and publish data in user friendly manners.
- PCBS develop several channels for statistical dissemination including Web portal and statistical calendars, social media, maps and atlases, PUF, library, data visualization, research centers.
- PCBS will continue its efforts to develop its dissemination policy to cope with the future developments
- PCBS is looking forward to continue in adoption of the recent evolution in GIS Web based dissemination system to enrich it's experience in this field.
- PCBS is looking forward to publish the next population, housing and establishments Census, 2017 though out an interactive GIS Web based dissemination system.
- More development of the system, e.g adding more tools to the system such as data visualization tools.
- Unify the dissemination systems for each purpose.
- Improve the Infrastructure Architecture.
- Improve the data visualization use in many places.
- More use of story -telling in dissemination of official statistics.

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Palestinian Central Bureau of Statistics (2014). Dissemination Policy. Ramallah- Palestine.

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