International Journal of Business and General Management (IJBGM)
ISSN(P): 2319-2267; ISSN(E): 2319-2275
Vol. 5, Issue 5, Aug – Sep 2016; 59-64

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

BIG DATA ANALYTICS: IMPLICATIONS ON ECONOMIC PLANNING AND IMPLEMENTATION

UDAYAKUMARI VIDHYASAGARA MENON & MUHAMMED REFEQUE

Faculty, Middle East College, Oman

ABSTRACT

Over the years, there has been a growing significance for big data analytics. With the advancements in communication systems, storage and real time computing, many consider that "big data" have the capacity to change many crucial dimensions of the economy. The study focuses on how big data can influence economic planning and implementation with special reference to Oman. It discusses how public and private data sets can improve the way the government quantifies, tracks, and influences economic activities in a country. It also discusses how the time lags in combining, analyzing and utilizing the collected data can be reduced for improving better economic planning. The study has important implications for government officials, researchers and policy makers for providing real-time awareness and feedback for the economy and for developing required early warning systems.

KEYWORDS: Bid Data, Machine Learning, Economic Planning

INTRODUCTION

World undoubtedly is heading towards an era where data sources are becoming larger and richer. Experts consider that mining those largely available datasets and using it efficiently for decision making can be a source of achieving competitive advantage for private individuals, firms, institutions and even government agencies [1]. Accurate and timely availability of the most required data helps them to gain deep insights for future decisions. Given the growing significance of big data analytics, experts foresee the big data market to grow to $32.1 billion by 2015 and to $53.4 billion by 2017[1].

Application of big data analytics has been found in diverse areas from consumer behavior analysis in marketing, Probability of default (PD) in investment decisions, health care or even Terror Management (TM). Higher levels of computerization have made rich data sets of purchases, sales, hiring practices, and shipments of goods in private sector compiled and made available. Large sets of data available also include those of tax filings, social insurance programs, crime, government expenditures, and regulatory activities in the public sector. Further, the data is growing at a very fast rate thereby making it suitable for big data analytics and predictive modeling.

The paper explores potentials of big data analytics in economic planning and implementation. Since economic planning is a task involving huge analysis of micro and macro-

Economic data, a study on the implications of big data analytics on it receives interests of the researchers. In the same line study tries to analyze how with the usage of big data analytics and usage of technology to its advantage can improve the quality and effectiveness of economic planning. Government of Oman's e-Oman concept can use this study for their reference. In other words we try to understand the value of handling large administrative data sets, the ability to capture and process data in real time which could lead to improvement in both the efficiency of government operations and

lead to well informed economic policy making. The efficiency of economic planning will lead to achieving the long term goals of the country. The remainder of the paper is organized as follows: Section II provides overview of economic planning in Oman; Section III presents the need for big data analytics; and Section IV covers the discussion, conclusions of the study

OVERVIEW OF ECONOMIC PLANNING IN OMAN

The economy of Oman formally initiated its first Five-year Plan from 1976 to1980. The process of structural transformation can be broadly divided into two distinct phases. Phase I from 1970 till 1995 and Phase II covering the next 25 years spanning from 1996-2020. The second phase popularly known as "Vision 2020" was set out at the end of the first phase of the country's development outlining the country's economic and social goals over the 25 years.

Vision 2020, developed and initiated in June 1995, considered diversification as the key theme for the nation's balanced growth and development. Main objectives of the plan were to improve economic and financial stability, to broaden private sector participation, globalization, skill development of the Omani workforce etc.

Further, various priority themes including the development of the manufacturing sector, tourism, infrastructure, services sector etc. were also identified [2]. Vision 2020 aimed at major change in Oman and forecasted a net increase in non-oil GDP from 62.4% from 1991-1995 to 81% in 2020. It also aimed at raising the contribution of industry 16.7% in 2010 to 29 per cent in 2020; where major contribution was expected from manufacturing, construction, mining and quarrying, electricity and water industries [2]. These objectives intend to build the right environment for economic diversification, ensure optimal exploitation of both available natural resources, raise living standards and guarantee that all citizens benefit from the progress of Oman [2].

The economic planning and implementation of various social developmental initiatives have contributed to a set of heterogeneous results in Oman. Their positive aspects include significant rise in the foreign investment due to low tax regime in the economy. Development of Small and Medium Enterprises (SMEs) have been one of the major mile stones for achieving self-reliance and transformation of the economy. The problem areas include the economy's skewed exports structure; where there was little change occurred since the promulgation of the vision 2020. Further experts also believe that a major flow of 'Vision 2020' is the lack of an effective strategy for economic diversification not translated into an action plan. They were lacking an effective action plan with proper indicators for monitoring and evaluating the system. The 'Vision 2010' had also failed to indicate the required measures to keep the conditions ready for realizing the objectives, clearly [2].

Possibilities of direct online democracy, active citizen engagement and utilization of big data based governance results in better competitive advantages also at governmental level. The e-government concept developed at Oman shares its great scope of achievement in the near future. This paper submits an effort in narrating the data could be useful for better economic planning at governmental level.

NEED FOR BIG DATA ANALYTICS

As discussed above, Oman is currently undergoing its Eighth Five Year Plan which began in 2011 and the government had setup targets to be achieved from the plans, for which a specific course of action was developed. For achieving these plans, the planning agency has to collect and maintain indicators of national progress so that it becomes

easier to measure and monitor the outcomes at any stage.

In addition, the government has its commitment to international organizations like World Bank, OECD, UN etc. with the aim of promoting prosperity and raising equity in the country. The commitment for Millennium Development Goals (MDGs) which were initiated in the year 2000 stands as an example.

Such initiatives require collection of numerous statistics at regular intervals like GDP, Inflation, Employment Statistics, F.D.I, Export, Import, Education etc. At a first glance at official website of National Center for Statistics and Information (NCSI), Oman 1 more than 1000 variables including various development indicators, economic indicators, International Rankings, comprehensive household surveys were reported in public domain.

Other important variables like population, National accounts, housing starts, security indicators etc. are also available and are updated regularly. Thus with the growth in number of variables and the dynamic economic environment, it becomes imperative to use big data analytics and power of smart technologies to process large economic data in economic planning, monitoring and implementation. The complexity, volume, variety, variability and velocity of the data produced by state governments would serve as a strong data base for its various decision making

The current section sheds more light on the same and discusses some of the important factors which portray the need for big data analytics in economic planning a necessity rather than choice.

Availability of Large Data Sets

As discussed above the available depth and variety of data is increasing very rapidly. As data sources are becoming larger and richer there lies enormous potential to revisit old issues with new and better data and to answer new questions raised directly by these new contexts.

The fact that multiple data sources are getting updated every second, widespread availability of the internet coverage with enhanced download speeds, coupled with falling storage costs make the use of big data in Economic Planning an important and necessary tool. The goal is to produce improvised quality of planning, implementing and monitoring economic planning. The paper narrates how big data analytics can be applied for higher growth and development potentials for the governments and act as a guide for Oman.

Combining Private and Public Data

Along with the large datasets available in the public domain, huge private sector data like details of expenditure by consumers through electronic mediums, television rating points of TV shows, messages on social networks etc. can be linked together to improve the quality of decision making. Integration of private and public information might be used to better track and forecast economic activity and using it for taking better policy decisions. Specific algorithms can be created which can merge private and publicly available information and process it in real time to arrive at solutions which could aid in achieving various short and long term goals of the policy makers.

Time Consumed in Collection/Analysis of Data

Another advantage of using big data analytics is their ability to collect data in real time. Major limitation with traditional approaches of collecting data is the long time lag between its various stages of processing output. In some of the

1 https://www.ncsi.gov.om/Pages/GlossaryOfStatistics.aspx http://www.data.gov.om/

rare cases, it is observed that till the data is completely collected to solve a problem, new problems could emerge thus causing the collected data going obsolete. Whereas, in case of big data analytics new data can be captured and processed in real time thereby increasing the chances to take effective decision making. For eg; the statistics collected manually by the surveyors have to be aggregated to different indices like inflation, house property prices etc.

However alternate approaches to collecting large scale and even real time data on prices, employment and spending are rapidly becoming available. For instance, the Billion Prices Project (BPP), developed by Alberto Cavallo, provides an alternative measure of retail price inflation. It relies on data from hundreds of online retail websites in more than fifty countries. The data are used to construct price indices that can be updated in real time. In countries such as the United States, the BPP index seems to track the CPI relatively closely [3]

Timely Reporting/Building Early Warning Systems

Other than instant collection and analysis of available data, big data algorithms can be programmed to give early warnings for various indicators so that timely decisions can be undertaken. The early warning systems if designed effectively can minimize substantial losses posed by natural and artificial calamities. For example early warning systems have become popular for studying weather maps or detecting terrorist threats and have proved extremely helpful in hedging different categories of unforeseen risk.

Real Time Updating

Another powerful feature of available data is that it is frequently updating. The analysis may change with updating of new piece of information to the existing dataset. Big data provides a solution to the continuous evolving datasets. The streams of new data can be added to the existing information on real time basis automatically, thereby giving great scope for the policy makers to feel the real economic environment.

Policy Decisions

Big data analytics have the inherent capacity to reduce the cycle time of collecting, organizing, analyzing and implementing the policy decisions. They not only possess the capacity to handle large and complicated datasets but also helps to comprehend loads of information in a fraction of second. All these characteristics can help policy makers to take timely decisions.

Understanding the Response of Policy Decisions

Another merit of big data analytics is that, once the policy decisions are implemented, it enjoys a greater role in developing a control mechanism and in understanding the dynamics of market response. Once a policy decision is taken, a close monitoring of its implementation and growth stages are required.

In case of any flaw identified in the plan, corrective measures can be taken with an immediate effect. In case of traditional methods, such mechanism may take longer period of time. However with alternate methods of measuring policy effectiveness, such response could be collected and scrutinized timely and easily to improve the possibility of a successful planning.

H. Optimum Utilization of Available Data

It has been observed by researchers that government data are generally underutilized, both by government and

private agencies. Limited and restricted access keeps the researchers and private data vendors away from its utilization. In case the policy makers allow access to administrative data sets, there could be a significant impact on the economic policy discussions. Thus with big data analytics, the sharing and collaboration of data also becomes easier opening vistas for indepth research leading to better outcomes.

CONCLUSION

Economic planning is the most crucial as well as primary task of any government. For making short term and long term plans the government collects and maintains data of various macro and micro economic variables like inflation, GDP, imports, exports etc. The data is collected through primary household surveys or from the variables from secondary data which can act as a major input for policy makers in planning, controlling of the governmental decisions and contribute to most effective regulations.

Thus with the growth in number of variables and the dynamic economic environment, it becomes imperative to use big data analytics and power of smart technologies to process large economic data in economic planning, monitoring and implementation.

Big Data in economic planning can be used to transform imperfect, complicated, often unstructured data into actionable information [4]. This involves modern computational tools (such as machine learning), developed in other fields, to reveal trends and correlations within and across large data sets that would otherwise remain undiscovered.

In line with the development of big data analytics and their applicability in public policy, there usage becomes important in case of implementation of various social development initiatives in Oman especially when the traditional approaches in the past have contributed to mixed results for Oman. Economy of Oman still faces various challenges like the skewed exports structure, lack of specific strategy for economic diversification, proper action plan, inadequate control indicators and a robust monitoring and evaluation system [5].

Thus big data analytics have enormous potential to provide solution to the above mentioned problems. The value of nature, richness of the information that new and alternate data streams contain along with the inherent advantage of size and speed can complement the traditional methods. Further, drawing inputs from qualitative social media information may help the policy makers to paint a picture that quickly reacts to changing conditions.

Thus all these developments can assist in effectively regulating the government policies, tax systems, social programs, and thereby to maximize the operations and service efficiency. Such initiatives portray the well-being of the population at a higher frequency, high degree of transparency and accuracy from all the angles, narrowing the time gap, down. These would finally result in a greater resilience and creative outcomes in economic policy making [6]

REFERENCES

1. Sharpley, Richard. "The challenges of economic diversification through tourism: the case of Abu Dhabi." International Journal of Tourism Research4.3 (2002): 221-235.
2. Mansour, Antoine. "Planning For Economic Diversification In Oman." (n.d.): n. pag. Web. 7 Jan. 2016. http://www.oea-oman.org/03-Mansouier.pdf
3. Cavallo, Alberto. "Online and official price indexes: measuring Argentina's inflation." Journal of Monetary

Economics 60.2 (2013): 152-165

4. Einav, Liran, and Jonathan D. Levin. The data revolution and economic analysis. No. w19035. National Bureau of Economic Research, 2013.
5. Pulse, UN Global. "Big data for development: Challenges & opportunities." Naciones Unidas, Nueva York, mayo (2012).
6. Taylor, Linnet, Ralph Schroeder, and Eric Meyer. "Emerging practices and perspectives on Big Data analysis in economics: Bigger and better or more of the same?." Big Data & Society 1.2 (2014): 2053951714536877.

APPENDICES