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The e-governance approach to register-based census, based on the case of the GCC countries: A research note

Sulaiman Bah[1]
Jaffar Mansour

Abstract

This paper discusses the experience of the Scandinavian countries with respect to register-based census (RBC), outlining important enabling features that facilitated this type of accounting system in Scandinavia. The central question examined is whether RBC is possible in the Gulf Cooperation Countries (GCC) as they proceed toward the 2020 round of census. The secondary question is whether, for the GCC countries, the e-governance approach offers a viable alternative to the classical Scandinavian approach to RBC.

Keywords: register-based census; National Statistics Office; Scandinavia; Gulf Cooperation Countries; census.

Résumé

L'article traite de l'expérience de pays scandinaves en matière de recensement à registre (RR); il donne les importantes caractéristiques qui permettent de faciliter ce genre de système de comptabilité en Scandinavie. La question centrale qui y est examinée consiste à déterminer si le RR est possible dans les pays du Conseil de coopération du Golfe (CCG) en vue du prochain recensement de 2020. L'autre question consiste notamment à savoir si, pour les pays du CCG, l'approche d'une gouvernance électronique fournit une solution de rechange viable à l'approche scandinave classique au RR.

Mots-clés : recensement à registre, Bureau national de statistique, Scandinavie, Conseil de coopération du Golfe, recensement.

Introduction

Register-based census emerged naturally in the Scandinavian countries where there is a long history of keeping registers of different types. Typically, they would start with the population register, and would then initiate one register at a time until all the registers required for conducting a register-based census were put in place. When that stage was reached, the register-based census (RBC) would then be conducted, given that the other necessary conditions were in place. For example, over a period of 11 years, from 1968 to 1979, Denmark initiated nine registers. The first three of these were the population register, family register, and household register. They were initiated in 1968, followed by the income register in 1970, the education register in 1971, the business register in 1975, the register of dwellings in 1997, and the register of housing conditions in 1997,

1. Sulaiman Bah, College of Public Health, Imam Abdulrahman Bin Faisal University, P.O. Box 2435, Dammam 31441, Saudi Arabia, email: sbah@iau.edu.sa; and Jaffar Mansour, Realsoft, Amman, Jordan.

and lastly by the employment register in 1979. With these registers in place, Denmark succeeded in conducting a register-based census in 1981 (UNECE 2007). Similarly, Finland established its central population register and income register in 1969, followed by the household register and the education register in 1970. Then, over the period from 1970 to 1987 seven other registers were established, and a register-based census was conducted in 1990 (UNECE 2007).

The development of an RBC requires some enabling factors. Some of these enabling factors, as found in the Scandinavian countries, are as follows:

1. A culture of establishing the population register and, subsequently, other registers in a gradual manner
2. Complete Civil Registration/Vital Statistics (CR/VS) systems, which, by implication, contribute to the completeness of population registers
3. Universal acceptance of personal identification numbers (PIN) for administrative and statistical uses
4. The established practice of publishing statistics from the registers
5. The pre-eminent position of the national statistics office
6. Collaboration between the national statistics office and the owners of the data
7. Enactment of an empowering Statistics Act and/or Register-Based Census Act
8. A mandate (pressure) from the top to reduce census costs and move on to RBC

These enabling factors cannot be taken for granted, as they cannot be easily found in other developed countries. Of these factors, the most important one is the population register and its related sub-factors (for example, relevant supporting legislation and inclusion in it of the personal identification number). In Austria, for example, the legislation does not allow the national statistics office to use the personal identity number to link registers; this can only be done via another number called the "branch-specific personal identification number for official statistics" (bPIN OS; Lenk 2008). As population registers are absent in anglophone countries, such countries are far behind in terms of moving over to RBC. For example, in the UK they will only be able to consider moving to RBC after 2021 (Office of National Statistics 2017). In the case of New Zealand, Statistics New Zealand (SNZ) started working on a census transformation strategy in 2012. As part of the strategy, SNZ investigated the possibility of moving in the direction of RBC, noting the following in this regard:

> However, New Zealand does not currently have a population register, and privacy, legal, and cost concerns mean that the creation of a register in the near future is unlikely. Therefore we assume there will be no New Zealand national population register in the next 10 to 20 years (Savage and Bycroft 2014).

In summary, the unique enabling factors found in the Scandinavian countries cannot be easily found elsewhere, even in some developed countries. The question is whether all these enabling factors have to be present before a RBC can be carried out. In other words, can other countries arrive at RBC by working on only some, but not all, of these enabling factors? This is the subject of this paper, which discusses this issue in light of the ongoing efforts of the Gulf Cooperation Council (GCC) countries to use RBC in the 2020 round of census.

E-governance and RBC

The term *e-governance* (electronic governance) has many definitions. The core purpose of e-governance has been described as follows:

> Electronic Governance is the application of Information and Communication Technologies (ICTs) for delivering government services through integration of various stand-alone systems between Government-to-Citizens (G2C), Government-to-Business (G2B), and Government-to-Government (G2G) services. It is often linked with back office processes and interactions within the entire government framework. Through e-governance, the government services are made available to the citizens in a convenient, efficient, and transparent manner (IGI Global n.d.).

In the e-governance approach, the government's primary aim is to harness ICT for simplifying the provision of government-related services to citizens, residents, and businesses and for security. For this to happen, the personal identity number is mandatory, as it forms the primary search field for the *population identity number database*. This database would then be accessed by different government departments (e.g., vehicle registration, traffic, and utilities as G2G) and private businesses (e.g., banks as G2B) when they need to. Since the different departments collect additional information on their clients in their databases, in total these databases contain large amounts of information on individuals. With data linkage and a logical strategy, it is possible to harness this information to conduct RBC.

Unlike the Nordic approach to RBC, the e-governance approach does not follow the route of developing one register after another. It starts off with the population identity number database and links it with the different governmental departments and non-governmental entities in furtherance of its e-governance strategy. It then harnesses this to conduct an RBC. One problem with this approach is that, with a few exceptions, the statistical agency may not be the driver of the e-governance strategy, and in some cases could even be marginalized in the process of the evolution of e-governance.

RBC enabling and disenabling factors in the GCC countries

The Gulf Cooperation Council (GCC) was set up in 1981 and comprises the six Arabian Gulf countries of Saudi Arabia, Kuwait, Bahrain, Oman, Qatar, and the United Arab Emirates (UAE). It was set up to achieve institutional coordination in the production of oil and energy, as well as other fields related to socio-economic development, security, and political stability. In furtherance of its mandate, the GCC established the Statistical Centre for the GCC (GCC-Stat) in June 2011. The GCC countries are well known for their high level of income, rapid rate of development, high levels of migrant labour, and diverse international work force.

In the GCC there are several RBC disenabling factors in place, and they are related to each other. In the Scandinavian countries, the CR/VS system feeds directly into the population registers, to which the national statistics offices have direct access. In the GCC countries, on the other hand, the CR/VS system is structured differently. For the majority—Bahrain, Qatar, Kuwait, and the UAE—the Ministry of Health is responsible for the registration of births and deaths. In those countries, the ministry forwards their information to the national statistics office for publication of vital statistics. In Oman, the Ministry of Justice is responsible for registering vital events, while in Saudi Arabia it is the Ministry of Interior. For both Oman and Saudi Arabia, the flow of data to the national statistics office is not direct (UNSD 2009). For Kuwait, the registered vital events

are used to update the population register, maintained by the PACI (Public Authority for Civil Registration), which publishes reports on vital statistics.

Table 1 shows that of all the GCC countries, civil registration is considered complete for Bahrain, Kuwait, and Qatar; it is incomplete in Oman, and for Saudi Arabia and UAE, the estimate of completeness of registration is unknown. The country with the most up-to-date demographic statistics and the one with most complete civil registration is Bahrain, followed by Kuwait. It is therefore not surprising that Bahrain was the first Arabian Gulf country to conduct RBC, and that Kuwait conducted a pilot RBC.

Table 1. Demographic statistics in the Arabian Gulf countries.

	Live births		Live births by mother's age		Deaths		Deaths by age		Infant deaths	
Country	Latest year	Source	Latest year	Source	Latest year	Source	Latest year	Source	Latest year	Source
Bahrain	2014	C	2014	C	2014	C	2014	C	2014	C
Kuwait	2014	C	…	…	2014	C	2014	C	2014	C
Oman	2014	U	2014	U	2014	U	2014	U	2014	U
Qatar	2014	C	2010	C	2014	C	2013	C	2013	C
Saudi Arabia	2013	…	2013	…	2013	…	…	…	2013	…
United Arab Emirates	2012	…	2012	…	2012	…	…	…	2012	…

Source: Extracted from United Nations (2016).
Note: C = civil registration, estimated over 90% complete;
U = civil registration, estimated less than 90% complete;
… = information not available.

In several of these GCC countries, the national statistics offices are in direct competition with other governmental agencies whose mandates overlap with theirs. This sometimes puts national statistics offices in a weaker position. In Kuwait for example, the PACI operates in parallel to the national statistics office. Thus, the PACI is effectively the keeper of registers (the population register, the housing register, the employment register, etc.) and a key driver of country's e-governance strategy. In one study in Kuwait, it was found that there was discrepancy between the census figures and those of the PACI. In this regard, the author made the following comments: "The collection and production of data by two different departments on essentially the same pieces of information comprises a massive duplication of effort and resources"; and further, "The lack of institutional coherence between the two main bodies responsible for collecting population information results in a defensive rather than collaborative posture of the two institutions" (Shah 2014). As the PACI also has its own legislation and is performing well, it is difficult to foresee that it would give up its registers to the national statistics office. If there is any plan for carrying out RBC in Kuwait, this could only be feasible as a joint program of both the PACI and the national statistics office.

In summary, for most of the GCC countries, the national statistics offices are not in a pre-eminent position, nor are they supported by strong empowering Acts. Another point is that, apart from Kuwait, there is no established practice of publishing statistics from the registers.

The two strong RBC-enabling factors in the GCC countries are universal acceptance of the personal ID number and the high level of e-governance. The United Nations routinely conducts e-government surveys among its member states to assess their progress in e-governance. From Table 2 it can be seen that the indices are all higher than the world average. The table shows that Bahrain leads in terms of the E-Government Development Index (EGDI) and the E-Participa-

tion Development Index (EPDI), followed by the UAE. Kuwait comes third in the EGDI, while Oman comes last.

Table 2. Indices of e-government in Arab countries and their ranking among countries in 2016.

GCC rank	GCC country	E-Government Development Index		E-Participation Development Index	
		Index	Rank	Index	Rank
1	Bahrain	0.7734	24	0.7458	32
2	Kuwait	0.7080	40	0.6441	55
3	Oman	0.5962	66	0.5593	76
4	Qatar	0.6699	48	0.6441	55
5	Saudi Arabia	0.6822	44	0.7119	39
6	United Arab Emirates	0.7515	29	0.7458	32
	World average	0.4922	—	0.4625	—

Source: United Nations (2016).

The e-governance approach to RBC in the GCC countries

The GCC countries are planning to carry out RBC in the 2020 round of censuses, with GCC-Stat spearheading this drive. In this regard, GCC-Stat is partnering with national statistical organizations to organize workshops aimed at improving understanding and acceptance of RBC. Such workshops usually include presentations given by RBC experts from Nordic countries. One such workshop was held in Muscat (Oman) in May 2015 (GCC-Stat 2015). A similar workshop was held in Abu Dhabi (UAE) in April 2016 (GCC-Stat 2016) and another in Riyadh (Saudi Arabia) in October 2016 (General Authority for Statistics 2016). It is clear from these workshops that GCC-Stat is not trying to reinvent RBC but to learn from best practices, especially from the Nordic countries. It is also clear that the GCC countries are not aiming to develop one register at a time, as was done by the Scandinavian countries. They are not even targeting the completion of a civil registration/vital statistics system. Instead, the GCC countries are moving in the direction of harnessing the benefits of e-governance in conducting the RBC. As an example, in the UAE the population register and the ID system are part of one system that forms the core of e-governance (see Figure 1).

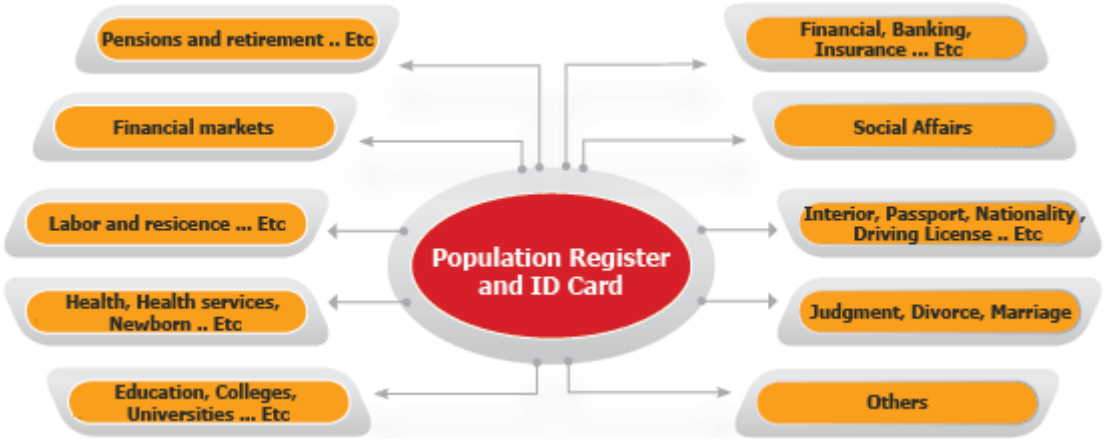

Figure 1. *The centrality of the population register and ID card system to e-governance in UAE.*

The summary of the approach being used is as follows: There are a minimum number of recommended variables to be included in the 2020 round of censuses for the GCC countries (GCC basket). Each country should start with those variables and try to map them on the existing databases used in e-governance. Once this has been done, the data should then be extracted and put in a census database for further analysis. The primary move in this approach is from the registers to the administrative databases used in e-governance. In principle, this idea could work. The main reason for this is that the registers and the administrative databases are all built on *same principles*. Typically, the database is a set of data tables that are connected to each other through referential integrity (parent–child style). This technology and modeling style is how the administrative systems are structured and managed, so the applications can access these tables to add/modify/delete/read this data. The administrative registers are mostly stored in such formats. For example, the population registers in UAE and Bahrain comprise of a set of tables in Oracle and IBM database management systems. There is a master table which contains the person data (typically found in population registers). Some databases, like the utilities company database, have some information about subscribers who are either citizens or residents, so it could be considered as a subscribers' register. It would need inspection, manipulation, and augmentation to partially replace the population register, and it may fail to be leveraged to that level. In this case, one would need to develop interlinked registers in order to produce a workable statistical register.

Conclusion

In the Scandinavian countries, administrative registers are routinely used for producing social, demographic, and economic statistics. Success in this field, and other factors, led these countries to explore the use of registers for conducting censuses, termed *register-based census*. Some of these countries have already achieved the goal of conducting fully register-based census (RBC). The availability of many high-quality registers, along with the enabling factors for utilizing these registers, are not easily found in other countries. Some of the GCC countries, for example, still have problems with their vital registration systems. In addition, some of their statistics offices are at relatively weak positions. For some of these countries, any attempt to copy the Scandinavian route would be a formidable task, with a high risk of failure. These countries can shorten the time it takes to reach the stage of conducting RBC by going via the route of e-governance. In such cases, countries do not have to develop ten or more registers for them to consider conducting RBC. The ideal situation is when the national statistics agency is responsible for the informatics system and is the one driving the e-governance program. In the GCC, it is only Bahrain that is in that fortunate position. Other GCC countries can conduct RBC by going the route of tapping directly into the databases that are driving e-governance. Once they are successful, they will have established a new e-governance route to RBC.

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