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Investigating the Potential for Open Government Data (OGD) in Qatar

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Overview

Recently, many countries have started to **utilize** Open Government Data (**OGD**) in **developing open environments** and **platforms** to **improve** their **economies**, **enabling** Small and Medium Enterprises (**SMEs**) to use them.

Governments are **seeking new methods** to **support diversification** and **promote SMEs** in the economy.

Motivation

- ▶ The economy of Qatar is among the most robust in the region and one of the most promising in the world.
- ▶ The current OGD platforms in GCC countries mainly, only employ data from government agencies; they do not mix data from other sources, such as *third-party data* and *social media*, with *analytics*.
- ▶ The Qatari government needs to provide SMEs with an OGD platform to use big data analytics to achieve more innovation and growth.
- ▶ This paper provides research into the use of OGD and the deployment of OGD in Qatari SMEs to investigate the Qatari government's and SMEs' readiness for employing OGD.

Background and Related Work

The Open Government Data (OGD)

- ▶ Before the rise of OGD, the terms “open government” and “open data” appeared separately.
- ▶ The **open government** expressed the **political side**; however, **open data** represented the **technical side**.
- ▶ In 2009, President Obama signed the "**Memorandum on Transparency and Open Government**", stating that Government should be *transparent*, *participatory*, and *collaborative*.
- ▶ By 2011, the **US and other countries** established the Open Government Partnership (**OGP**). They are dedicated to making their governments more *open*, *accountable*, and *responsive to citizens*.

Background and Related Work

OGD Terminology

- ▶ Many concepts are related to **OGD**, such as *open data*, *public data*, *e-government*, *linked data*, and *data portal*.
- ▶ **Open data**, data is published in *open data format*, *machine-readable*, *platform-independent*, and *open to the public* without restrictions or under an open license.
- ▶ **Public data** , is made *freely available to the public* but only sometimes open.
- ▶ **OGD**, is a **subset of open data** and is **government-related data** open to the public.
- ▶ **E-government**, the **government's use of technology** to **improve its offered services** to other entities, including citizens, employees, partners, suppliers, and other government agencies.

Background and Related Work

OGD Terminology

- ▶ **Linked data**, is the process of following a set of best practices for publishing and connecting structured data on the web.
- ▶ **Data portal**, is more commonly a “one-stop-shop” hosting the actual data, where end users search and access the published data and interact with it suitably.
- ▶ One of the main functions of a data portal is the administration of metadata for the datasets, potentially including metadata harmonization. Different tools are enabled on government data portals, e.g.; data format conversion, visualization, query endpoints, etc.
- ▶ Therefore, Open Data Portals (ODP) are essential, and the solution will provide an ODP with a data analytics framework for SMEs.

SMEs Motivations for Utilization of OGD

Generated Economic Value Through Open Data

- ▶ Open data is already contributing to the economic growth of countries worldwide [23][24]. They also support creating and strengthening new markets, companies, and jobs [23].
- ▶ Government plays a vital role in creating value from open data, not only in its publication stage.
- ▶ Organizations can create value with open data in various companies and industries in three ways [24]:
 - for traditional companies or new non-technological startups to make decisions, as their governments use open data to improve decision-making, and
 - the vast private sector; to generate new products or services that create value for their clients, and
 - consumers require more information and reward transparent companies: by releasing data, companies can guarantee their actions are transparent [17].

SMEs Motivations for Utilization of OGD

Promote Greater Openness of Public Data

- ▶ One of the mechanisms to the government to encourage the use of open data by the private sector is to **strengthen the supply of these data** in **quantitative** and **qualitative** terms.
- ▶ In South Korea, the government has promoted **open data**, allowing **development of many digital applications** from **public open data**. The **Seoul Open Data Plaza** (data.seoul.go.kr) is one of **most active Open Data sites** [25].
- ▶ In 2012, Seoul started an **open data initiative** sharing public information to **create diverse business opportunities** for the **private sector** and develop IT industries.
- ▶ This portal is an **online channel** to share and provide citizens with **all public data of Seoul**, such as *real-time bus schedules*, *subway schedules*, *Wi-Fi public service places*, and *facilities for disabled people*, among others [26], [27].

SMEs Motivations for Utilization of OGD

Promote or Regulate the Opening of Data in Other Sectors

- ▶ Governments, international organizations, and civil associations have been at the forefront of **open data proliferation** and **openness** [22].
- ▶ As **governments** have adopted the **open data agenda**, citizens and consumers **demand transparency in other sectors**, such as *business, academia, and government organizations* [28].
- ▶ The **government** can play a role in **encouraging companies** to **share their data safely** and **respectfully** regarding the **privacy of consumers and citizens** [30].
- ▶ **Universities** and **academia** have to take a step forward to **publicize** and **give access** to their **data** in **different formats** to other societal actors [31].

SMEs Motivations for Utilization of OGD

Promote Data Entrepreneurship

- ▶ Open Data Incubator Europe (ODINE) 32 and the well-known emergence of **data ventures** in the UK and US demonstrated the opportunity to *generate value*, *scalability*, and *profits* with **open data ventures**.
- ▶ In Latin America, there are also cases of successful data ventures that have received **foreign investment** and have grown in the last 5 years, e.g.; **OPI**, **Data4**, and **Atlantia** [29].
- ▶ In UK, the government has offered **open government data** of the highest quality through **data.gov.uk**.
- ▶ The Open Data Institute (ODI) has analyzed **270 companies** in UK that *use*, *produce*, or *invest* in **open data** as part of their **business strategy** [30].

Challenges Affecting SMEs Full Utilization of OGD

- ▶ A set of **classifications for the challenges** that prevent SMEs in the GCC region from utilizing the OGD effectively are discussed.
- ▶ **Saxena** [6] applied the models developed to the **status of OGD** in the **GCC countries** [32].
- ▶ **Sieber** and **Johnson** introduced **four models of open data** that define the **relationship** between **citizens** and **government** (also called the **Citizen Engagement Model of OGD**) [33].
- ▶ **All GCC** is **still** at an **early stage or phase** for utilizing and implementing OGD [6].

Challenges Affecting SMEs Full Utilization of OGD

- ▶ They face a number of challenges in the OGD implementation, such as:
 - the datasets are not regularly updated,
 - the available datasets are in unprocessed format,
 - there is no interpretation or clear description for these datasets,
 - most of the datasets are available in the Arabic language only,
 - some GCC countries have no clear OGD policy and classify OGD under other topics,
 - discouraged users from contributing to the datasets, and
 - limited formats and interactive maps and user-friendly formats.

Challenges Affecting SMEs Full Utilization of OGD

- ▶ The OGD platforms use exclusive data from governmental entities; they do not incorporate data from different sources, such as third-party data and social media combined with analytics.
- ▶ Therefore, one of the essential classifications that needed to be included in the OGD lifecycle classification.
- ▶ Moreover, it could be categorized by the different activities in each stage of the OGD lifecycle.
- ▶ Therefore, the end user could track, monitor, and tackle the challenges effectively.

Research Methodology

The research methodology to consist of **five phases**:

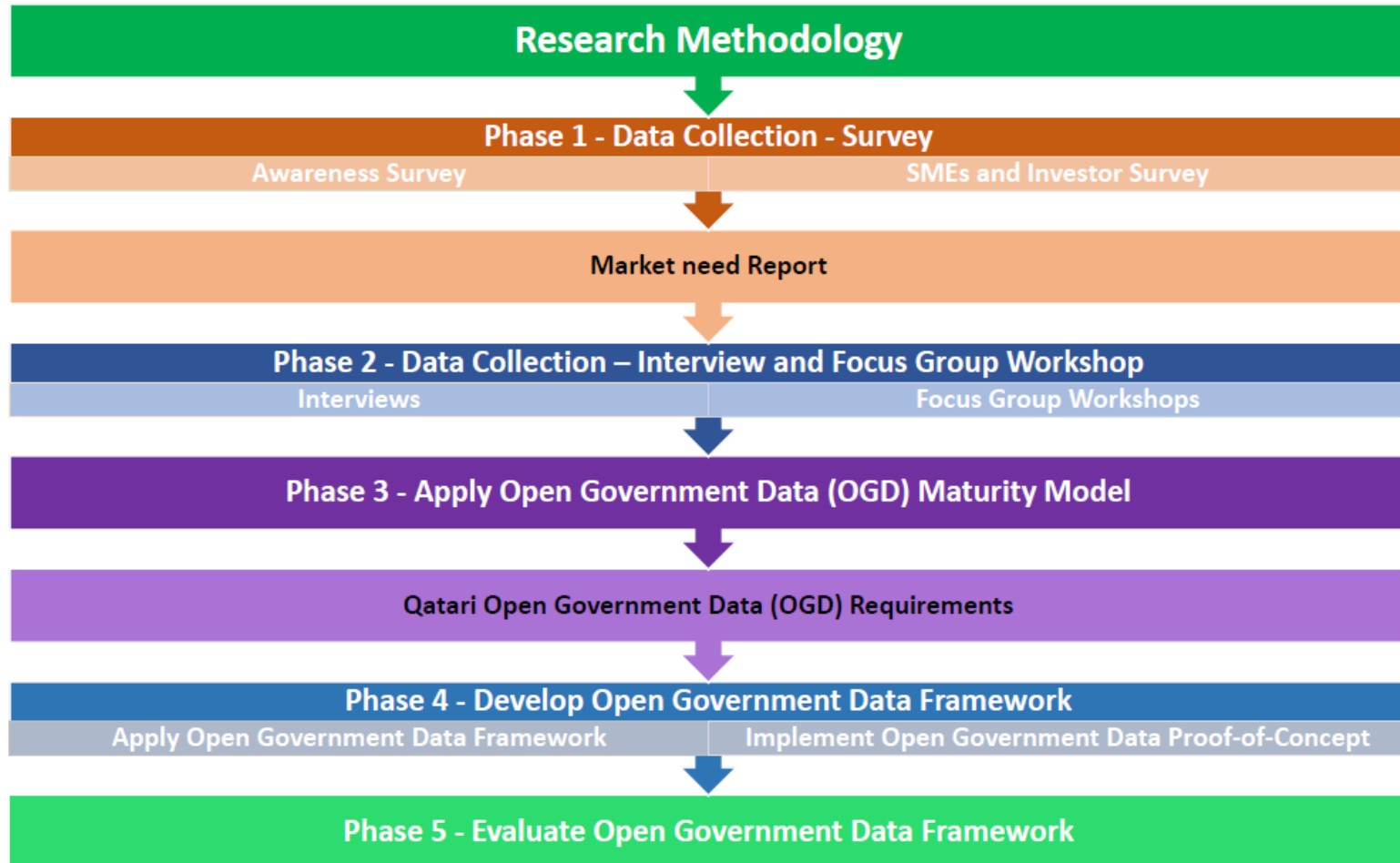


Figure (1) Research Methodology Plan

Research Methodology

- ▶ Data collection improves the decision-making process and the quality of those decisions.
- ▶ Thus, to answer our research questions related to the role of SMEs in Qatar in utilizing and spreading the use of OGD, we used a mixture of quantitative and qualitative data collection methods, such as surveys [37].
- ▶ The primary objectives of the two independent surveys were to examine the level of awareness of OGD as a concept, how SMEs in Qatar view the current OGD platforms, and how OGD may be enhanced to meet the needs of SMEs.

Figure (1) Research Methodology Plan

Research Methodology

- ▶ We targeted **two categories** of stakeholders for the survey. The first category is the **public, i.e., citizens and residents**, and the second category is **SMEs and Investors**. So, we have designed a survey for each category as follows.
- ▶ The first survey was called the "**OGD Awareness Survey**", which aims to **evaluate** the **awareness of citizens and residents in Qatar of the Open Government Data**.
- ▶ Further, the second survey was called "**OGD – SMEs and Investors Survey**", which aims to **evaluate** the **awareness and utilization of OGD by SMEs and Investors in Qatar**.

Figure (1) Research Methodology Plan

Results and Evaluation

Selection of Organizations and Stakeholders

- ▶ We have selected various organizations and stakeholders participating in the data collection process.
- ▶ Examples of organizations are:
 - Ministry of Interior (MOI),
 - Ministry of Justice (MOJ),
 - Qatar Development Bank (QDB),
 - Qatar International Court and Dispute Resolution Centre (QICDRC),
 - Ministry of Commerce and Industry and Hukoomi.

Results and Evaluation

Survey Data Analysis Procedure and Used Tools

- ▶ Two Surveys distributed for the targeted stakeholders ([OGD Awareness Survey](#)) and ([OGD – SMEs and Investors Survey](#)).
- ▶ We performed [an initial analysis](#) in Microsoft Excel files should be included in the statistical analysis.
- ▶ [Cleaning and transformation](#) steps were necessary to prepare an Excel file for [statistical analysis](#).
- ▶ Transformed Microsoft Excel files for the two surveys were imported into [IBM Statistical Package](#) for the [Social Sciences \(SPSS\)](#) to provide [further analysis](#) of the survey results.

Results and Evaluation

OGD Awareness Survey – Data Analysis Findings

- ▶ We examined the relationship between Q2– Age Group and the three questions: Q8– OGD Reaction, Q9– OGD of QatarGov Usability and Q10– OD Qatar Third Parties Usability.
- ▶ These numbers indicate that OGD from the Qatar government is trusted and could be used or utilized by youth and adults.
- ▶ We performed the Chi-Square analysis using IBM SPSS between questions Q2, Q8, Q9 and Q10.
- ▶ We checked the relationship between Q3– Gender and the same three questions Q8, Q9 and Q10.
- ▶ OGD is something required by both genders.

Results and Evaluation

OGD Awareness Survey – Data Analysis Findings

- ▶ The Chi-Square value between the questions Q3– Gender and Q8, Q9.
- ▶ There is an indication that a high percentage of males and females show their interest in OGD, and they may utilize both governmental and third-parties open data.
- We examined the relationship between Q4– Nationality and the three questions Q8, Q9 and Q10.
- OGD from the Qatar government is trusted and could be used or utilized by citizens and residents.

Results and Evaluation

OGD Awareness Survey – Data Analysis Findings

- We checked the relationship between **Q5– Highest Qualification** and the three **Q8, Q9** and **Q10**.
- **OGD from the Qatar government** is **trusted** and could be used or **utilized by highly educated people in Qatar**.
- We examined the relationship between **Q6– Computer Knowledge Level** and questions **Q8, Q9** and **Q10**.
- There is a good indication that **OGD** is something **required** by people who **have expert** or **intermediate computer knowledge levels**.
- Furthermore, facilitating data access for persons with **limited computer abilities** is a **barrier** and should be **addressed** in the **available OGD platforms**.

Results and Evaluation

OGD Awareness Survey – Data Analysis Findings

- We checked the relationship between **Q7– Employment Situation** and the three questions **Q8, Q9** and **Q10**.
- This indicate that **open data from Qatar Third-parties** are **trusted** and could be used or **utilized by people working Full-Time or in Education**.

Results and Evaluation

OGD – SMEs and Investors Survey – Data Analysis Findings

- ▶ We examined the relationship between Q3– Age Group and the seven questions: Q9– SMEs Utilization Published OGD, Q12– Verify QatarGov OGD Policy, Q13– QatarGov Verify OGD Access, Q18– Qatar ODP Usability Purpose, Q19– Qatar ODP Registration Provided Data Method, Q21– Qatar ODP Registration Dissuade Status and Q23– Qatar ODP Verify Data Analytics Usability.
- ▶ There is an indication that a high percentage of youth and adults need free-of-charge access to Qatar government OGD as in responses to QatarGov Verify OGD Access.
- ▶ Thus, access to Qatar government OGD should be free of charge according to youth and adults' feedback.

Results and Evaluation

OGD – SMEs and Investors Survey – Data Analysis Findings

- ▶ We examined the relationship between **Q7– Computer Knowledge Level** and the seven questions (**Q9, Q12, Q13, Q18, Q19, Q21 and Q23**).
- ▶ This indicate that **responses** from these **computer knowledge levels had no difference**, which may have happened because they **did not use an analytics platform**.
- ▶ We found **no difference** between **computer knowledge levels** in their responses to the **registration process ODP** will **dissuade** the **SMEs from utilizing the OGD**.

Results and Evaluation

OGD – SMEs and Investors Survey – Data Analysis Findings

- We checked the relationship between Q6– Highest Qualification and the seven questions (Q9, Q12, Q13, Q18, Q19, Q21 and Q23).
- We found that there is an indication that:
 - a high percentage of highly educated people will utilize Published OGD,
 -
 - need free-of-charge access for Qatar government OGD,
 - believe in the full or semi-full utilization of the open data portal, and
 - believe in that Qatar government OGD is provided from both direct (i.e., through ODP) and indirect (i.e., through the website of the ministry or the OGD source).

Conclusions and Future Work

- ▶ This paper paved the way for future researchers to develop prominent **data analytics theories** that would benefit the **Qatari economy**.
- ▶ We have conducted **intensive surveys** to gather information regarding readiness to use the **fruits of OGD**. The results showed **how open data** could **impact society** and **SMEs**.
- ▶ There is a need for *a plan to increase awareness of OGD* between different age groups.
- ▶ Regardless of **education, gender, and employment status**, people in **Qatar** have a **positive reaction** and are keen on **OGD**.
- ▶ The OGD portal must be **simple and easy to use** by all people, **regardless of their education level**.

Conclusions and Future Work

- ▶ OGD should be made available to SMEs at an accessible cost to help the Qatari private sector, as they may not utilize it if they have to pay.
- ▶ All qualifications are the same regarding their belief that the policy of OGD and the registration process of ODP will dissuade SMEs from utilizing the OGD.
- ▶ There is no difference between computer knowledge levels in their responses to the registration process of the ODP will dissuade the SMEs from utilizing OGD.
- ▶ The Qatari government should create a national-level, centralized service where SMEs utilize big data analytics tools and examine open data supplied by the government and others to improve business decision-making and discover new chances for expansion and innovation.

Conclusions and Future Work

- ▶ We are now working on the completing the development of an OGD platform that encourages the use of OGD and overcomes the issues raised in this article.
- ▶ With big data analytics, the planned OGD platform would assist SMEs in achieving more innovation and growth.
- ▶ SMEs may use big data analytics tools and techniques and evaluate open data provided by the government and others to enhance corporate decision-making and find new opportunities for growth and innovation.
- ▶ Data from social networks and outside sources will be combined with open data to give additional information to SMEs, reflecting the whole economic picture and assisting decision-makers in delivering better conclusions.



Your questions and comments are welcome



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धन्यवाद
Hindi

多謝
Traditional Chinese

ขอบพระคุณ
Thai

Спасибо
Russian

Gracias
Spanish

Thank You
English

شكراً
Arabic

Merci
French

Obrigado
Brazilian Portuguese

Grazie
Italian

Danke
German

நன்றி
Tamil

多谢
Simplified Chinese

ありがとうございました
Japanese