



**Facilitating Decisions by Using a Data – Driven -  
Decision Making for Management Using Business  
Intelligence**

**Case Study: Social-Services Departments in the Emirate  
of Sharjah**

تسهيل القرارات باستخدام البيانات التي تعتمد على اتخاذ القرارات للإدارة  
بإستخدام ذكاء الأعمال

دراسة حالة: دائرة الخدمات الاجتماعية في إمارة الشارقة

by

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of the requirements for the degree of  
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## **ABSTRACT**

Many governmental and private institutions have much data, which are not used properly. Therefore, they are stored for a long period and this leads to using all the servers found there. Modern technology can find links between such data and the way of getting benefit of it. Actually, this helps to get a quick and proper decision.

This data is not only for storing but it is also for helping in taking the quick and proper decision based on numbers and statistics. Due to the care of our rulers, the strong base of data and the strategy of the UAE in predicting the future, the UAE can anticipate, analyze and plan the early opportunities and challenges on the long run at all levels to achieve qualitative achievements for serving the state's interests. The new strategy of the UAE serves the vision of the president and vice-president of the UAE while forming the future government, which aims at getting all the global opportunities and anticipate ten future economic and social challenges.

Providing social aids gets much care from our rulers either inside the state or outside it. This research sheds some lights on providing social aids for the UAE citizens in the emirate of Sharjah. It also helps people get familiar with the technique used to provide these aids, people deserving this aid, and the objectives of this department, which help in improving the way of providing these aids. Simply, the definition of the social aids means providing the financial, healthy and social aids.

This research focuses on the improvement and acceleration of the technique of providing the financial social aids for three types of people; oldness, widows and handicapped. That is because these kinds of people have the priority in providing aids in the department and they get the ultimate care of our rulers.

Data-Driven decision-making approach was used in this research. Data driven refers to activities driven by spurred on by data. However, it is totally different from the data driven by the personal attempts and experiences. This leads to a very strong decision based on proofs rather than feelings. This expression is used mainly in business, but it is also used in so many other fields.

Business Intelligence solution was proposed to analyze (**12272 records**) for the three priority beneficiaries in the provision of cash social assistance, which are, Elderly, Widows and Disabled.

The result was the highlight of the major challenges that hamper the delivery of cash social assistance as well as the ability to involve all decision-makers based on accurate data and demonstrate it in an easy to read and accessible manner. By using POWER BI tools which can visualize data and share it through dashboards, online (web view) and mobile applications.

**Keywords:**

Data- driven decision-making (DDM), Business intelligence, Power BI, social welfare, Social Services Department, Sharjah. UAE.

## نبذة مختصرة

لدى كثير من المؤسسات والجهات الحكومية والخاصة بيانات لا يتم استخدامها بالشكل الصحيح ويتم تخزينها لفترة طويلة مما يؤدي إلى استهلاك الخوادم الموجودة، هناك الكثير من التكنولوجيا التي بإمكانها إيجاد ترابط بين هذه البيانات والاستفادة منها والتي بدورها تساعد على اتخاذ قرار سريع وسليم.

كما أنه لم تعد البيانات تستخدم للتخزين فقط وإنما هناك الكثير من الآليات التي أثبتت أن للبيانات دور كبير في اتخاذ القرار السريع والمبني على أرقام واحصائيات، فانطلاقاً من مبدأ الاستفادة من البيانات وانطلاقاً من اهتمام قادتنا واستراتيجية دولة الإمارات في استشرف المستقبل والتي تهدف للاستشرف المبكر للفرص والتحديات وتحليلها ووضع الخطط الاستباقية بعيدة المدى لها على كافة المستويات لتحقيق إنجازات نوعية لخدمة مصالح الدولة. وتأتي استراتيجية المستقبل الجديدة لتحقيق رؤية صاحب السمو رئيس الدولة ونائبه في تشكيل حكومة المستقبل التي تسعى لتبني كافة الفرص العالمية الجديدة واستباق التحديات الاقتصادية والاجتماعية القادمة.

تقديم المساعدات الاجتماعية تتولى اهتماما كبيرا من قادتنا سواء داخل الدولة أو خارجها، وبحثنا هذا سيسلط الضوء على تقديم المساعدات الاجتماعية لمواطني إمارة الشارقة والإطلاع على الآلية الحالية لتقديم طلب المساعدة وماهي الفئات المستحقة للمساعدة، كما تم الإطلاع على أهداف الدائرة والتي في دورها تساهم في تحسين آلية تقديم المساعدات. حيث أن تعريف المساعدة الاجتماعية هنا يعني تقديم المساعدات الاجتماعية النقدية والصحية والاجتماعية.

في هذا البحث سيتم التركيز على تحسين وتسريع آلية تقديم المساعدات الاجتماعية النقدية لثلاث فئات وهي الشيوخوخة، الترملة والإعاقة. حيث أن هذه الفئات لها الأولوية في تقديم المساعدات في الدائرة كما أنها تحظى باهتمام كبير من قادتنا.

تم استخدام نهج صنع القرار القائم على البيانات (Data-Driven decision-making approach) في هذا البحث. الاعتماد على البيانات نتيجة على تحفيز بيانات أخرى وليست حسب المحاولات والخبرات الشخصية. هذا يؤدي إلى قرار قوي للغاية يعتمد على البراهين بدلاً من المشاعر. ويستخدم هذا التعبير بشكل رئيسي في مجال الأعمال التجارية، ولكن كما أنها تستخدم في العديد من المجالات الأخرى.

تم اقتراح حل ذكاء الأعمال (Business Intelligence) لتحليل (12272 سجلاً) للمستفيدين ذوي الأولوية الثلاثة في تقديم المساعدة الاجتماعية النقدية، وهي المسنين والأرامل والمعوقين.

وكانت النتيجة هي تسليط الضوء على التحديات الرئيسية التي تعيق تقديم المساعدة الاجتماعية النقدية وكذلك القدرة على إشراك جميع صناعات القرار بناء على بيانات دقيقة ودقيقة وإظهارها بطريقة سهلة القراءة ويمكن الوصول إليها. باستخدام أدوات POWER BI التي يمكنها تصور البيانات ومشاركتها من خلال لوحات المعلومات والإنترنت (عرض الويب) وتطبيقات الهاتف المحمول.

### الكلمات الدالة:

نهج صنع القرار القائم على البيانات (Data-Driven decision-making approach)، ذكاء الأعمال (Business Intelligence)، Power BI، المساعدات الاجتماعية، دائرة الخدمات الاجتماعية، الشارقة، الإمارات العربية المتحدة.

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## Chapter 1: Introduction

*In this chapter, I will display the title, barriers, reasons of writing this research, what questions will be answered, and the techniques will be used in this research and what is distinguished in this research.*

### ii. Overview

In the era of the great technological growth in UAE reaching to the artificial intelligence, in addition to the decision of the governmental accelerators, which is a technique for achieving the UAE 2021, vision. All these techniques, initiatives and strategies are based on governmental and private data.

In this research, I will shed lights on the importance of these data to speed up decision taken by managers and experts using Data- Driven decision- making approach .This approach will help to determine the current sudation for the department, Predicting future opportunities and risks. In addition, to analyze this data, Business intelligence solution has been used, which will clarify the importance of having a strong infrastructure to save data. It will help having one platform for displaying all reports in graphs to help decision makers easily read and predict the rate of success and possible cases can occur in the future to be put in the annual budget.

Because of providing aids to UAE citizens is a very important part of its policy to make sure a decent life for the UAE people and the concern of the UAE rulers and the Federal National Council. The case of the Department of Social Services in Sharjah will be studied to apply this technique. It provides help and back up for people monthly who worth since 1984 such as; widows, disabled people, orphaned elders and income less, handicapped and etc, as law states in the emirate . It does not provide money only but it helps the affected people with shelter, clothes, food, services, etc.

### **iii. Research Problems**

Every institution has its own data and it grows up, this data has different patterns that human mind can't accommodate. New techniques (data extraction) can analyze this institution data such as social services department in Sharjah to help speed up decision-making. This technique will also help see all the reports to analyze them. The Important benefit is to save time for the programmers in getting out reports and understanding the needs of reports without analyzing in the institution.

### **iv. Motivation**

Our country provides aids and social care for all sectors of citizens through the personal interest of HH Dr Sheikh Sultan bin Mohammed Al Qasimi in Sharjah. As he said "We will insure fixed income besides the salary for all Sharjah inhabitants under the name of Social Insurance" and "We will work for providing health insurance for Sharjah citizens and medical treatment abroad."

It aims at providing decent life for them. The idea of this research is to support the interest of using modern techniques in this aspect.

### **v. Aim and Objectives**

The main aim of the research is to show the importance of data in every institution and its effective role in facilitating decision making through suggesting a technique for analyzing data using a clear method. It also helps in facilitating providing social aid for these categories; the old, widows and disabled who have the priority in the social services department.

### **vi. Uniqueness of this study**

During my research on providing social aids, I didn't find any research talking about internal system for providing aid, however all the researches talk about the technique for providing aid to the needy categories. The distinguished thing in this research is upgrading internal system of the social aids department, suggesting a new technique, analyzing data and depending on them to accelerate decision making for many upcoming years. This technique is provided in all institutions that all programmers can use it easily and this is another advantage to help data analyzing and reports providing in a very clear way.

## vii. Research Question

In order to prove that the Business Intelligent solution will add value to the internal program in Social service organization and will help to facilitate and improve process and decision making by analyze data, the following questions must answered:

- *Is the proposed approach will improve the performance of the social service decision-making process?*
- *Is data driven decision making techniques will be helpful in social service Department?*
- *Is the integration of BI solutions with the current information systems will accelerate and facilitate the provision of social assistance?*

## viii. Methodology

The methodology used in this research is a mix of three methodologies, which are Data-driven decision-making approach, Business intelligence Solution, Power BI.

- **Data- Driven decision making :**

Spread the importance of using this approach among the employees of the Department and its importance in speeding up the decision-making and reaching the goals. Moreover, based on the meeting held with them and was briefed on the current work in the provision of assistance in addition to the program used. Emphasis was therefore placed on the most important strategy of accelerating the provision of social assistance to eligible groups.

- **Business intelligence Solution:**

In this research will cover the implementation of using BI solution and transfer using classical use of data of OLTP relational database by using SQL server 2014. Which has many features like integrate different data resources and analyze them. It helps to solve many business problems in simple way and cost-effective manner. Also will cover how to design data mart warehouse and view real-time business intelligence data by using specialized application consolidation to help managers to follow- up the current work and make decisions.

- **Power BI:**

Its Microsoft tools that integrates easily with existing business environment allowing adopting analytics and reporting capabilities. By using customized dashboards to meet the exact need of information, share it with colleagues.

## **ix. Dissertation Structure**

This dissertation is divided into five chapters as follows:

**Chapter 1:** Introduces the overview of this research. In addition, What are the research problem, motivation, aim and object to conduct this study. Moreover, explain why this research is unique in researcher point view. List the research questions need to answer to improve hypothesis. Finally, explain the methodology that used.

**Chapter 2:** It outlines the aspects of the provision of social assistance in the UAE, the extent of its importance and the types of beneficiaries, as well as some aspects of similar and different assistance from other countries. See the importance of adopt Business intelligence solution in the business.

**Chapter 3:** Illustrates the methodology that has been used. Highlight the research questions. Definition of the Department of Social Services and its functions. Finally, Shows how the techniques to collect research data.

**Chapter 4:** The chapter presents in details the analysis of case study to find Constraints and challenges to apply the suggested methodology and the results and its outputs. Some of the challenges are in the recent workflow of provide Social assistance, so the new workflow is suggested. Finally, answer the research questions that prove the suggested approach is useful.

**Chapter 5:** Discloses the conclusion of the research. Moreover, recommend some points that suggested from the researcher alongside Illustrates the challenges in writing this dissertation

## Chapter 2: Literature Review

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*There are many types of social assistances, including financial, which is disbursed a certain amount of money. Health assistance, which is provided in the field of health and social assistance, which is concerned with social education or involvement in society affairs. There are also many categories covered by these assistances, including the elderly, the widows and the disabled. Each country has its own criteria for providing such assistances, based on its economy and geographical distribution, as well as the social and educational level, and thus leads to a diversity of groups eligible for such assistances.*

*The provision of social assistances has become more organized with technological development, and the presence of appropriate legislation, with databases that in turn store the names of beneficiaries and what social assistance is due. The development of technology has led to the possibility of benefiting from these data in facilitating the decision to provide assistance. In this study, we have been acquainted with the provision of social assistances in the United Arab Emirates and the Gulf countries as well as some European countries. As well, getting benefit of the importance of business intelligence and its effective role in data utilization.*

### **x. Introduction**

This chapter will shed light on the nature of social assistance in the United Arab Emirates, especially the emirate of Sharjah. As the research focuses on it with examples from the Gulf countries and some European countries, the priority of such assistances in the emirate of Sharjah will be focused on three categories Elderly, widowed and disabled.

In addition, it will

be talking about business intelligence, which will be applied in this research. It will identify and show the positive affect of business intelligence while being applied in institutions. This will also be cited as an example in their application in the field of health care.

### **xi. Background**

#### **i. Social assistance in UAE**

Life expectation in Arab countries is a great story of social and economic growth. This case is the most important challenge in the 21st century in Arab region which appears not to be used to address the multiple implications of changes (Hussein and Ismail 2017, cited in Kronfol et al. 2013). (Halabi& Zafar 2010 ) stated that the UAE is considered one of the highest income, peaceful, rich investment seeker country in the world and between the financial status and life

satisfaction. It shows positive proportion (Shen & Tanui 2012 , cited in Gray et al. 1992; Krause 1991).

In the United Arab Emirates, there is more than one authority providing social assistance for example; a federal agency called the Ministry of Community Development, a local authority in the Emirate of Sharjah called the Social Services Department. There is also a social support program in Abu Dhabi. This assistance is provided under certain conditions.

Albrithen (2015) pointed out that Social Affairs Ministry provides enormous number of services such as; orphans, nurseries, social integration guidance for girls and finally the children (social security, disability, social development).

Moreover, (Governmentae, 2019) clarifies that it is based on the federal law no.2 of 2001 which states the categories deserving assistance monthly and they are:

- widows
- divorcees
- disabled or those with special needs
- elderly
- orphans
- children from unknown parents
- medically unfit persons
- married student
- families of prisoners
- financially unfit
- abandoned women
- UAE national women married to expatriate men who cannot earn a living for reasons beyond their control

The Social Services Department of the Government of Sharjah provides many financial and health assistance to the citizens of the emirate of Shariah from these categories:

- Benefited Scales for the Social Aids in Shariah:

No.	The Scales
1	Income less ( without income )
2	Financial inability

3	Limited income
4	Retirement
5	Unemployment ( work-less )
6	Divorce
7	Widow
8	Orphanage
9	Being unmarried
10	Marrying by non-Emiratis
11	Abundance
12	Heath inability
13	Handicapped people
14	Oldness
15	Prisoner's family
16	Local guarantees

**Table 1: Benefited Scale**

**This research will shed light on social assistance for the following three categories:**

ii. [Elderly social assistance](#)

According to the National Policy for Senior Citizens, the Government of the UAE has decided to change the name of the elderly who are over 60 years of age to become "senior citizens" as senior experts, and in their sincerity and inexhaustible dedication to the nation (Governmentae, 2019) . Ghubach et al. (2010) affirm that more than half of UAE old adults are satisfied with their lives. Ladder of life shows that zero represents the worst possible life and 10 represents the best possible life. Strong wealth-personal satisfaction is among 47 nations. In prosperous nations, there is no guarantee of satisfaction. Fewer than half in countries such as Italy, Germany and Japan relate their lives more than 7 on ladder of life scale.



It has been stated that previous studies focused on quality of life among aged people because of the worldwide trend term of successful elderly that contains three dimensions: physical, mental and social health (Shen & Tanui 2012 , cited in Rowe and Kahn 1997; Reig 2003) . Therefore, the elderly are receiving great attention from the rulers of the United Arab Emirates, who in turn have influenced the enactment of national policies to ensure their welfare by providing the following assistance:

**a. social support**

Pursuant to Federal Law No. (2) of 2001, monthly assistance is provided to senior citizens of the UAE(Governmentae, 2019). In Sharjah, Social Services Department provides monthly Social Financial Aids for elders (Sssdshjae, 2019)

**b. Health support**

Health services are necessary for frail older people. Many factors such as: demographic, social, economic, health, financial and more increasing demand for services among clients and physicians are a key for health care to frail older people. They have to cooperate with organizations and professionals to provide services to patients. They have to facilitate transitions between different settings as health services which are impossible without structural changes in system (Hébert et al. 2003). One of the challenges facing the health system is elderly population (Al-Shaali & Al Jaziri 2015).It has been shown that health status is an important factor in determining the quality of life of the elderly where it is known that health problems increase with age can lead to disability (Al-Shaali & Al Jaziri 2015 ,cited in Abolfotouh et al. 2001).It has been clarified that the world is in an enormous demographic change. Two-third of elderly lives in a contrasting world: major – Asia, minor: China and India. In Middle East and Arab countries, number of elderly is increasing due to health care services and demolition of dangerous infectious diseases. (Hussain (2016). MacAdam (2008) points out that care of elders has been an important focus due to high seniors related with one or more chronic conditions (high use of health care and growth).

Due to continuous improvements in living standards and health care, the percentage of elderly people in the United Arab Emirates is increasing, with the percentage of those aged 60 and above being 5.1% in 2000 and possibly increasing to 23.6% in 2025, and life expectancy is increasing from 74 years in 2000 to 78 years in 2013 (Al-Shaali & Al Jaziri 2015 ,cited in World Health Organization 2016). In the last ten years, the UAE had appeared in elderly care. We can see that in Obaid Allah Geriatric in RAK and more of these facilities. This hospital contains more than 120 beds (Halabi& Zafar 2010, cited in Janardhan 2009). Abu Dhabi also has many elderly health care facilities that provide nursing care that are authorized by social affairs ministry. Numbers of elders are increasing all over the world (Halabi& Zafar 2010)

(Sssdshjae, 2019) describes the various health services that provided from Social Services Department:

- **Aman Service**

It is a free medical service for all Sharjah citizens 65 years or above in Sharjah University Hospital who don't have any medical insurance.

In June 2006, some medical laws systems are made. In April 2008 health insurance system started and implemented which consists of two parts; the 1st is introduction of adjustment system of insurance of people between 65 and 74, and the 2nd begins of health independent system for people 75 years and over. That means that people aged 75 years and over can leave the insurance system and join health independent system(Shimazaki 2009 ).

- **Sanad Service**

It is a free medical service for UAE citizens of Sharjah 55 years or above in Sharjah University Hospital . They must have social help and monthly salary. That service will be given to the Emirati citizens and his wives, too.

- **Elder House Care**

The United Arab Emirates, like many other countries facing the challenge of elderly population. Elder House Care is one of the solutions to these challenges. Such houses provide health care for older people in their homes with a multidisciplinary team that contributes to maintaining their health while at home (Al-Shaali & Al Jaziri 2015 cited in Joshi, Kumar & Avasthi 2003). Findings from studies on public opinion data from Denmark and Norway respectively (Blekesaune & Quadagno 2003 cited in Pettersen 2001; Goul Andersen 2002) show that some age differences in support for services like rest homes for old and child care institutions, but hardly age differences support in health services. All groups of aged people favor generous transfer to elders because everyone can know that they will grow old.

Social Services Department provides health care for elder people 60 and above through physical therapy and health aid for nervous muscular system that helps them recover their abilities once more again. Besides the health care, it also provides them with good living nature and their needs through programs and entertainment activities. It protects their rights and safety. They also help them regroup with their families easily.

- **Home Care**

Ireland has relatively young population, but always changes. In 2006, there were 468000 people aged 65 and over (11% of population). By 2021, population of 65 aged and over will be 751000 (16% of population). By 2041, they will be 1.4 million (22% of population). Researches show that older people prefer staying in their homes and have support services that allow them to stay in their homes, as well. Services like housing, nursing, health care, etc ... must be given to old people by combination of self-care, as well as upgrading system of health care. Medical cards were given

to all aged from 70 years to 80 which provide general medical services. Medical cards were tested to follow an emergency budget (Barry & Conlon 2010).

Social Service Department established home care in 2003 to provide social, health, psychological and rehabilitation services for the elderly and the disabled in their homes in order to provide the necessary care to develop and install their abilities. Rehabilitation and support of caregivers in addition to the provision of appropriate day-to-day services through:

➤ **Mobile units**

Provide a range of health, social and psychological services to suit their needs through teams of specialists.

➤ **Clubs of originality**

Were established in 2009 to provide social, health and day-to-day social services for the elderly to achieve social integration through a program and activities that ensure their interaction with the community and its members.

➤ **Supporting Services**

Introduce rehabilitation and training programs for health care and health care providers to ensure their health stability, provide home nursing services (Rahma), private transport services for bedridden patients, and provide medical needs for those with limited income.

○ **Physical Therapy Center**

The center was established in Sharjah in 2009. It provides services 24/7 for elders and disabled people. Its main role is to upgrade kinetic system of participants.

**c. Public transport for the elderly**

In Dubai, transport authorities give Emiratis and elderly residents over the age of 60 discounts on public transport. A free parking permit is granted in the working areas of citizens of the Emirate with disabilities and elderly persons over the age of 60 years (Governmentae, 2019).

iii. **Women social assistance**

Women more supportive than men at politics welfare did (Blekesaune & Quadagno 2003 cited in Edlund, 1999; Svallfors, 1997). studies show that women are more supportive than men due to

their different interests that women are more likely benefits from being widows, single parents or be employed (Blekesaune & Quadagno 2003 cited in Hernes 1984; Sainsbury, 1996).

(Devin joy. 2019) finds that American widows see that their home status will decrease by 37% because the death of their husbands. On the other hand , men see their home status decreases by 22% only. Women widows are 4 times more than men widows whom they all try to have a solution of the issue of income. Life can be much harder to live in a certain station in your life. Widows have a problem that they have to deal with electricity, food, rent and life needs with only one way of income. Men receive 2 SSC per month while women receive only one per month.

Many organizations give widows an aid budget, but several of them continue this help. Social Security is a persistent helping originally to widows, whom they use it for personal payments or to their next husbands. Widows who didn't have a chance to remarry or did not have a child take a low income ( 8656 dollars). Another way of widows' help is the procurement of her spouse account in their former work, that might help the widows a lot.

The government has provided an online (benefits.gov) website that gives help and consultation for widows. All what widows have to do is to fill in a questionnaire. The website would help widows through many issues such as; electric bills, rent payment, health insurance, unemployment assistance and etc..... Another website like elderly.gov would help them on the short run in stuff like food, clothing, housing and furniture. There are many organizations that give aid to widows such as churches, and it is also useful for them. St Vincent DE Paul charity organization gives widows one – time basis help for widows who have economic problems . Churches are the best place, widows can ever resorts to.

In Government of Sharjah, Social Services Department provides different kinds of welfare to women as following:

- Providing monthly Social Financial Aids for widows, divorced, being unmarried and other cases after studying their status in accordance with the regulations and rules issued by the Executive Council in the emirate of Sharjah.

- Providing financial, social and health assistance to non-Emirati women married to an Emirati citizen of the Emirate of Sharjah. (Albrithen, 2015) such as the payment of widows' pensions for non-Saudi wives married to Saudi husbands who were entitled to pensions.
- Women's Protection Center (Ssdshjae, 2019) clarifies that it was established in 2011 to secure the protection of contemporary women in the Emirate of Sharjah through:
  - ⊙ Accommodation
  - ⊙ Shelter of abused or exposed women.
  - ⊙ Empowerment
  - ⊙ Specialized support for women and girls.

#### iv. Disability social assistance:

The Government of the UAE has changed the name of special needs to People of Determination. According to Federal Law No. 2 of 2001 which states that people with certain disabilities must have a monthly salary to help them live. Moreover, they must be not deprived from welfare utilities and social processing. MOH records medical and mental status reports for people of disabilities. Abu Dhabi made a service for disabled people if there is a problem. They can send an SMS with the information to get help immediately (Governmentae, 2019).

(Governmentae, 2019) highlights that a new law takes care of disabled people and provides respectful life for them. Disabled people are experiencing their life with shortage in some or all means of life. This makes them unable to live their life normally. Discrimination is one of the most fatal attributes which destroys inner mental abilities of the disabled people and makes them unable to merge in the society. In addition, they have to be encouraged to achieve their goals in different businesses.

Disabled children's families face an enormous challenge to balance between their jobs and taking care of their children. This makes it a very rough and harsh job for them. To talk about GCC countries, studies show that disabled people are more in Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab. (World Health Organization and World Bank (2011)). Most factors that make families deal negatively with disabled children are; less informed, poverty, the disability to deal properly with them, and stress. The most important factor that makes families deal positively with them is confidence of families to educate and handle their issues in an

excellent way with them. These disabled children families need to know that when their children will grow, they must have a confidence in their children status after school, their social relations and possibility to merge with the society. By focusing on social scarcity ( disabled children's family should interact with other children's families), community support ( families should be informed about people support from the beginning of disabled children) and business scarcity ( as known that disabled children need more money than others because they need special food, clothes and etc (Khuffash 2012 cited in Holoryd 1982).

The Social welfare aids mothers of disabled children very well to relieve causes of stress to these mothers. (Khuffash 2012 cited in Wilkin 1979 ). (Khuffash 2012 cited in Quin, 1991 and 1993) He also suggests to provide more budget to disabled children because they need more care and needs than other children.

(Wam 2019) points out that UAE stands by the disabled children and assists them and helps them build a motherhood strategy. The two strategies have been directed and authorized by Sheikha Fatma bint Mubarak . Sheikh Muhammed bin Rashid said that disabled people have the full right to live and merge within the society . Vision of 2021 states that the disabled children will have their enormous role to participate in the construction of their country. Three main elements will help the disabled children. They are; (healthy life, upgraded education system and incorporated lifestyle). The plan aims at the expansion of the facilities to help disabled children have their services, care and society incorporation. The team working on this strategy plans to embody a group of 45 institutes including the state ones. This strategy is one of its unique kind in the UAE, which guaranteed all the rights for mothers, and children in the society.

In Government of Sharjah, Social Services Department provides monthly financial aids, social and health care for disabled people after studying their status in accordance with the regulations and rules issued by the Executive Council in the emirate of Sharjah.

#### **v. Business intelligence**

Information is an important factor among the foremost ones to a co-operative success that govt managers or physicians would want to base their selections on throughout decision-making(Sheta, Osama & Eldeen 2013). In regular data systems, businesses have relied on paper-based reviews regarding overall performance in order to make vital business decisions. Most of the reviews that are created are out dated. These have come as a result of extracting records from operational structures and collating with other sources of statistics to come up with them.

However managers prefer and need more information, analysts can provide only minimal data at a high fee inside the favored time frames (Sheta, Osama & Eldeen 2013, cited in Dych 2000).

To ensure that the effectiveness of the strategy is measured, the organization needs to analyze the data, the presence of software and resources, technical leaders, operational specialists, executive leaders and much more (Ali, Nassif & Capretz 2013). For executive leaders, consultants, and analysts, there is no longer a want to spend hours in designing and improving common reports or charts. The entire solution can be carried out thru using Business Intelligence “BI” software (Ali, Nassif & Capretz 2013). The concept of BUSINESS INTELLIGENCE (BI) has spread in the final 4-5 years in the field of enterprise management has been defined as a strategy to help institutions in measuring the effectiveness of its strategy initiative (Ali, Nassif & Capretz 2013).

Business Intelligence is defined as "broad category of applications and technologies for gathering, storing, analyzing, sharing, and providing access to data to help enterprise users make better business decisions" (Ali, Crvenkovski & Johnson 2016 cited Gartner Group 2012). Also, BI platform is defined as a “software platform that delivers the 14 capabilities within three main categories of functionality” as follows:

- 1) Integration: BI infrastructure, Development tools, Metadata management, Collaboration.
- 2) Information Delivery: Reporting, Ad-hoc query, Dashboards, Data integration, Search-based BI, Mobile BI.
- 3) Analysis: Online analytical processing (OLAP), Interactive visualization, Data mining and Predictive modelling, Scorecards (Key Performance Indicators -KPIs, Performance Management Methodology)" (Ali, Nassif & Capretz 2013 cited in Hagerty, Sallam & Richardson 2012).

### **BI Solution has been used in many fields including healthcare:**

Many modern health care organizations have been semi barrier with the weakness of collecting and manelderly information. This can affect their decision-making, as well. This is not a big deal. They also have a serious problem from using the data that has been saved in these “traditional systems” that don’t have relation with each other (Ali, Crvenkovski & Johnson 2016). health care organizations made a solution for this problem by upgrading a new system to record data from patients’ treatments, etc. This data recording system has the ability to save large

amount of data daily. However, this system doesn't give the suitable data to make the right decisions for administration (Sheta, Osama & Eldeen 2013).

One of the decision-making requirements of executives is to analyze health data as quickly and in a timely manner (Sheta, Osama & Eldeen 2013). To be successful in health care organizations field, you must give administrators and workers the ability to use OLTP strategy to take the best decision for business. For perfect decision-making, health information must be collected in dashboards by time (Ali, Crvenkovski & Johnson 2016)

One advantage of using BI in health care organizations, is for example for recording medical history for helping fractured patients. This has helped in reducing treatment time and upgrading the way of surgery. These data have improved the way to health care organizations field working by cubes and data warehouse. In addition, it helped in upgrading treatment of another patients (Ali, Crvenkovski & Johnson 2016). The outcome of using BI strategy in health care organizations field is to merge technical and clinical work to upgrade and auto update system information (Ali, Crvenkovski & Johnson 2016).

## xii. Conclusion

The literature review has covered what is meant by social assistances and the beneficiary groups in the UAE, specifically the emirate of Sharjah with some examples from other countries. Moreover, this chapter identifies the technology that will be applied in this research, along with the experience of its application in the field of health care.



## Chapter 3: Research Methodology

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*This chapter illustrates the methodology used in this research and define the architectures need to apply it. Highlight the research questions and define the work of Social services Departments in the Emirates of Sharjah.*

### xiii. Research Methodology

The Main idea of this research is to facilitate the decision making for the managers by using data-driven approach, which means take the decision based on data analytics.

There are many technology and tools can help to analysis data one of them is Business intelligence approach. This technology transfer storing data from classical data warehouse to enterprise data warehouse, which can create reports, and analysis data. In this research, **Business Intelligence Development Studio with Visual Studio 2014 (SSIS) packages** is used.

The output from analyzing data is difficult to understood by non- IT employees. There many tools can transfer data to powerful digital analytics. In this research, POWER BI is used. Which can visualize results and share with colleagues through different channels like desktop, online and mobiles. It helps to read data instantly, which helps to take fast and accurate decisions.

vi. **Business Intelligence architecture**

The Fig. 1 represents the core of BI is with the proper work process of the interrelated elements as follows

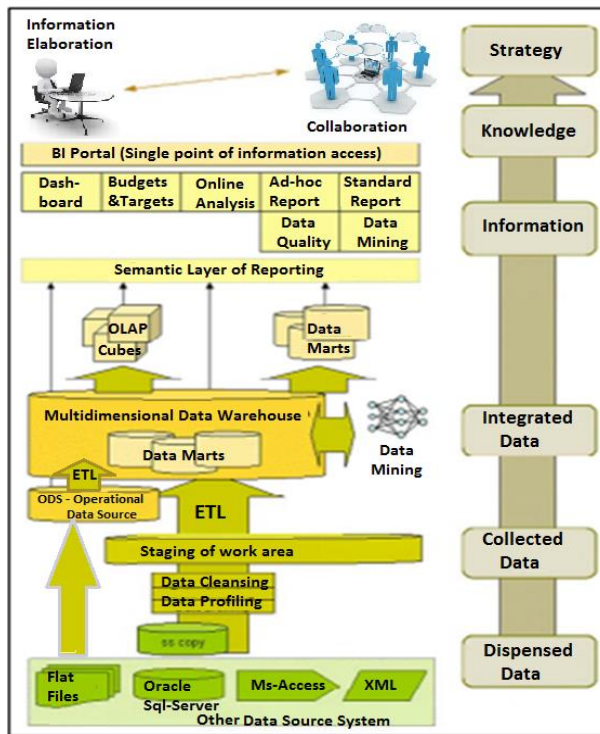


Fig. 1: The main components of BI architecture (Guro 2011, cited in Ali , Nassif & Capretz 2013)

**A. The Multidimensional Data Warehouse**

Data Warehouse (DW) considered as a core of any solid BI solution. DW defined as a “repository for keeping data in a subject oriented, integrated, time variant and non- volatile manner that facilitates decision support” (Inmon 1995; Naddaf , cited in Ali , Nassif & Capretz 2013).

It is a big database in a corporate database to get benefit from needed data to evaluate performance management, decision-making and prediction. The multi-dimensional modeling techniques, which using facts and dimensions within relational or multi- dimensional databases used to design a

corporate database and data marts of the department (Han and Kamber 2006; cited in Ali, Nassif & Capretz 2013).

The design and construction of a data warehouse is very complex because it contains many fields and subfields, which may cause technical issues (Sen and Sinha 2005, cited in Ali, Nassif & Capretz 2013).

#### B. The source systems:

In order to get benefit from BI solution it must feed by source systems which can be internal such as sql database or external like XML , Excel files or other integrated systems. Even it is not a part of BI Environment, but this procedure considered as a basic step to start using BI solution, which should be understood by the developers. This step needs to set-up BI environment to except all data source types in order, which needed in analysis process (Ali , Nassif & Capretz 2013).

#### C. ETL: Extract, transform and load:

**Extraction task** is to export the required data from different data sources and import them in the multi-dimensional data warehouse within BI environment. All these data need transformation and make them match and fit the multi-dimensional model. This procedure called **transformation process**, which may become complex sometimes especially when the data that has transferred need clean up and harmonize because it came from different systems. In this task, the job of BI professionals is to describe Extract, transform and load works as 70% of the IT side of a BI project.

All these data need to be **loaded** in the separate database in data warehouse in area called stelderly area or work area (Ali , Nassif & Capretz 2013).

**D. Online Analytical Processing (OLAP) cubes:**

As (Han and Kamber 2006; cited in Ali, Nassif & Capretz 2013) defined OLAP as "analysis techniques including variety of functionalities such as aggregation, summarization, and consolidation as well as the ability to view information from different angles". OLAP Cubes used in many BI Solutions since it is a powerful technology for what-if analysis, budget and forecast planning (Ali, Nassif & Capretz 2013).

The cube generally designed for creating and viewing reports (Guru99com, 2019).

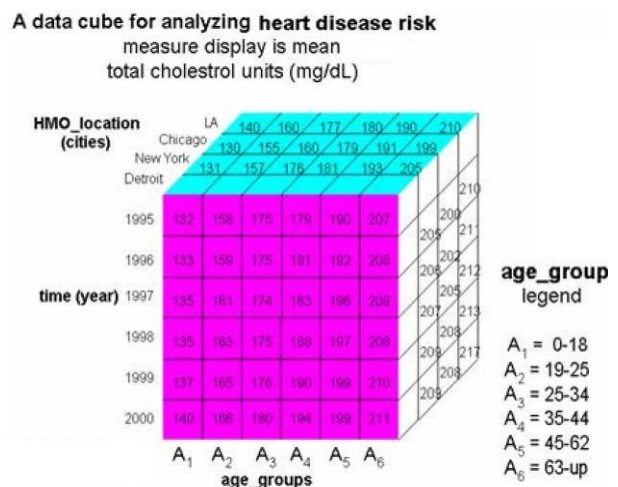


Fig. 2: "A 3-D data cube representation of the data, according to the dimensions time, age groups, and location. The measure displayed is number of patients" (Information technology for students and professionals, cited in Ali , Nassif & Capretz 2013)

**E. Semantic layer for reporting:**

Database is not reporting module and not user-friendly so, vendors try to create layers between database and reporting. One of this layer is semantic layer, which is a tool in BI solution to enable end-users to access data easily.

The database fields can be translated into objects in this layer and each object has a business definition, so the end user will be able to drag and drop these objects onto making reports (Ali , Nassif & Capretz 2013).

#### F. **BI portal:**

BI portal is a single point to access to all reports, because there are different reports and it will grow gradually.

This portal will help to access information within the organization and all related reports that contain description of each report and indicate who the business owner of the report is (Ali , Nassif & Capretz 2013).

#### G. **Data mining:**

Data mining is “**the automated process of discovering previously unknown useful patterns within structured data.**” It is a technique realize the potential of data collected within organization. Data mining technique can applied in data warehouse is a perfect environment to apply data mining technique along with online analytical processing OLAP. Users can use visual data mining form to discover patterns (Ali , Nassif & Capretz 2013).

#### H. **Project Outcomes:**

As described in (Ali , Nassif & Capretz 2013) that the project has several outputs that include the following:

##### 1. **Data warehouse building:**

- Create a solid database warehouse that can accommodate different data sources.
- Set standard technology or resources with organization to integrate system and file systems.

## **2. Data management:**

- Define the current infrastructure of data saving and processing.
- Highlight the current data management in the organization how it has collected, transferred and analyzed.
- Define a standards and process to collect, transfer and analyze data to use it in reporting.
- Recommend infrastructure, tools and processes to improve quality of data and use them to improve decision-making.

## **3. Reporting:**

- Create dashboard for all departments' reports.
- Define needed reports for each or related departments.
- With multi-dimensional data warehouse within BI environment, we can use OLAP cube for reporting purposes.

## **4. Decision-making:**

- Facilitating decision making for different level of users like managers, specialists and etc from different entries for examples report using OLAP cube, prediction cases from data mining technique and define standards and evaluate them using KPI's (Key Performance Indicators).

### **I. Technology used for design implementation:**

- Microsoft SQL Server 2014 R2 Management Studio for Data Mart Building.
- Business Intelligence Development Studio with Visual Studio 2014 (SSIS) packages for Data Transformation (ETL).
- SSRS or MS Excel 2013 or another reporting tools for Reporting.
- Building data mart table

#### xiv. **Research Questions**

In order to investigate the hypothesis of Facilitating Decisions making by using data driven approach in Social service Department of Emirates of Sharjah by applying Business Intelligence technology , the following research questions must to be observe.

**RQ1:** Can the proposed approach improve the performance of the social service decision-making process?

**RQ2:** How can data driven decision making techniques be helpful in social service field?

**RQ3:** Is the integration of BI solutions with information systems facilitates decision-making to accelerate and facilitate the provision of social assistance?

#### xv. **Case Study: Social Services Departments in Emirates of Sharjah**

This case study covers in details the following about Social Services Department : the assistance provided by the Department to the areas of assistance to it, the categories that deserve assistance and what is the objective of the Department in providing social assistance, from which the idea of this research

As defined in (Sssdshjae, 2019) It is a local governmental establishment in Sharjah since August 1984. Since then, it became a part of the Sharjah governmental social services side in 1995. Its main role is to offer monthly humanitarian services for those who deserve. Its main work is to protect the rights of poor people and those who miss social interest. It also provides house interest and protect poor services. The vision of the circle is to have a society enjoying welfare, security, family stability and social enclosure.

It is known that the Emirate of Sharjah is a vast emirate characterized by geographical diversity, as the population is located in the heart of the emirate of Sharjah and its outskirts. In addition to the city of Sharjah, which is a vital city, it has universities, government institutions and institutions that led to the diversity of population, as well. It includes many nationalities enjoying higher educational levels rather than the following areas:

**1. Abu Musa Island:**

**2. Hamriyah Region:** It is considered one of the most important ports in the Emirate of Sharjah, with a free zone containing a large number of factories.

**3. The Central Region, which includes: (Al-Dhaid city, Madam area, Maliha area)** characterized by its desert nature, palm farms and archaeological sites. Its people are characterized by simplicity and the average educational level.

**4. Al-Battaih District:** Al-Battaih is located 40 km away from the center of Sharjah. It is a vital link between the center and the rest of the central regions. In a more accurate description, it can be said that the area of Al-Batih is located in the central region of the Emirate of Sharjah.

Al-Battaih area has many farms and livestock, and enjoys a good plant cover. In agriculture, the area has an opportunity and suitable space for palm growing. A lively and populated area, as well as being a focal point for visitors and a station for entertainment and recreation (Alkhaleejae, 2019).

**5. The Eastern Region, which includes the cities of Khor Fakkan, Dibba Al-Hasn and Kalba.** They are coastal cities overlooking the coast of the Gulf of Oman and whose people have been interested in the sea since ancient times.

Note that some of these areas are on the outskirts of the city, since it is known that these areas do not contain the facilities found in the city and the majority of the population is not highly educated. The Department was interested in providing social assistance, health and education. (Shen & Tanui 2012 , cited in Hsu 2010) state that future studies show that the later rural elder life was relatively



low and tough in different ways. Some rural elderly had poor health conditions especially old people. In 2002, the Chinese government began to set up a new medical service system to address the problem of poverty. Social services on elderly had fallen far behind the needs of rural elderly society. Thus, governments and local communities should be home based caring services in rural areas and encourage more social organizations and individuals to share in.

The biggest challenge is that more than 70% of elderly population in China lives in countryside, due to increasing life expectancy and declining fertility rate , the reason may also be massive rural to urban migration of young , leaving elders in village. The remaining elders make large proportion than young people (Shen & Tanui 2012 , cited in Kaneda 2006).

Rural elders have lower incomes and high poverty rate than urban (Shen & Tanui 2012 , cited in Glasgow and Brown 1998). For example, for elderly people in rural China, they have material living standard which is low and basic (Cui 2006).

Large population of rural in china has a high probability of diseases and disability because of low physical mechanism (Shen & Tanui 2012 , cited in Li 2010). Many cases may lead to disability. For example, chronic arthritis may lead to motor disability and therefore older people are unable to move. Understanding the cause of disability may help to clarify the appropriate health intervention to improve the condition (Al-Shaali & Al Jaziri 2015 ,cited in Gavrilov & Heuveline 2003; Pérès et al. 2005; Mahfouz & AwadAllah 2007)

The Department provides the needed assistance to these people despite the diversity of geographical location of these areas. Therefore, the population also has diversity in their living and educational levels, through the following branches:

### **1. Headquarters**

### **2. Elderly home**

### **3. Social welfare center for children**

**4. Department for the Protection of Children's Rights**

**5. Oases of adults**

**6. Home care management**

**7. Center for the Protection of Women**

**8. Dar Al-Aman**

**9. Al-Hamriyah Branch**

**10. Al-Dhaid Branch**

**11. Madame branch**

**12. Al-Battaih Branch**

**13. Malihah branch**

**14. Kalba branch**

**15. Khorfakkan branch**

Visiting the headquarters in Sharjah and a meeting was held by:

Name	Job title
Kholoud Ahmed Al Nuaimi	Director of Social Licenses - Acting Director of Corporate Performance.
Alia Obaid Al Zaabi	Director of Social Assistance Department.
Ahmed El Sayed Ibrahim	Computer Engineer
Mariam Ali Marzouki	Head of Social Studies Department
Hessa Ali Ibrahim Ali	Performance Evaluator

During this meeting, many topics were discussed such as; the services provided by the department to the beneficiaries, the objectives of the department to improve the quality of these services, and the challenges they face.

- **Benefited Scales for the Social Aids in Sharjah:**

No.	The Scales
1	Income less ( without income )
2	Financial inability
3	Limited income
4	Retirement
5	Unemployment ( workless )
6	Divorce
7	Widow
8	Orphanage
9	Being unmarried
10	Marrying by non-Emiratis
11	Abundance
12	Heath inability
13	Handicapped people
14	Oldness
15	Prisoner's family
16	Local guarantees

**Table 2: Benefited Scales**

As the Department is concerned with the provision of social benefits and assistance to citizens of the Emirate of Sharjah.

Provision of social benefits and assistance to Sharjah citizens residing in the other emirates. It is also concerned with assisting women married to UAE citizens from the Emirate of Sharjah, in the case of the death of her husband or being eligible for social assistance under the law.

- **Social Services Department's objective.**

One of the Department's objectives is to accelerate the provision of cash social assistance to the beneficiary, especially for the following three categories:

1. Widows	- Widows whose income is equal or less than the supposed income of the ministry of Social Affairs.  - The foreign widow until proves her marriage.
2. Handicapping	- Handicapped person who has needs and depending on others.
3. elderly	- A person over 65 years.

**Table 3: accelerate the provision of cash social assistance to this categories**

Due to the sensitivity of such cases and the UAE's orientation, the matter is based on the provision of rapid social support to these groups, especially the last three mentioned.

**xvi. Data Collection**

Data is grouped in the following ways:

1. A meeting was held with the Director and staff of the Department of Social Assistance to understand the mechanism of assistance.
2. A meeting was held with the Strategic Planning Department to review the strategic objectives of the Department in the field of social assistance.
3. A meeting was held with the Information Technology Management Officer and an inquiry about the programs used to receive and store the beneficiary data.
4. Emails and phones.

- We have been provided with data for the three priority groups (12272 records) in the provision of social assistance for 2018
  - Elderly
  - Widows
  - Disabled
- Data describe each case including:
  - Place of residence.
  - Social, health, educational status.
  - Age categories.
  - Type of assistance provided by law.
  - Citizenship and non-citizenship category.

## xvii. Summary

In this chapter, the researcher have explained the methodology of this research and the needed architecture to apply. The research questions to improve hypothesis In addition, a case study about the Social Services Departments in the Emirate of Sharjah plus techniques of collecting data that need analyzed.

## Chapter 4: Analyzing and Discussion

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*This chapter will discuss the findings of the research by analyzing the proposed case study. Show the process of applying proposed methodology and illustrate outputs. Finally proof hypothesis by answering research questions.*

## xviii. Case Study Analysis

The Department of Social Assistance is the department concerned in studying the application submitted and ensuring eligibility.

As mentioned in (Sssdshjae, 2019) Social Aid Administration provides help and back up for people monthly who worth since 1984 such as; widows , disabled people, orphaned elders and income less, handicapped and etc. as law states in the emirate. It doesn't provide money only but it also helps the affected people with shelter, clothes, food, services, etc. Its functions include:

**Conducting social studies:**

Conducting social studies of the applying cases for social assistance and social conditions, and providing the specialized opinion and recommendations thereon.

**Case Management:**

Ensuring the provision of support and social assistance to beneficiaries in various categories such as widows, orphans, the elderly, the uneducated, the disabled and others in accordance with the regulations issued by the Executive Council in the Emirate. Providing social rehabilitation services to those affected by relief and emergency and urgent intervention by providing temporary accommodation, clothing, foodstuffs, coordinating services and subsidies with the competent authorities. In addition, there is coordination to the access to health insurance for treatment in the university hospital for beneficiaries of social benefits.

• **Steps to provide cash social assistance:**

Work mechanism adopted in requesting the social aid from the administration of social services in Sharjah:

At Present (Now):

1. To welcome the benefited person and prescribe in an application form (Prescribing for an aid request) through customers' service.

## طلب جديد

<input type="text"/>	الاسم *		
<input type="text"/>	الهاتف المحمول 1 *		
<input type="text" value="058"/>	الهاتف المحمول 2		
<input type="text" value="....."/>	هاتف المنزل		
<input type="text" value="....."/>	<input type="text" value="....."/>	<input type="text" value="....."/>	العنوان *
<input type="text"/>	رقم البلدة	<input type="text"/>	رقم الأسرة
<input type="text"/>	الراتب الشهري	<input type="text"/>	عدد المعالين *
<input type="text"/>	راتب الشؤون	<input type="text"/>	راتب التقاعد
<input type="text"/>	عدد الرخص	<input type="text"/>	الجمعيات الخيرية
ملاحظات الإستقبال			
<input type="text"/>			

**Fig3: Submit a new help request form through customer service**

2. After registering the request in the system, it is sent to the department of Receiving Requests (Informing the benefited about the needed documents).
3. The request arrives to the page of the administration manager to ensure its lawful state, then the request passes in two cases:  
(\* ) If the request is lawful (the lawfulness of the request depends on the **law of the Executive Council no, 3 for the year 2018** related to the system of spending reliefs and social aids in Sharjah.  
- The Administrative Manager states the lawfulness and transfers the request to the appointments' page to state an appointment for a visit to the benefited in his/her house.  
(\* ) If the request is unlawful:

- Informing the benefited of closing the request because it is not lawful with two possibilities:-

a. to re-introduce the request again.

b. to make a study case to the request from the committee.

4. After stating an appointment, the benefited will be informed of the field visit with the necessity of preparing all the needed documents.

5. After the field visit, (a detailed study about the case fed into the system)

Government Of Sharjah  
Social Services Department



حكومة الشارقة  
دائرة الخدمات الاجتماعية

### التقرير الاجتماعي

من	الى	رقم الملف
البيانات الأولية		

#### بيانات شخصية

		الإسم
		تاريخ الميلاد
		الجنسية
		رقم الهوية
		رقم الجواز
		خلاصة القيد
		العنوان
		الحالة العملية
		الحالة الاجتماعية


#### الهواتف

ملاحظات	رقم الهاتف	الاسم



**Figure 4: The interface of the program that is used to study the status of the beneficiary of social viewing**

Government Of Sharjah  
Social Services Department



حكومة الشارقة  
دائرة الخدمات الاجتماعية

**التقرير الإجتماعي**

**المعلومات والحقائق**

**الجانب الإجتماعي**  
لا يوجد بيانات للجانب الإجتماعي مسجلة لدى المستفيد

**المسكن**  
لا يوجد بيانات للمسكن مسجلة لدى المستفيد

**الجانب الإقتصادي**

**الدخل**  
لا يوجد دخل لدى للمستفيد

**الديون**  
لا يوجد ديون لدى للمستفيد

**الأموال**  
لا يوجد أموال لدى للمستفيد

**الرخص التجارية**  
لا يوجد رخص تجارية لدى المستفيد

**الجانب التعليمي**  
لا يوجد بيانات للجانب التعليمي مسجلة لدى المستفيد

**الجانب الصحي**  
لا يوجد بيانات للجانب الصحي مسجلة لدى المستفيد

**الجانب النفسي**  
لا يوجد بيانات للجانب الصحي مسجلة لدى المستفيد

**جانب الإستقلالية**  
لا يوجد بيانات للجانب الصحي مسجلة لدى المستفيد

**التشخيص للمشكلات و العوامل المؤدية لها**

**Figure 5: The interface of the program that is used to study the status of the beneficiary of social viewing**



## التقرير الإجتماعي

لا يوجد مشاكل مسجلة للملف

تحديث البيانات

لا يوجد تحديث بيانات مسجلة للملف

قائمة الخدمات والمساعدات المقدمة للحالة

خدمات المساعدات

لا يوجد خدمات مسجلة للملف

خدمات إدارة الحالة

لا يوجد خدمات مسجلة للملف

المساعدات التي يتلقاها من الدائرة

لا يوجد مساعدات مالية شهرية مسجلة للملف

**Figure 6: The interface of the program that is used to study the status of the beneficiary of social viewing**

6. Revising the case from the Department Chief, then from the Administration Manager.

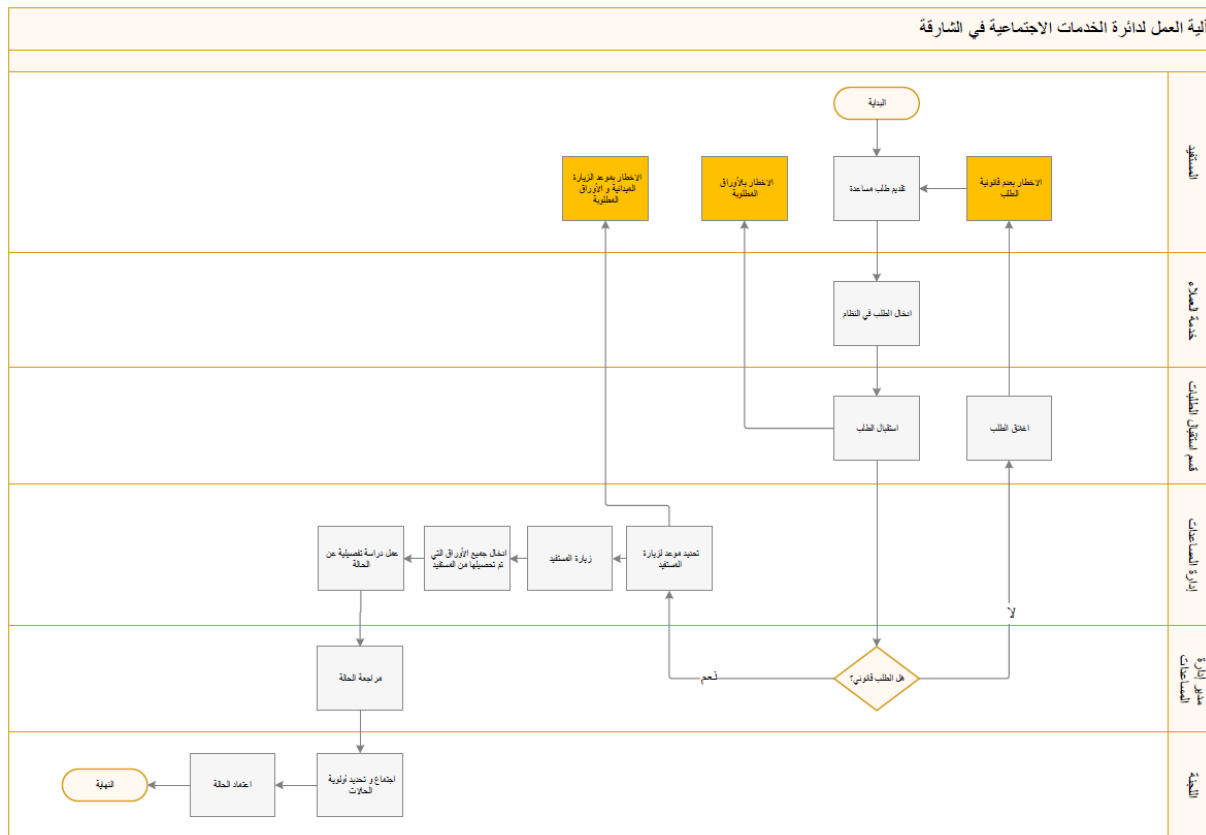
7. Revising the requests and stating the requests of priority:

- Oldness

- Widows

- Handicapped (in case of having a handicapped card from the Social Affairs with getting an aid).

8. Later, asking for a request for a committee meeting (the meeting happens once or twice a month. Requests sent to the members for studying before the meeting).



**Figure 7: illustrate the current workflow for providing social assistance**

- **Studying the steps of application and challenges:**

The steps of applying and highlighting the internal and external challenges that would delay the adoption of financial social assistance, including challenges before and after submission of the application, were discussed:

Process	Name of process	Description	Challenges that may cause delays in providing assistance
Before submitting an application	Application Channels	<p>Assistance is requested by:</p> <p>Customer Service: A service that is available at the branch or branch office where the beneficiary is required to be in person to apply for assistance. The customer service employee receives and assists him in entering his basic data and sends the request to the assistance department for review and validation.</p>	<ul style="list-style-type: none"> <li>•Lack of sufficient staff in customer service.</li> <li>•The extent to which a customer service employee is aware of the terms of the application. If the service provider is not familiar with the terms of submission, it may lead to delaying the application.</li> <li>•The effectiveness of the application form and whether it contains sufficient data or not.</li> <li>•Difficulty in providing transportation to the applicant since he or she may be old or disabled.</li> <li>•The applicant's educational level, since it is possible to provide incomplete information about his or her condition.</li> </ul>
after submitting an application	Delay in completing required papers	<p>Required documents: Documents are extracted from several parties according to the situation to measure the level of per capita income or proof of the situation. , If the income of the individual is inadequate, financial assistance is provided to him according to the law</p>	<ul style="list-style-type: none"> <li>• Linking these documents to entities within the Emirate of Sharjah and federal destinations, noting that these papers take time to be prepared.</li> <li>•The beneficiary may have difficulty in extracting these papers because, as a child, he or</li> </ul>

		<p>to provide a decent life for him.</p> <p>Example of required papers:</p> <ul style="list-style-type: none"> <li>•Valid passport</li> <li>•Valid identity</li> <li>•Nationality-for citizens</li> <li>•A new medical report not less than 6 months old</li> <li>•A copy of health card</li> <li>• A personal Photo</li> <li>•A retirement certificate</li> <li>•Proof of non-marriage</li> <li>•Proof of children's study</li> </ul>	<p>she may need his or her children, or need witnesses such as a widow to prove that she is not married.</p> <ul style="list-style-type: none"> <li>•Difficulty in transportation and geographical distance</li> <li>•Lack of an electronic link with these entities.</li> </ul>
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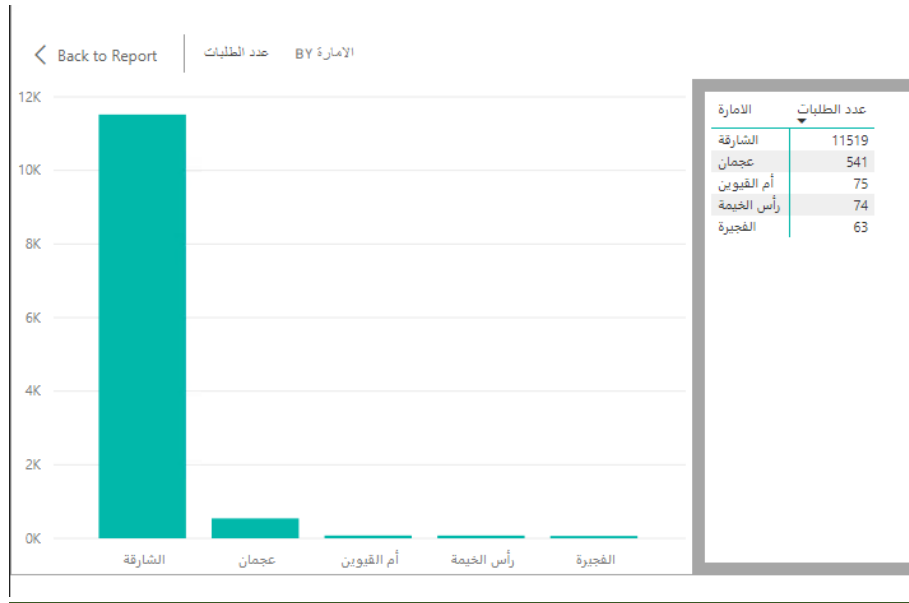
**Table 3: Challenges that may cause delays in providing assistance**

- The application of social assistance through customer service includes many challenges, from both the department and the beneficiary, which in turn delay the provision of assistance.
- After reviewing the request by the Department of Aid and its legality, the applicant is contacted to complete the remaining required papers, as some papers are linked to entities within the Emirate of Sharjah and federal destinations.

xix. Statistics:

After reviewing the data provided by the Department, the following statistics were found:

**1- Number of requests for cash assistance in each emirate.**



**Figure8: shows the number of requests for cash assistance in each emirate**

## 2- Number of requests for cash assistance per case.

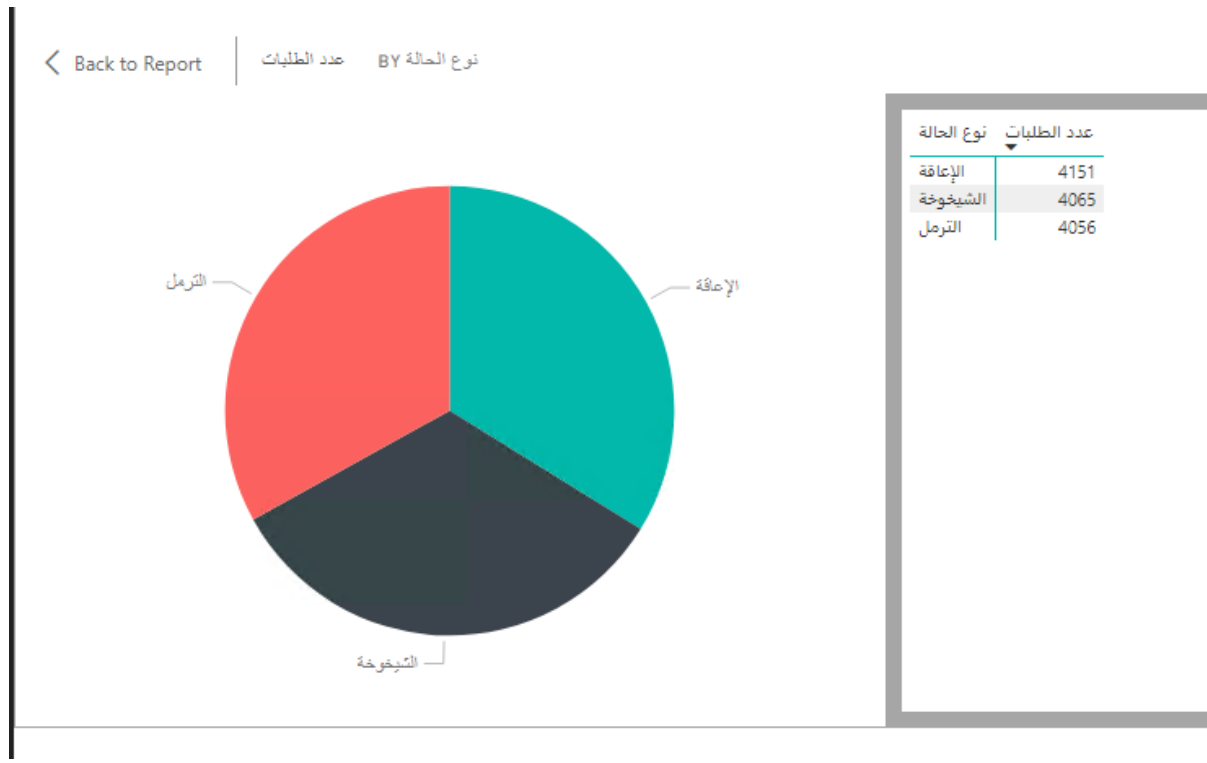
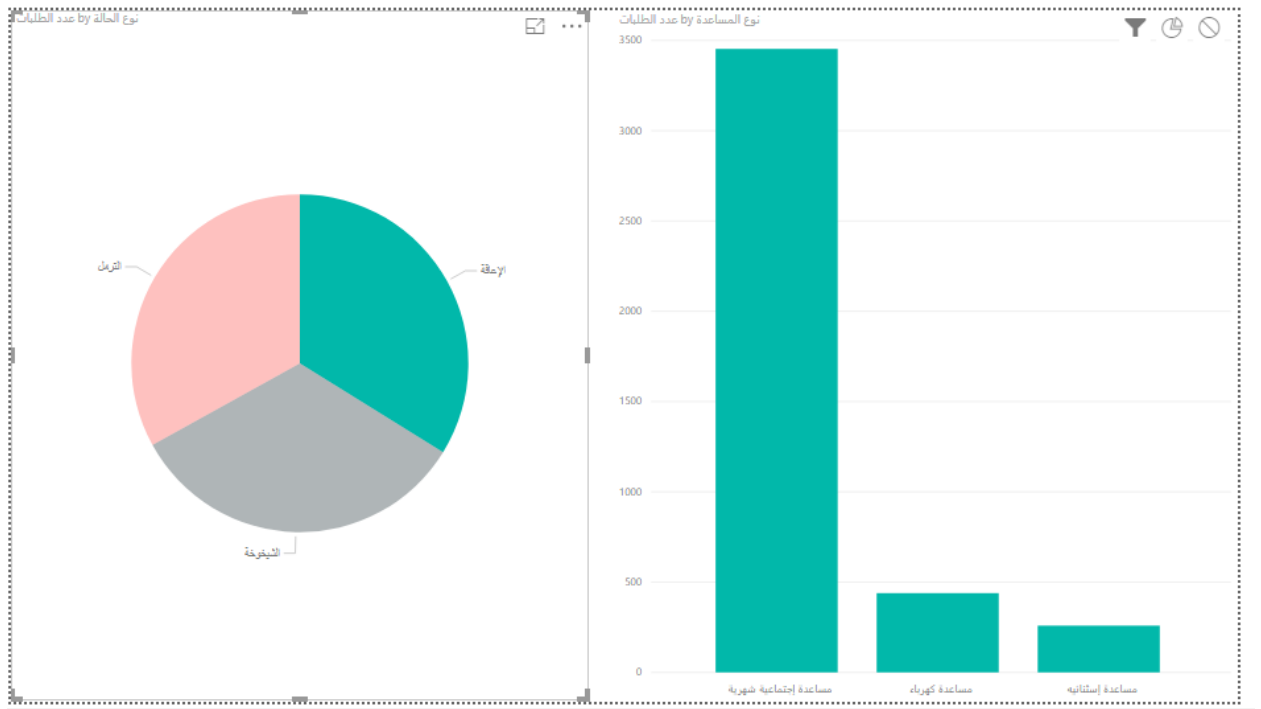


Figure9: shows the Number of requests for cash assistance per case

## 3- Types of assistance provided for each case.



**Figure 10:** shows the types of assistance provided for each case



#### 4- Categories of citizenship and non-citizenship status.

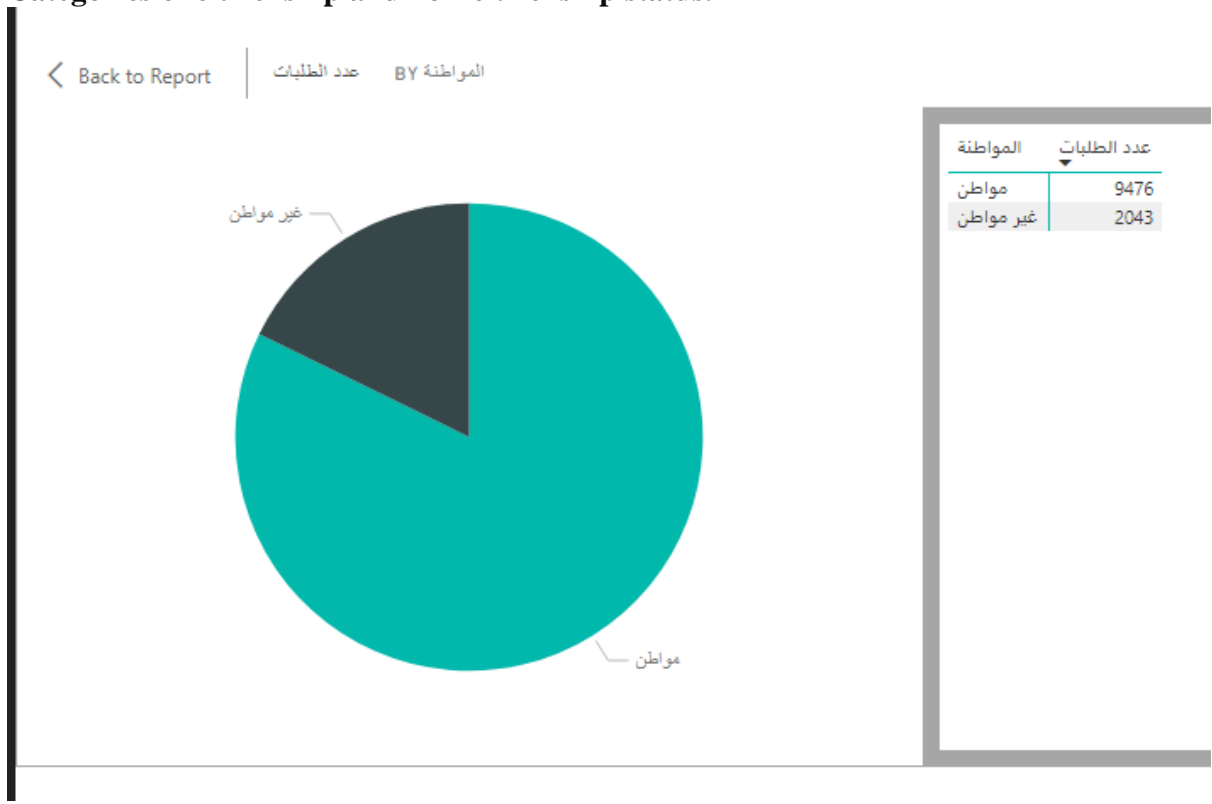


Figure 11: shows the categories of citizenship and non-citizenship status

xx. Applying BI Solution technique in social service Department's data:

The study and understanding of the data provided by the department, were also analyzed on the basis of the data that have been updated from the data collection,

- **Steps to apply business intelligence to the existing data:**

As BI solution, we need the BI developer to apply the following development life cycle phases:

- 1) Design the data warehouse using SQL Server Management Studio, In particular, design the tables (dimensions and fact) that are needed as a part of the DW as shown in the Fig:

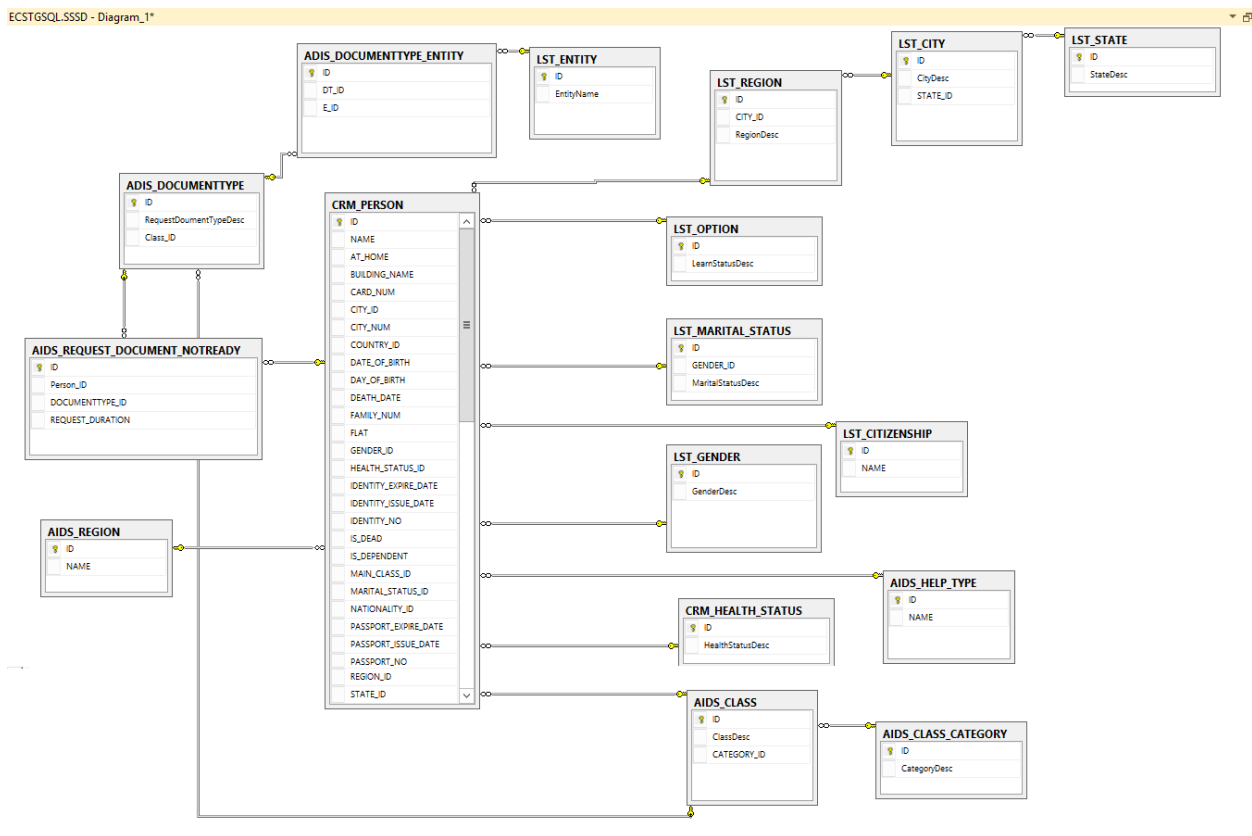


Figure 12: shows the SSSD Diagram

- 2) Design ETL process to pull the required data and populate tables from The Social service department in Sharjah, which is Oracle data source, then push it to SQL database by using SQL stored procedures and populate the multi-dimensional data warehouse within BI environment.

After extraction, the data need to be transformed to make the data match and fit the multi-dimensional model. After that, load these data in stelderly database to check and clean it up.

When the data is ready, it will be moved to the production database. Finally, start working on it.

- 3) Design Analysis Service project by using visual studio 2014

SSAS as follows:

- **Create Data Source.**

-Make a connection on the SQL database engine to choose the required database.

- **Create Data Source View**

Choose the tables that will be used in the cube.

- **Create associated dimensions.**

Choose the dimensional tables for the cube.

- **Create multi-dimensional cube.**

Choose the facts or measures' tables for the cube

**4) Apply step #3 to the application channels challenge:**

All applications submitted through customer service were listed and sorted by region. Types of cases provided include their educational level, as well.

[Statistics.mp4](#)

- This video will show all steps in #3 applied for channels challenge.

**5) Apply step #3 to the -Delay in completing the required papers:**

A table has been added to the database that contains the documents' names and a table containing the entity responsible for extracting it, where the document type is linked to the status type.

It is possible for cases to share the quality of basic documents such as passport, identity, etc. However, they may differ in the type of case. For example, a widow requires a marriage certificate extracted from the court.

Accordingly, the required and delayed documents were listed according to each case as shown in the following video:

[RequiredDocs.avi](#)

**xxi. Results after applying Business Solution:**

Traditional charts can provide limited view of data and it's not fit to all applications. The results of steps extracted from the points #4.3 are easily readable by programmers or those with experience in dealing with the database.

To visualize the results in such a way that the employee or the decision maker, whatever his specialty, can read them, has been used **power BI**.

**What is Power BI?**

As declared in (Techtarget.com, 2019) it is a Microsoft product considered as a Business intelligence that helps in organizing, aggregating and providing data to end users. Programs such as Excel and another Microsoft office programs provide an easy path for data sharing and categorizing for all people (slightly trained). In addition, it helps to make decisions that convert data into plans that have been shared to co-workers. It also helps in reviewing data in one monitor and share the dashboards, reports, etc..... . It also helps in measuring plans through company (Microsoft.com, 2019)

**The parts of Power BI**

(Maggiesmsft, 2019) shows that Power BI has many apps on desktop called (Power BI Desktop). An online service is also provided for power BI called ( Power BI service ). It is also provided for mobile such as android ( Power BI mobile ) . The three compartments help people work according to their style. It is very effective and economic.

How can people use Power BI in work or business? How might people use power BI in another way? It can be for designers, end users, developers, and authority.

- **The result of using power BI in:**

- 1. Challenge the application channels:**

[Statistics PBI.avi](#)

It is through this video that the decision maker can see the number of applications made by the customer service and what are the most areas where they are submitted in this way, in addition to the proportion of each case and their educational level, and accordingly can take the following actions:

- Identify the most kind of cases who use customer service, and find the best methods to provide service to them more easily and faster.
- Develop a mechanism to raise awareness of the use of the website according to the educational level of the region,
- Ensure that the customer service employee is aware of the type of cases and papers required to prove the situation.

- 2. Challenge the application channels:**

[RequiredDocs PBI.avi](#)

From this video, the decision-maker will explain what the required and delayed papers are, and what the authority is to extract them. Since he can:

- Find the most required type of papers that cause delay in providing assistance.
- Find a mechanism to expedite the extraction of these papers either through electronic linkage or through agreement with this body to find the best mechanisms to accelerate the extraction.
- Know the categories that require these papers; for example if the most required papers belong to the elderly, it is possible to find a mechanism to extract these papers through the same circle instead of the elderly.
- Develop a performance indicator. For example, if the submission of the required papers is delayed.

xxii. Suggested workflow for requesting the social aid

Based on these findings, it was proposed to add some steps that would improve the current work process to speed up the receipt of social assistance:

(\*) The Best Suggestion:

The Expression	The meaning
A Condition Covering Request	The basic requirements for the request as; ID, Family Registration Card, and number of sponsors, etc.
A Case Covering Request	Covering all papers of the case such as; death certificate, handicapping, etc.

1. Welcoming the benefited to register in an application (Registering for an aid request).  
There are two ways for applying the request:
  - Customers' service
  - Online or smartphone application
  
2. While applying the suggested request of aid through visiting the website of the establishment, it contains these following necessary fields:
  - Name
  - A copy of the ID
  - The case type as; (A widow, oldness, or handicapping)
  - A telephone number for contacting
  - An e-mail (not obligatory)
  - Others, if necessary
  
3. The suggested request of aid through visiting the electronic website or the smartphone application is divided into two sections:
  - (A) The general department containing these fields:
    - Name
    - A copy of the ID
    - The Registration card(book)
    - Retirement salary
  
  - (B) The case department according to the chosen case type:

(\*) The case type, e.g. if the case is a widow, these fields will appear:

- The husband's death certificate
- Information about other sponsored people as; a brother or a son
- Etc.,

(\*) Case Type: e.g. if handicapped is chosen, some information will appear:

- A certificate of the handicapping case
- Etc.,

4. Informing the benefited to deliver the needed papers through SMS or the e-mail according to the case, (the benefited can deliver these documents by hand or by uploading them on the link).

(\*) A suggestion of electronic linking with all related sectors that may introduce any kind of help as; the economic, social administrations, charity organizations and Ministry of Social Affairs, etc.

5. After registering the request in the system, it is sent to the department of receiving the requests.
6. To ensure if the request was applied before or not.
7. If the reply is (yes), it is a must to make sure of the reason of refusal. Is there a change on the case?
8. If the request is new, it must be reviewed and making sure of all documents and uploading all the needed documents.
9. The request is not sent to the administration manager unless it has all the conditions of the case.
10. The request arrives to the page of the manager of the aid administration to ensure the validity of the case conditions. The request passes with three cases:

(\*) If the request was validated for all conditions, full of the case and lawful (The lawfulness of the request depends on the law of the Executive Council no., 3 for the year 2018 related to the system of spending the reliefs and aids in Sharjah.

- It is suggested to spend the aid for them without any need to the field visit (Cases of widows, oldness and handicapped have the priority of specification).

(\*) If the request is valid for all conditions, but not complete and lawful:

- The administration manager states its lawfulness and transforms it to the appointments' page to state an appointment to visit the benefited in his house.

- After stating an appointment, the benefited is informed of the field visit.

- After the field visit, a detailed study about the case is downloaded.

- A suggestion of filling the data at once.

- Revising the case from the head department, then the administration manager.

(\* ) A suggestion of admitting these cases from the administration manager because issuing a law states this. Therefore, a quick decision should be taken within the system.

(\* ) If the request is valid for all conditions, but not lawful:

- Informing the benefited that the request is not valid and is closed.

# Re-evaluation

# A call from the committee to study the request again.

11. A suggestion of a meeting for the committee of the exceptional cases to take a decision with the help of the system.

(@) Notice:

- A suggestion of unifying the request number with the case number. This means only one number for the request from the very beginning.
- All the similar requests gathered for the signature of the administration manager.

### xxiii. Research Questions' Analysis

After analysis data and applying the proposed solution, the following questions were answered based on the outcomes:

**RQ1:** Is the proposed approach will improve the performance of the social service decision-making process?

The proposed approach is a highlight of the latest technology in the field of utilization of data. It is very clear that data has a significant role in the analysis of the current situation of institutions and predicts their future. In addition, they help to facilitate decision-making rapidly and accurately because these decisions must be based on facts and figures and not on the whims of human beings

This approach also explained that the decision-making process could be made on all positions and on the latest mobile devices or computers. Also, when making a decision, the data is instantaneous, accurate and easy to read, as well as the traditional way in which reports are submitted and may have been printed or sent for some time.



**RQ2:** Is data driven decision making techniques will be helpful in social service Department?

Data driven decision-making is the path for business success through:

- Decisions based on data begins with all-important strategies. This facilitates the process of focus the attention of the researcher and help in the business. **The department's determine that facilitate and accelerate the delivery of social services of the most important goals.**
- Determine the highly valued of information for decision-making. **(during data analysis, the researcher notice that some duplicated fields or some fields are not useful )**
- Determine the quality of inserted data whether it is valuable or not. **( through data analysis, the researcher add new fields )**
- Involve administrative staff in decision making to provide accurate and accurate data. **( through proposing customized and shared dashboard )**
- Improve process, saving time. **( through analysis current workflow, proposed analytic methodology can use it easily )**

**RQ3:** Is the integration of BI solutions with the current information systems will accelerate and facilitate the provision of social assistance?

Moving structure of the data from classical data warehouse to enterprise data warehouse, which led to deal with one data source. The data analysis can conducted when the data in enterprise data warehouse. In addition, this technique can apply it on the top of current systems no need to change it, since most of the Governmental institutions has developer, servers and applications.

This technique saving time and cost, the developer can receive the needed information for decision makers and translated to digital form by analyze data and produce visualize reports for the managers. Data analyst can do these procedures but it may be cost and limited to specific process.

BI solutions has many has many properties that can be used like data mining technique and key performance indicator (KPI).

## Chapter 5: Conclusion and Recommendations

### xxiv. Conclusion

In conclusion, Entering and storing the data is not an end in itself, but it is used to anticipate the future and taking the right and proper decision through analyzing it using many technologies. The normal way of getting data from the administration of technology, which takes a very long time to be sent to the decision maker, may be very old due to the quickness of the entered data. Moreover, it is possible to be provided in a way, the decision maker could not read it, so it needs an analysis firm which may cost a lot and does not suit all the objectives.

In this research, illustrate that the data-driven decision-making approach is important for assessing the status of the institution as well as looking for the future, finding suitable opportunities and anticipating the challenges ahead. In addition, assess the quality of the current data used does it have value or whether they lead to the existence of big data. In order to analyze this data, Business intelligence solution was proposed because the privilege of this program is the possibility of being used in all governmental institutions to get the benefit. The appearance of data in this way allows the decision maker whatever his rank is, to read it. This data is momentous and very accurate to help the decision maker takes the decision quickly.

The results shows that data-driven decision-making shade lights of the important goal for the department which is Facilitate and accelerate social assistance, as well as analyze current progress in providing social assistance and consider challenges and constraints in their delivery. The data provided was analyzed and the inputs were useful and not useful. As well as suggesting new fields to input and a new workflow.

Also shows the importance of applying Business intelligence Solution in the Departments by Clarify the importance of transmission data storing from classical data warehouse to enterprise data warehouse to unified source of data in order to analyze it. In this research, the data were analyzed and used to clarify some of the obstacles to accelerating the delivery of social assistance such as demand delivery channels and delayed delivery of required papers.

In addition, shows that these analysis data can be read by all responsible staff through Power BI Microsoft tools, which can offer for them to customize results and share it in order to ease and speed up decision making. Since these data is Instantaneous and accurate.

## **xxv. Recommendations**

This research does not use all the found specifications because of the main purpose and data provided. These two kinds of technology cannot be applied on types of the provided data. Due to two kinds of technology to achieve other objectives in the governmental institutions. In addition, we can use it for the present and used program and data without any need to modify the program.

## **xxvi. Challenges**

I wished my graduation research to be valuable and beneficial, so I have chosen the Social Services Department in the emirate of Sharjah. That is because it gets direct interest from the ruler of Sharjah and its effective social role in studying the cases of UAE citizens in Sharjah to rise their living, healthy and social standards after meeting the responsible authorities regarding this topic. Therefore, the main target of this research is how to accelerate providing these social assistances for the beneficiaries especially the three categories; elderly, widows and disabled. This main target needs me first, to understand the current steps, analyzing them and finding the challenges, which may hinder the process of providing these assistances. Regarding this process, and based on the data I collected in my research, I found a great challenge in getting the suitable technology for application. Moreover, the search for the best technology and the most modern to deal with such data was a very great challenge, as well.

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