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Effectiveness of the Smart Government in Abu Dhabi Municipality: A Study of the Customers' Opinion

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EFFECTIVENESS OF THE SMART GOVERNMENT IN ABU DHABI MUNICIPALITY: A STUDY OF THE CUSTOMERS' OPINION

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Under the Supervision of Dr. Sami Hasan

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Declaration of Original Work

I, Hajar Saeed Alafreet Alkuwaiti, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled "*Effectiveness of the Smart Government in Abu Dhabi Municipality: A Study of the Customers' Opinion*", hereby, solemnly declare that this thesis is my own original research work that has been done and prepared by me under the supervision of Dr. Sami Hasan in the College of Humanities and Social Sciences at UAEU. This work has not previously been presented or published or formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this thesis.

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Abstract

Smart government has become a new way of delivering services to the public that not only is efficient and quicker, but is also useful and convenient for the customers availing those services. By adopting advanced technologies government nowadays are transforming public services and offering enhanced experience to the customers. However, since these services are based on new technologies, people are often apprehensive of using them because of privacy security and other concerns and that creates challenges for smart government implementation. The current research that aims to understand if Abu Dhabi Municipality's smart government initiatives are meeting customer service expectations and leading to customer satisfaction. While mainstream research studies focused on understanding the overall country governments and their initiatives towards smart government, they did not clearly explore how the municipal level governments are working towards such agenda. It is crucial to understand their smart service effectiveness and they establish a closer link with the customers providing numerous services that meet their daily requirements. This is the rationale of undertaking this given research.

To accomplish the given aim, the present study selects the Abu Dhabi Municipality and the way they are working to meet the public demand and contributing to the country's smart government goal. The study explores the initiatives that the Abu Dhabi Municipality has undertaken to enhance customer service and assess the factors that impact customer satisfaction with the Government's services. The main objective of the research is to analyze the effectiveness of Abu Dhabi Municipality's E-government services in securing trust and confidence of its users, maintaining privacy and security of the E-government users, making the E-government easy to use, and accessing the required resources and information to the public to avail the Municipality's E-government services. Thus, the four parameters as identified in this given research are privacy security, performance expectancy, accessibility, and public trust and confidence. These parameters of assessing service effectiveness were derived from review of past research works done by the authors and were incorporated in this study to assess service effectiveness.

The research adopted a mixed-method research methodology and combined survey and semi-structured interview to collect quantitative and qualitative data respectively. In order to understand the effectiveness of these online services, the study surveys 154 users of these e-services. The questionnaire primarily assessed the four above-mentioned parameters by seeking customers' response of a five-point Likert scale. Furthermore, the researcher conducted two interviews. The data were analyzed and the findings revealed that majority of the customers conceive the services of the municipality as effective. All the parameters had high mean score that demonstrated service effectiveness. However, it was found that majority of the customers are from young age group and thus indicated lack of reach of smart services to the municipality to all the customers. The findings also revealed some major initiatives by the municipality to improve service effectiveness like offering Supportive services, requesting customer feedback, collaborating with services development department, and leveraging social media channels to build awareness of the municipality's smart government services.

Keywords: Customer service, customer satisfaction, Abu Dhabi municipality, smart government, E-government, service effectiveness.

Title and Abstract (in Arabic)

فاعلية الحكومة الذكية في بلدية أبوظبي: دراسة لرأي العملاء

الملخص

باتت الحكومة الذكية الوسيلة الجديدة لتقديم الخدمات للجمهور، حيث ان هذه الوسيلة ليست فقط فعاله وسريعة، انما مفيدة ومريحة للعملاء الذين يستخدمون هذه الخدمات. من خلال اعتماد التقنيات المتقدمة والتطبيقات الذكية، قامت الحكومة في الوقت الحالي بتحويل الخدمات العامة وتقديم تجربة مطورة للعملاء. نظرا لان هذه الخدمات تستند على التقنيات الحديثة، غالبا ما يتردد الناس في استخدامها بسبب مخاوف من تسريب معلوماتهم الخاصة ومخاوف أخرى مما يخلق تحديات أمام تطبيق الحكومة الذكية. ركزت الدراسات والأبحاث السابقة على فهم حكومة الدول بشكل عام ومبادراتها تجاه الحكومة الذكية، إلا أنها لم تبين بوضوح كيف تعمل الحكومة على مستوى البلديات في مثل هذه الأجندة، من المهم فهم فعالية الخدمة الذكية وإنشاء روابط قوية مع العملاء الذين يقدمون العديد من المعاملات التي تلبي متطلباتهم اليومية، هذا هو الأساس والمصدر الرئيسي لإجراء البحث.

لتحقيق الهدف اختارت الدراسة الحالية بلدية أبو ظبي والطريقة التي تعمل بها لتلبية الطلب العام والمساهمة في هدف الدولة لتطبيق الحكومة الذكية، تبحث الدراسة المبادرات التي اتخذتها بلدية أبو ظبي لتعزيز خدمة العملاء وتقييم العوامل التي تؤثر على رضا العملاء عن الخدمات الحكومية. الهدف الرئيسي من البحث هو تحليل فعالية خدمات حكومة أبو ظبي الإلكترونية في ضمان ثقة مستخدميها والحفاظ على خصوصية وأمن المعلومات لمستخدمي الحكومة الإلكترونية، مما يجعل الحكومة الإلكترونية سهلة الاستخدام وتوصيل المعلومات المطلوبة للجمهور للاستفادة من خدمات الحكومة الإلكترونية للبلدية، وبالتالي فإن العوامل الأربع المحددة في هذا البحث هي الامن والخصوصية ومتوسط الأداء وإمكانية الوصول للمعلومات والثقة العامة، تم اشتقاق هذه العوامل لتقييم فعالية الخدمة من مراجعة الأعمال البحثية السابقة التي قام بها المؤلفون وأدرجت في هذه الدراسة لتقييم فعالية الخدمة. اعتمد البحث على منهجية البحث المختلط والدمج بين الاستبيان المقابلات الشخصية الشبه منظمة لجمع البيانات الكمية والنوعية من أجل فهم فعالية هذه الخدمات عبر الإنترنت، استطلعت الدراسة 154 مستخدمًا لهذه الخدمات الإلكترونية.

قام الاستبيان في المقام الأول بتقييم العوامل الأربع المذكورة أعلاه من خلال طلب استجابة العملاء لمقياس ليكرت ذو النقاط الخمس، و تم تحليل البيانات وكشفت النتائج أن غالبية العملاء يعتقدون أن خدمات البلدية فعالة. جميع العوامل اظهرت درجة عالية في حساب المتوسط مما أظهرت فعالية الخدمة ومع ذلك فقد وجد أن غالبية العملاء هم من فئة الشباب، مما يشير إلى عدم وصول الخدمات الذكية التابعة للبلدية لجميع العملاء، كشفت النتائج أيضًا عن بعض المبادرات الرئيسية التي اتخذتها البلدية لتحسين فعالية الخدمة مثل تقديم الخدمات الداعمة وطلب توصيات العملاء والتعاون مع قسم تطوير الخدمات والاستفادة من قنوات وسائل التواصل الاجتماعي لبناء الوعي بالنسبة للخدمات الحكومية الذكية التابعة للبلدية.

مفاهيم البحث الرئيسية: خدمة العملاء، رضا المتعاملين، بلدية ابوظبي، الحكومة الذكية، الحكومة الإلكترونية، فعالية الخدمات.

Acknowledgements

The present research has been an academic effort to understand smart government in Abu Dhabi Municipality and the effectiveness of the services they provide. Throughout this research I gained immense knowledge about considerable knowledge about the concept of smart government, E-government, its benefits, and challenges in its implementation. The successful achievement of the research purpose would not have been possible without my supervisor Dr. Sami Hassan, continuous guidance and support. His useful feedback had been immensely helpful in improvising the research, understanding the critical areas, and addressing the gaps. My supervisor introduced me to academic writing style, referencing methods, and helped me developing critical thinking ability. It was with his continuous guidance and supervision I achieved the research purpose. This thesis considers as a changing point in my life, where it will be a key to many opportunities in my career life.

I would also like to express my thanks to United Arab Emirates University, its committee for their support and guidance from preparation of the research to its completion. My sincere gratitude to Abu Dhabi Municipality for allowing me conducting the research and helping me with the data collection from the respondents. Specifically, my thanks go to the IT employees, Mr. Ahmed AlHammadi and Mr. Omar AlMaamari, who took out time for the interview and offered useful insights on the research topic.

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Dedication

To my beloved country UAE

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List of Abbreviations

ADM	Abu Dhabi Municipality
AI	Artificial Intelligence
HTML	Hypertext Markup Language
ICT	Information and Communications Technology
IT	Information Technology
KPI	Key Performance Indicators
MoHAP	Ministry of Health and Prevention
RSS	Rich Site Summary
SPSS	Statistical Package for the Social Sciences
TRA	Telecommunications Regulatory Authority
UAE	United Arab Emirates
UN	United Nations
US	United States
UTAUT	Unified Theory of Acceptance and Use of Technology

Chapter 1: Introduction

1.1 Background of the research

The deployment of technology for enhancing governments' service delivery has significantly shaped the earlier mode of dealings and exchanges between the government and its service users, the government entities and the business establishments, and also between different government entities (Luna-Reyes, Mellouli, & Zhang, 2014). As noted by Weerakkody and Dhillon (2008) nowadays the online channels and mobile applications are increasingly used by governments to enhance public service delivery. This is clearly transforming the earlier public service management approach by providing the users with better service experience (Fishenden & Thompson, 2013; Misuraca & Viscusi, 2015). For instance, Fishenden and Thompson (2013) reflected that by applying the advanced technologies public services have become most cost-effective, responsive, and customer-centric. These emerging technologies have facilitated the implementation of electronic governance or what is commonly known as e-governance (Norris & Reddick, 2013). It also has benefits like increased efficiency, transparency, accountability, enhanced services, and greater accessibility of government services (Al-Khouri, 2012).

Some governments have also moved from E-government to smart government by using smart technologies, smartphones and tablets (Chung, 2015). For instance, the UAE has adopted smart government initiative as a measure to extend its E-government (Al-Khouri, 2012) and attempted to achieve a good governance that promote people's happiness (Yaghi & Al-Jenaibi, 2018). In the UAE's 2021 vision, smart government is a priority to ensure smart services to the customers, have innovation in the country's public service delivery, and improve the service interface standards (Yaghi & Al-

Jenaibi, 2018). In addition, the digital government maturity model was launched by the UAE Telecommunications Regulatory Authority (TRA) in partnership with Albany State University, USA that measured capability of the government in terms of digital transformation and upholding a sustainable digital government (The United Arab Emirates' Government Portal, 2019a). TRA also developed a national plan for smart government and led transformation of the UAE government. The authority developed a smart government maturity model that assessed the progress and maturity of the country government in its service delivery approach, organizational capability, and strategic impact (TRA, 2015). TRA also developed a level chart that depicted the development from traditional government towards modern smart government depicted in Figure 1.

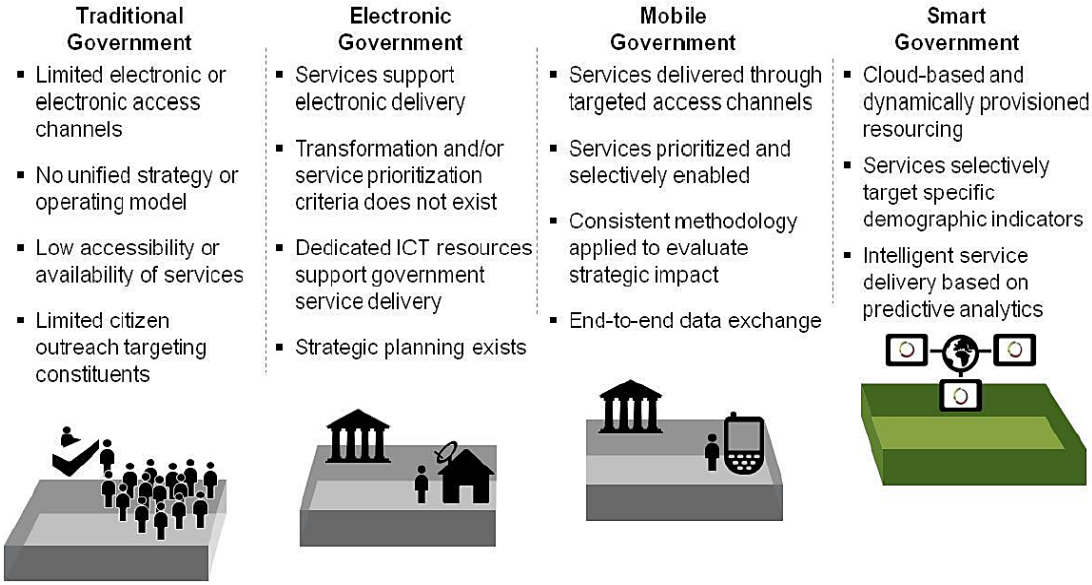

Figure 1: Smart government development levels
(Source: TRA, 2015, p.7)

The smart government agenda at the national level also identified seven priority areas that include smart identity, smart infrastructure, smart data analytics, smart service modernization, governance and policy, engagement and outreach, and human

capital (TRA, 2015). In alignment with this national smart government goal, Dubai Smart Strategy 2021 is adopted with the purpose to transform the city into one of the leading cities of the world by implementing technology and increasing people's happiness (Smart Dubai 2021, 2019). Such efforts demonstrate government's aim towards betterment of customer experience by using new technologies and creating user-centric services that fulfill customers.

While secondary sources of information indicate UAE governments' initiatives to enhance service effectiveness and meet users' needs, it is also important to assess the same from the customers' perspectives. Moreover, there exists limited research on municipal level government like Abu Dhabi Municipality and their efforts to enhance public service delivery. However, Abu Dhabi Government (ADM) has taken several measures towards smart government and improve customers' experience. For instance, the E-government strategy of Abu Dhabi has enabled digital transformation of government services and established performance indicators for creating a smart government (The United Arab Emirates' Government Portal, 2019b). Several public services were digitized, and the Emirate contributes significantly to the overall smart government strategy of the nation. The TAMM portal of Abu Dhabi government is one of the significant example of smart government initiatives that calls for greater collaboration between the governmental agencies and providing an integrated experience to the customers (TAMM, 2020a). This indicates government's customer centricity that is the present study aims to understand. In line with this considerable effort has also been noted in Abu Dhabi Municipality where 46 government services were digitalized with the introduction of Smart Hub platform (Sebugwaawo, 2018). In order to increase accessibility to data it has introduced online portals that list down ADM's various services offered by the municipality and the users are able to search

for information by using filter categories (like individual-level services or organization-level services) (DMT, 2018). Similarly it has also launched e-services portal whereby individuals can look for the required information by using the advanced search functionalities (DMT, 2020).

Thus, the municipality's effort to enhance customers' experience with online services is clear from the effort discussed so far. The given study aims to understand whether customers of ADM perceive the services as useful and effective and whether they meet their purpose and needs. In particular, the study has focused on analyzing four aspects including trust and confidence, privacy and security, accessibility, and performance expectancy of the municipality's smart government services. These dimensions were derived from the extensive review of the existing literature and considered to be significant dimensions for analyzing the perspective and views of the users of the municipality's smart government services. The below section analyzes the core research issue that the study seeks to address in this research.

1.2 Problem statement

Despite several efforts made by the government in implementing technologies to enhance customer service, there are instances where such initiatives have failed due to lack of technological infrastructure, bureaucratic organizational structure, and inadequate strategic thinking (Kalsi & Kiran, 2015; Welch & Pandey, 2007). Earlier a survey conducted by Kim, S. and Kim, D. (2003) among the government officials noted that in South Korea that they witnessed failure in terms of technology implementation, data and knowledge sharing between the government agencies, and access to public data. Such instances indicate the challenges and difficulties towards realization of smart government goals. Furthermore, a study conducted by World Bank

revealed that ICT application in public sector has witnessed either total or partial failure in the developing nations (Neto et al., 2005). Recent research carried out by Gunawong and Gao (2017) in the context of developing countries revealed that various reasons such as setting project goals, ICT readiness, technological design of the system, and other external or internal factors cause failure of the initiatives. Such incidents clearly indicate the criticality of such projects and the difficulty in achieving effectiveness of the smart electronic services offered by the government.

A smart government involves multiple groups of stakeholders with varying expectations and needs that are required to be fulfilled for ensuring service effectiveness of the government electronic services. Among all these stakeholders the citizens or the residents are the regular service users and their satisfaction determines the success of smart government to a great extent (Anwer et al., 2016). Although the existing studies have assessed the concept of smart government and provided a framework for analyzing their effectiveness, the customers' perspective has not been focused much. The present research addresses this gap and aims to understand ADM's smart government services and their effectiveness in meeting customer needs.

The present study focuses on four aspects of smart government that include public confidence and trust (Carter & Bélanger, 2008; Venkatesh et al., 2016), privacy and security (Angelopoulos et al., 2017; Liu & Carter, 2018; Losavio et al., 2018) performance expectancy (Alraja et al., 2016; Jacob et al., 2016), and citizen-centricity (Asmi et al., 2017; Kim & Lee, 2012; Liu & Huang, 2014). For instance, it has often been observed that public is apprehensive of trying and adopting the new e-services provided by the government (Venkatesh et al., 2016). In addition, lack of transparency of such services also reduces c xc c to encourage adoption of these services and

ultimately leads to failure of smart government. Furthermore, privacy and security issues also an area of concern in smart government services. A study conducted by Sarabdeen et al. (2014) in Dubai among 190 users of smart electronic services revealed that customers' perceived privacy and security concerns affect the adoption of these services. The study further noted that customers' perception about ease of service usage (or performance expectancy) also determines effectiveness of governments' smart services (Sarabdeen et al., 2014). Accessibility is also another criteria that indicate effectiveness of smart government services (Baazeem et al., 2017; Kamoun & Almourad, 2014). These dimensions indicate the factors that impact smart government service effectiveness; therefore, such aspects must be considered and remedied to allow the smart government services to be more effective and fulfill the customers' requirements. The study takes a deeper look into these parameters and evaluates the effectiveness of ADM's smart government services from the customers' point of view.

1.3 Rationale of the research

Although existing studies have provided broad-based understanding of the concept of smart government (Al-Obaithani et al., 2018; Anthopoulos & Reddick, 2016; Isaac et al., 2018; Yaghi & Al-Jenaibi, 2017, 2018), they have primarily reflected contexts other than the UAE. However, in recent times the UAE context and its initiatives towards the development of smart government. For instance, Ghazaleh and Ahmad (2018) carried out a study of Ajman's digital government initiatives and noted that the government faced challenges in understanding the quantitative and qualitative dimensions of e-services. (Yaghi & Al-Jenaibi, 2018). In addition it also noted that certain section of people (especially the elderly population) do not

participate in these kinds of services (Ghazaleh & Ahmad, 2018). Although the study highlighted the elements that adversely affect E-government service adoption, they did not explore the customers' perspectives. Similarly, Yaghi and Al-Jenaibi (2017) conducted a survey in public service agencies in the UAE among 1500 respondents and revealed that although the public service entities have a suitable environment in implementing smart government services, there are some challenges like availability of the internet and inadequate legal infrastructure. Furthermore, the authors also conducted a study in 2018 and revealed that smart government policy in the UAE has the ability to increase people's happiness and builds the relationship between public and the government (Yaghi & Al-Jenaibi, 2018). Another study conducted by Al Athmay (2015) also addressed E-government service adoption in the UAE and focused only on two aspects, namely e-openness and e-participation. In addition, it only considered the demographic factors in understanding adoption and did not highlight the aspect of service effectiveness. Furthermore, another significant study is conducted by Al Mansoori et al. (2018) in Abu Dhabi, UAE to identify the factors impacting the adoption of e-services. The authors conducted a survey of 638 citizens and revealed that trust in the internet-mediated services and the associated performance expectancy are the significant determinants that can be considered for understanding the rate of E-government service adoption. The study was based on the UTAUT model and provided significant inputs for this research. However, results may not be considered conclusive as the research is based on a single theoretical model and did not explore other aspects like privacy and security and accessibility. The aim to address such gaps indicates the rationale for carrying out the research. Apart from the above discussed studies, limited attention is given on understanding UAE's smart government services and more so in the municipal level governments like ADM.

Another rationale of carrying out the study is there limited attention has been given on analyzing the municipal level government. However, there has been considerable effort from the municipal governments to become more innovative by implementing E-government services to improve public service delivery (Ingrams et al., 2018). Furthermore, Sandoval-Almazan and Gil-Garcia (2012) observed a closer interaction between the public and the municipalities at every locality and thus the authors stated that technology can have significant applications in transforming the services. Although these studies highlighted the importance of municipal-level smart government they did not clearly explore how the various factors impact adoption of e-services.

The rationale of the present study is derived from its aims to provide a critical perspective on this issue and assess how effectively the Abu Dhabi municipality addresses customers' needs and demands. Since the UAE has formed its vision towards smart government and Abu Dhabi is committed towards contribution to the national agenda, it is important to analyze how it is being implemented at a more small-scale municipality level. To this aim to study assesses the effectiveness of the ADM's smart government services. These services cater to wide-ranging needs of the individuals and constitute the elementary level of interaction between the government and its service users. As an under-researched research context, the study seems practicable.

1.4 Research purpose

1.4.1 Research aim

The study aims to understand Abu Dhabi Municipality's smart government initiatives and analyzes whether these services are meeting customer service needs and

requirements and improving customer satisfaction. In line with the factors related to E-government adoption, analyzed in the literature, the study analyzes the effectiveness of the Abu Dhabi municipality's E-government service effectiveness in meeting customer needs.

1.4.2 Research objectives

The present study focuses on trust and confidence, privacy and security, performance expectancy, and accessibility to the required information in order to avail the Municipality's E-government services. Finally, the research also offers some useful recommendations to enhance the customer satisfaction with the service quality and efficiency of Abu Dhabi's Municipality's smart government services.

The following are the specific objectives addressed in this research.

- To understand whether E-government services provided by ADM can meet the needs and requirement of the public.
- To analyze the effectiveness of ADM's E-government services has been in securing trust and confidence of its users.
- To evaluate customers' views about privacy and security of ADM's smart government services.
- To understand whether public find it easy to use the E-government services of the municipality.
- To analyze the level of access to the required resources and information to the public to avail the Municipality's E-government services.
- To recommend ways to improve Abu Dhabi municipality's E-government services.

1.4.3 Research questions

The core research question that led to the development of the research study is: How effective has been the ADM's online services in implementing smart government in Abu Dhabi? This research question can be further divided into sub-questions.

- Are the E-government services provided by ADM able to meet the needs and requirements of the public?
- How effective the ADM's E-government services have been in securing trust and confidence of its users?
- What is the customers' opinion about the privacy and security of E-government services provided by ADM?
- What is the opinion of the customers regarding the ease of the smart service usage?
- How accessible are the required resources and information to the public to avail the municipality's E-government services?
- How can the municipality improve the E-government services?

1.5 Significance of the research

As an under-researched research context, the study aims to generate significant findings in terms of analyzing the smart services of ADM. It assesses the effectiveness ADM's smart services how these services satisfy the needs of the customers. In particular terms, the study generates quantitative results that reflect customers' level of trust and confidence in the municipality's smart government services and the level of privacy and security of the municipality's e-services. Furthermore, quantitative findings also indicate the level of accessibility and performance expectancy

actualization of these services. In addition, the research also generates some qualitative insights into the measures taken by ADM to enhance smart government services as well as the challenges. Finally, the study is significant given the useful recommendations that it outlines for improving ADM's public service delivery to its customers and increasing their level of satisfaction. The study generates new knowledge into the current situation of smart government services of the municipality and indicates the ways to strengthen the smart government initiatives of the municipality.

1.6 Structure of the thesis

Introduction: The chapter provided a brief background of the research along with the initiatives adopted by the UAE government. It also analyzes the context of Abu Dhabi government and the municipality's smart government initiatives. The core research issue has been discussed to indicate the relevance of the study. Furthermore, the rationale and significance of the research have been outlined along with the study aim, objectives, and research questions. Finally, the chapter also highlighted the structure of the dissertation.

Literature review: This chapter critically analyzes the existing literature on smart government, its concepts, and benefits. It also analyzed the significance of an effective smart government and the factors that affect E-government service adoption. The discussion outlines the factors included in the current analysis and analyzes their significance. Finally, it also draws out some features of effective smart government and indicated their application in the chosen context of research.

Smart government initiatives of Abu Dhabi: It provides a broad overview of the Abu Dhabi government's smart government initiatives. The discussion starts with a broader perspective and analyzed the UAE government's various initiatives in terms of technology implementation. Gradually the discussion leads to Abu Dhabi Emirate and focuses on the municipality. It discusses several initiatives adopted by the municipality and indicated their effectiveness in meeting customer requirements.

Research methodology: This section provides an understanding of the methodological position of the researcher. While discussing each of the methodological aspects of the study rationale of selection of a particular approach has been outlined. The discussion centers on key aspects of the research like its design, process and techniques of data gathering, sampling, and other ethical concerns of the study.

Data analysis and findings: Following the methodological analysis, this chapter brings out the results of the study. By analyzing both the survey and interview results gathered from the study sample the researcher carried out a comprehensive analysis to find answers to the research questions. The findings have also been discussed with the relevant literature to strengthen the research outcome.

Conclusion: Finally, this chapter reiterates the results reflecting on the aim and the way they are met. It highlights the research implications in both practical and theoretical terms, indicates the limitations, and discusses areas for conducting further research.

Chapter 2: Literature Review

2.1 Introduction

The present research began with the aim of evaluating Abu Dhabi Municipality's (ADM) E-government service effectiveness from the views and opinions of the users or the customers. The underlying purpose is to assess the extent to which the smart government services provided by ADM meets the needs of the customers. To this aim, the researcher carried out a critical analysis of the extant literature and attempted to arrive at a theoretical and conceptual understanding of the concept of E-government and smart government along with its distinction between the concepts. The chapter also discusses the benefits of smart government and the way it meets the requirement of the customers' needs and requirements. In addition, the discussion also reviews the challenges in its implementation to understand the criteria that determine smart government service effectiveness. Following this, the discussion draws out certain features of an effective smart government. The work also provides an insight into the frameworks and models for evaluating E-government services and indicated their relevance in the given research.

2.2 E-government and smart government

Although E-government and smart government are used interchangeably, the concepts have a subtle distinction. This section aims at understanding a conceptual distinction between the two. Drawing from the existing literature, the section attempted to define the core concepts that the study entails and rationalizes the focus of the study.

In the field of public service administration E-government and smart government have become the most widely discussed areas (Rana et al., 2017) and significant aspects of governance and public service administration (Morgeson et al., 2010). E-government, as defined by various authors, refers to government service delivery and information sharing to the citizens and residents by utilizing digital tools based on the medium of internet (Joseph, 2013; Rana et al., 2017; Yaghi & Al-Jenaibi, 2018). Combining the idea of (Adam, 2020; Güler et al., 2019) E-government can be understood as seamless interaction and communication with the business establishments, citizens, or the residents by the government through the medium of ICT for undertaking business or exchanges. Therefore, the primary purpose of E-government services is to provide the public with convenience of access to such electronic services and information as well as enable them to search for such information and services without the restriction of any geographical boundaries (Schaupp & Carter, 2010). In other words, it can be understood as a public policy that focuses on the dimension of public happiness by utilizing ICT (Yaghi & Al-Jenaibi, 2017, 2018). Venkatesh et al. (2012), in addition, reflected on the informational and transactional aspect of E-government. The former refers to the provision of government information and communication through internet services and the latter refers to the two-way exchange and transaction process between government its peoples, businesses, and amongst the government entities.

The conception of E-government is also interchangeably used with the smart government. However, they have a thin line of demarcation. As explained by Yaghi and Al-Jenaibi (2018) smart government goes way beyond E-government. It is not merely the application of ICT to make services accessible but also relates to the services that are available around the clock. It uses technology to help the customers

finish transactions and business with the government from start to end. Smart government as a social and citizen-centric service delivery system that increases the participation of the civil society who play an active role in co-creating government by using various technologies and tools (Al-Obaithani et al., 2018). In this regard, Aldama-Nalda and Gil-Garcia (2013) provided a comprehensive definition of smart government and stated that it is a creative blend of various new technologies that help in fostering public sector innovation. To put it differently, it is a continuous effort that is supported by advanced technologies like big data, social networks, HTML, RSS, web designs, and many more (Anthopoulos & Reddick, 2016). Often smart government is understood as smart cities, however, Aldama-Nalda and Gil-Garcia (2013) stated that the latter is only a subset of the former and refers to the government practices for innovation for enhancing efficiency and effectiveness in service delivery with greater participation from the citizens.

The idea proposed by Isaac et al. (2018) is relevant for the context of the UAE. As stated by the authors, it is through the extension of the efforts of E-government, countries can transform them into smart government. By leveraging on the advanced technologies, government across the world are focusing on building collaboration with the citizen to make their services quicker, affordable as well as sustainable (Howard, 2013). Thus, following Luna-Reyes et al. (2014) and Webster and Leleux (2018) at the core of the notion of smart governance lies the idea of citizens' engagement and participation as well as smart cities. Therefore, E-government can be leveraged to create a smart government and can serve for citizen experience enhancement. While the creation of services by applying technology is important, the government must also take initiatives to engage the citizens in the newly formulated service streams (Harsh & Ichalkaranje, 2015). In the UAE, the government has a keen focus on transforming

itself into a smart government. His Highness Sheikh Mohammed bin Rashid laid the foundation for smart government in the UAE and defined it as a government that is active all the time, has an efficient service delivery system, is adaptive, inventive, and serves to improve life and living of the citizens (UAE Cabinet, 2019). The cabinet further noted that the aim is not to replace E-government but rather to act as an extension of the same. This clearly indicates the government's commitment to smart governance by leveraging advanced technological systems. Thus, the present research focuses on smart government and analyzes its effectiveness in meeting customer requirements.

The section provides a conceptual clarity of the core concepts that the research entails and highlights the distinction among them. The given study focuses on smart government concept and understanding how the municipal governments are contributing towards the national smart government goal in the UAE. Although the existing research studies provide an understanding of the concepts, they are mostly derived from western societies and are not particularly relevant for the UAE. Moreover, the municipal governments' smart government initiatives and their effectiveness is fulfilling customers' requirements are not clearly addressed by the previous researchers. To this end, the study selected ADM as the case and assessed the smart service effectiveness of the municipality. Next section sheds light on some of the benefits of a smart government system.

2.3 Benefits of smart government

The section highlights smart government benefits and the way it can effectively meet customers' needs. The analysis indicates certain parameters or features of smart

government that relates to its effectiveness and ability to offer enhanced public service to the customers by the application of technologies.

There are a number of benefits of smart government. Rana et al. (2017) stated that smart government can have significant benefits for the stakeholders. For instance, it can significantly reduce corruption and make public services more transparent, accountable, and easily accessible. This can also reduce administrative burden, making government services more cost-effective (Rana et al., 2017). It can also lead to consolidation of smart government services and emphasize the importance of considering customers' needs by the government (Isaac et al., 2018; Luna-Reyes et al., 2014), and fulfillment of such needs (Al-Jenaibi, 2016; Anwer et al., 2016).

Venkatesh et al. (2016) and David et al. (2018) commented that transparency is another benefit of smart government. However, there perceived lack of transparency among the customers also cause a reduction in smart service adoption among the customers. Furthermore, Rodríguez-Hoyos et al. (2018) also highlighted the phenomena of digital hyper-transparency in E-government services that refer to access to a large amount of information by the public. This indicates the improper implementation of transparency in government services. Despite the contrary arguments, transparency is regarded as smart government benefits as it can capture the depth of the information provided (David et al., 2018). However, caution must be adopted to promote transparency since the smart government interacts with the citizens through technology and replaces direct communication (McIvor et al., 2002). This further asserts the importance of transparency that influences public view about the general functioning of the government (Chun et al., 2012).

Various authors pointed out that smart government facilitates citizens' collaboration and participation in the government services (Al-Obaithani et al., 2018; Luna-Reyes et al., 2014; McDermott, 2010; Ntulo & Otike, 2013). These authors observed that smart services from the government provide the citizens and businesses with opportunities to participate that can be beneficial for both parties. Smart governments are more transparent in their way of operation (Luna-Reyes et al., 2014). The authors noted that since the citizens are the active participants in the E-government processes and make significant contributions, it facilitates joint decision-making that in turn, promotes transparency. Kurniawan and Vries (2015) who studied local government revealed that by employing ICT in public services, governments can increase functional efficiency, enhance participation, and become more transparent as well as responsive by disclosing information. Such participation is clearly evident from the UAE government as it has provided several rooms for customers' collaboration in the government process and offer suggestion. For instance, according to TRA (2015), UAE ranked sixth globally in terms of e-participation as per WASEDA report (WASEDA, 2018). As per the report the federal government channels have created e-participation channels like surveys, chats, polls, and used various social media platforms to communicate with the public. Such efforts help the public to express their ideas and opinions and also provide feedback about government services (WASEDA, 2018). Thus, such participation and active communication between the government and the public can also be regarded as one of the benefits of smart government.

According to Sigwejo and Pather (2016), smart governments need to concentrate more on understanding citizens' requirements for developing those kinds of e-services that effectively and efficiently meet their needs. Therefore, it captures the citizens' perspectives and understands their challenges to successfully address them through E-

government services. However, Zikmund (2003) stated that it is difficult to encourage participation from the citizens who might show reluctance and apprehension about the new changes. Therefore, although technology has certain challenges it can also effectively bridge the gap between government and fellow citizens and make way for inclusion in the decision making leading to better service delivery.

Thus, smart government can reduce corruption, make public services more transparent, trustworthy, and easily accessible. It can also reduce administrative burden and cost while facilitating joint decision-making, citizens' collaboration in the government services. However, from the literature analysis, customers' need fulfillment can be regarded as the most significant factor that determines the smart service effectiveness. In order to be effective smart government needs to make public service more accessible, trustworthy, and attempts to understand public needs. Such as ease of use of smart government services and increased trust can foster its adoption. Since the study aims to analyze service effectiveness, it is important to first understand the concept of effectiveness and how it relates to the context of smart government services along with the criteria that determine their usefulness. The next section deals with this aspect.

2.4 Effectiveness of smart government and its features

The section evaluates the effectiveness of smart services of ADM and outlines some of the important features that denote the usefulness of such services. It aims at discussing the features of smart government that indicate its effectiveness. This will create a contextual basis for conducting further analysis in this chapter. Effectiveness is a broad term and is often understood as the degree to which a particular thing is able to generate the anticipated or desired result. It may be in terms of cost-effectiveness,

in terms of enhanced service delivery, in terms of time, and/or speed (Sigwejo & Pather, 2016). Smart government effectiveness is understood as a governments' ability to deliver value to the service users (Sigwejo & Pather, 2016).

Jiménez et al. (2016) stated that a smart government is an open government. In other words, it is an intelligent government that is characterized by collaboration, participation, and transparency. As noted by Luna-Reyes et al. (2014) smart government encourages citizen engagement in various government decision-making by applying technology. This sort of engagement is the founding principle and feature of smart government or open government that serves to improve the government's effectiveness and efficiency as well as their quality of decisions (McDermott, 2010).

Venkatesh et al. (2016) pointed out the uncertainty in smart government and attempted to develop a model to reduce such uncertainty and promote acceptance of e-services. The model provides some information on quality characteristics that include accuracy and completeness as well as channel characteristics that include convenience and customization (Venkatesh et al., 2016). These can be considered as the features of an effective E-government. Wixom and Todd (2005) stated that accuracy is a fundamental determinant for information quality. This refers to the perception of the citizens about information correctness provided by the government. Since the smart government, does not involve direct face-to-face interaction with the customers, it is important to ensure information accuracy (Meuter et al., 2005).

Thus, an effective E-government or smart government can be characterized by accuracy, accessibility, transparency, and collaboration. By assessing the dimensions of accessibility of smart government services and required resources, the study attempted to analyze if the users get the required information for availing online

services of ADM, the user-friendliness of the municipality's portal, precision of the information. In terms of information quality, completeness, and comprehensiveness are another parameter of smart government (Tarhini et al., 2017). Service effectiveness This implies if the government provides the customers with all the necessary information or services that are required to fulfill a specific purpose (Venkatesh et al., 2016). For instance, if the citizens visit the government websites and can find all the information related to tax policies, it can be considered as information completeness (Venkatesh et al., 2016). Such aspects are addressed in the survey questionnaire to the users of ADM smart services in terms of accessibility.

In addition to this, convenience is another major feature of smart government. Convenience is conceptualized from the users' point of view and their perception regarding the time and effort required for using a government e-services (Berry et al., 2002). Put it in the words of Venkatesh et al. (2016), convenience implies omnipresent accessibility and services on demand. Along with this the authors also introduced the concept of personalization and stated that if the system is able to deliver services and information as per the preference of the individual customers then such convenience adds to the service effectiveness. Karim (2015) stated when the citizens spend minimum time and effort to use the websites or the services, they can be called as convenient and user-friendly. The present research has assessed this dimension by using the performance expectancy dimension. By collecting primary data, it was determined whether customers can perform online transactions with ease, save money, time, effort, and fulfill their requirements.

Finally, personalization is another aspect that determines performance expectancy. Venkatesh et al. (2016) stated that personalization can capture the unique

identity of the citizens and provide them with relevant information. In the context of smart government, such personalization helps in improving efficiency in using a variety of services and minimizes the requirement to reenter the required personal details for multiple times. This is also similar to the empowered citizens' concept as highlighted by Bannister and Connolly (2011). The authors noted that an effective smart government enables citizens to search and gain access to the required information and services as per their convenience. This aspect is addressed by assessing the accessibility of smart government services. The more personalized the services are the more they will be easily accessible to the users and more enhanced will be their satisfaction. Such a dimension also indicates effectiveness of smart services.

Thus, it can thus be concluded that a transparent, collaborative, participative system of government that is founded on a strong IT system constitutes a smart government. In order to be efficient, it needs to ensure that it provides the citizens with accurate and complete information and service at their convenience with suitable personalization. Furthermore, the government should encourage the citizens and the residents to collaborate and participate in the E-government process. From this analysis, it is evident that certain parameters or criteria are required to be met in order to ensure the e-service effectiveness of the government to its citizens.

Although there had been discussion around smart government, there the features of an effective smart government are not clearly outlined. However, in the UAE, His Highness Sheikh Mohammed bin Rashid highlighted some of the significant features of smart government that include 24/7 service, hospitable, procedural stringency, adaptive, innovative, and improves citizens' quality of life (UAE Cabinet, 2019).

Following the analyses of the existing authors, the researcher in this study has focused on certain criteria to study the effectiveness of the Abu Dhabi government's smart government services. It primarily has focused on the parameters like public trust and confidence, safety and security of E-government services, performance expectancy, and access to E-government services. These parameters were incorporated in the survey design and questions were asked addressing each of them that helped the researcher understand the effectiveness of the smart government services provided by ADM.

2.5 Factors affecting effectiveness of smart government

The section outlines the factors that affect the smart government service efficiency and usefulness and indicates the areas that need to be addressed for increasing the effectiveness of smart government services to its customers. While drawing on a number of factors impacting service effectiveness, the researcher focuses the discussion on the chosen parameters where limited research was done. Although there are benefits of smart government, there also exist certain the government in its desired transformation. Often it has been observed that concerns over privacy and security of the new and advanced technologies hinder customers towards their adoption. This also creates issues of trust and confidence.

Smart government initiatives are aimed to increase governments' overall performance level improving service quality provided to the citizens through technology deployment and encouraging participation (Almarabeh & AbuAli, 2010). However, studies have also shown challenges in adopting such services (Gauld et al., 2010; Nkohkwo & Islam, 2013; Rana et al., 2017; Thong et al., 2012). The below discussion highlights some major challenges associated with the adoption of smart

services provided by the government. The discussion also emphasizes on the primary factors that are the main focus of the study.

2.5.1 Privacy and security

Past researches have also identified a lack of privacy and security as the cause of decreasing adoption of e-services offered by the government (Angelopoulos et al., 2017; Elisa et al., 2019; Liu & Carter, 2018; Mutimukwe et al., 2017). These authors argued that information privacy concern prevents users to espouse E-government services. For instance, Liu and Carter (2018) noted that US public service agencies and government entities are increasingly faced with cyber-attacks that threaten information privacy. Incidence of security breaches, information leakage, and threats to confidentiality raise privacy concerns among individuals. These have a considerable negative influence on the trust of the customers on these electronic services offered by the government (Liu & Carter, 2018). Furthermore, the existing frameworks for privacy engineering, models, and platforms do not provide an understanding of the privacy issues from organizational or business processes (Angelopoulos et al., 2017) and they also fail to integrate such analysis with public trust and understand how trust is affected by such privacy concerns that in turn hinders the acceptance of E-government services (Abu-Shanab, 2014). However, such challenges can be dealt with by educating government officials about the significance of privacy and security, designing robust applications with greater privacy protection, and restricting access to personal information databases (Almarabeh & AbuAli, 2010). Following this analysis, privacy and security were incorporated in this research as a significant factor determining service effectiveness, and the researcher attempted to analyze citizen's perspectives and opinions about the same about ADM’s smart Government services.

2.5.2 Performance expectancy

Performance expectancy, as understood by (Jacob et al., 2016), refers to the ease of execution of the transactions by using governments' electronic services. In other words, it denotes how effective the e-services in carrying out online transactions without errors. It also includes the availability of the information required to use such online services. (Alraja et al., 2016) noted that if the public views such services as easy to use and effectively meeting their requirements, chances of their adoption will be more. (Ahmad et al., 2013) stated that often public perceive new electronic services as complicated and difficult to use that affects their perceived performance expectancy of these services. In this regard, (Kurfalı et al., 2017) who conducted a study in Turkey noted that if the customers perceive the services of the government as useful and help them to successfully achieve their purpose, the degree of adoption of the services will be higher. Thus, the higher the performance expectancy dimension is the greater is the perceived service effectiveness. Therefore, performance expectancy has been chosen as the crucial point for analysis in this study as it analyzes service effectiveness from the customers' perspective. In the survey, the participants were asked about whether ADM's e-services meet their purpose and how user-friendly they are.

2.5.3 Accessibility

According to Paul and Das (2019) accessibility measures whether the users can access and understand the website and get the required information for fulfillment of their purpose. It depends on the navigability of the web page, its appearance (such as choice of colors), layout design that impacts readability and quality of the governments' website. Various researchers have pointed out the importance of accessibility of smart government services by the public (Bannister & Connolly, 2011;

Carter & Bélanger, 2008; Schaupp & Carter, 2010). These authors noted that customers need to have easy access to electronic services. Put it differently, the users must obtain the required help for using electronic services and gain access to the necessary resources for availing those services. For instance, Denmark who ranked the highest in the UN E-government survey index provides their citizens with offline support for using electronic services (UN, 2018). Since customers want the services to be readily available, this dimension has also been taken under the consideration of the study. The survey aimed at understanding whether the service users of ADM get the required information and resources to fulfil their service needs.

2.5.4 Public confidence and trust

Venkatesh et al. (2016) and Abu-Shanab (2014) commented that public trust can significantly reduce citizens' ambiguity and doubts E-government services. The authors argued that uncertainty stems from the ambiguity relating to the functional value a given technology can deliver. Such uncertainties can form a barrier that affects the ability of the user to realize the value of innovative technologies (Rindova & Petkova, 2007). Following this, Venkatesh et al. (2016) argued that smart government is an emergent field that has deals with application of innovative technologies. Thus, people are not aware completely that creates uncertainty in using these services. This creates the issue of transparency it is also regarded as a crucial concern that impacts trust (Bannister & Connolly, 2011). The authors also pointed out three kinds of transparency concerns related to E-government that include data, process, and policy or decision. The authors argued that governments must pay particular attention to promoting transparency to increase electronic service adoption and enhance trust with

the services. However, promoting e-transparency is challenging due to limited technical knowledge and inadequate IT infrastructure (Cappelli et al., 2017).

Thus, Tolbert and Mossberger (2006) stated that trust in smart government services is an important consideration as it has a positive impact on service implementation and its adoption. Carter and Bélanger (2008) noted that confidence in smart e-services is reducing considerably due to the lack of security on online transactions. The authors noted that citizens are apprehensive of submitting information online due to the impersonal nature of digital technologies and the internet system. This has its obvious implications for the public sector firms to encourage citizens to adopt e-services. However, Mizrahi and Vigoda-Gadot (2009) stated that trust can, however, be improved by encouraging the customers to participate and provide their suggestions in the government's decision processes.

Following this discussion, trust and confidence have been considered as an aspect of this research. In the absence of trust and confidence, the customers will not be willing to try new smart government services. Thus, while increasing privacy and security, the government also needs to assess the level of confidence the public has on such services that to a large extent determines the success and effectiveness of smart government. The present study, therefore, attempted to understand the level of trust of the customers regarding E-government services of the ADM. It also captured the opinions of the respondents regarding the transparency of the services and how it affects its implementation.

2.5.5 Citizen-centricity and participation

Finally, Kim and Lee (2012) pointed out the necessity for citizens' participation or engagement in government services. Citizen-centricity underlies the smart government services (Asmi et al., 2017; Liu & Huang, 2014). Jaeger and Bertot (2012) stated that it determines the success of smart government services. According to these authors, governments must pay specific attention to users' needs and requirements and design e-services to address them effectively. Understanding citizen's needs and their expectations from the online services is key to enhance their effectiveness (Heeks & Bailur, 2007). An engaged citizen and their involvement in the decision-making translates into an effective smart government. It denotes that the government is able to promote participation from the citizens. This dimension is also outlined in the UN E-government survey. However, this dimension has not been considered in this present study since, UAE already has a strong focus n e-participation and ranked sixth all across the globe (TRA, 2015). Since this already exists in the smart government infrastructure of the government and significant advancement has been achieved by the UAE government, this aspect has not been considered further in this research.

Therefore, from the discussion, it can be concluded that privacy security, performance expectancy, resource accessibility, and public confidence and trust have significant influence that determines the effectiveness and effectiveness of the electronic services of the governments. If there lie gaps in addressing any of these parameters, the services cannot be considered as effective and indicate further necessary improvements. The present study has chosen the most significant dimensions for evaluating the effectiveness of ADM's smart government services and aims to assess whether the public conceives the municipality's services as effective

and is keen to adopt them for fulfilling their needs. Although e-participation was a useful dimension, it has not been considered in this research as it already exists in the UAE government and there is proven evidence of the efforts made along this dimension. In the e-participation dimension the country ranked sixth globally as per the WASEDA Report and also reported a high e-participation index on the UN E-government survey (UN, 2018). Moreover, several government entities like the Ministry of Economy, MoHAP, including the TAMM portal of Abu Dhabi has an option for e-participation. It is because of this reason further analysis has not been carried out to explore this dimension of e-participation. Thus, the research primarily focused on the other parameters discussed above where limited evidence were available about governments' efforts.

Although existing studies have provided a broad analysis of the barriers regarding smart government service adoption and implementation, they are not clearly explored in the context of the municipal level government. Moreover, these studies have not attempted to evaluate the challenges typically faced by the citizens or the users of these electronic services, such as resource accessibility. The current research, therefore, sought to understand the ADM's smart government services and their effectiveness through the lens of the customers or the users.

2.6 Chapter summary

The discussion carried out in this chapter provided detailed insight into the concept of smart government, its difference with E-government, and its benefits. It drew out some of the significant challenges in implementation and how those can be addressed. By drawing out the perspective of the existing authors, it provided a useful analysis of the framework for E-government service evaluation and highlighted the

research gaps. It has been understood that smart government services have significant benefits for users. It can provide them ease of use, save time in terms of travelling to the municipality to avail services, and provide transparency. However, the adoption of such services is hindered because of the lack of trust and confidence over such new technologies. Moreover, the performance expectancy and access to such services are also the determining criteria that affect adoption of services in order to increase the willingness among the public regarding the use of online services, these need to be effective and adequately meet customers' demands. The present research takes a deeper look at these dimensions and assesses the usefulness and effectiveness of the Abu Dhabi municipality's smart government services. Based on this critical discourse carried out in this chapter, the next section attempts to provide an assessment of the Abu Dhabi Municipality's website, its services, and indicate its effectiveness in meeting customers' requirements.

Chapter 3: Smart Government Initiatives of Abu Dhabi

3.1 Introduction

The present chapter is an attempt to analyze the various digital and E-government services of the Abu Dhabi government. The analysis begins with the various smart initiatives of the UAE government and the electronic services provided to the citizens. The purpose here was to provide the reader with a clear understanding of the country's initiative towards smart government and the way such strategies translate into the municipal level government. The discussion also entails a detailed discussion of the ADM portal and its e-services provided to the customers to analyze if they can effectively meet the requirement of the customers.

3.2 UAE government and its smart government initiatives

In order to understand ADM, its role, and its services, at first it is important to focus on the overall country initiatives towards the smart government. This helps in establishing a contextual underpinning and facilitate better analysis of the services provided at the municipal level. To this aim, the present chapter provides a brief introduction to the UAE government's smart government initiatives, gradually drawing its focus towards the Abu Dhabi government, and its municipality-level services that are the primary focus of this research.

The smart government service is one of the new trends in the UAE (Al Mansoori et al., 2018). The 2021 vision adopted by the government in 2015 clearly indicates the country's move towards the development of an IT and ICT enabled infrastructure for enhanced public service delivery (Al Mansoori et al., 2018). The government aimed to transform itself to a regional E-government to a global leader in smart government

(TRA, 2015). The country has acquired a leading position in the Arab region in terms of digital connectivity, ICT implementation, and networked readiness (Baller et al., 2018). The government's approach towards public service enhancement is evident from its digitalization efforts as well as E-government initiatives that have a clear customer focus (Buhumaid et al., 2019). The E-government strategy of the UAE is primarily focused on three aspects, namely e-services, e-readiness, and ICT environment (Al-Khouri, 2012). Along with these, another significant aspect is e-participation that implies citizens' and residents' involvement with the government in the decision-making. Such dimensions are evident from the guideline formulated by TRA and UAE government (2016) on e-participation and social media. The country ranked sixth in the e-participation as per the WASEDA Report and also reported a high score on the e-participation index on the UN E-government survey (UN, 2018). Each of the separate government entities like the Ministry of Economy, MoHAP, including the Abu Dhabi government TAMM portal has e-participation channels and opportunities. It is because of this reason further analysis has not been carried out to explore this dimension of e-participation.

The development of the UAE's E-government from 2001 to 2012 clearly depicts the path of development and growth towards the adoption of technology in public service (Figure 2).

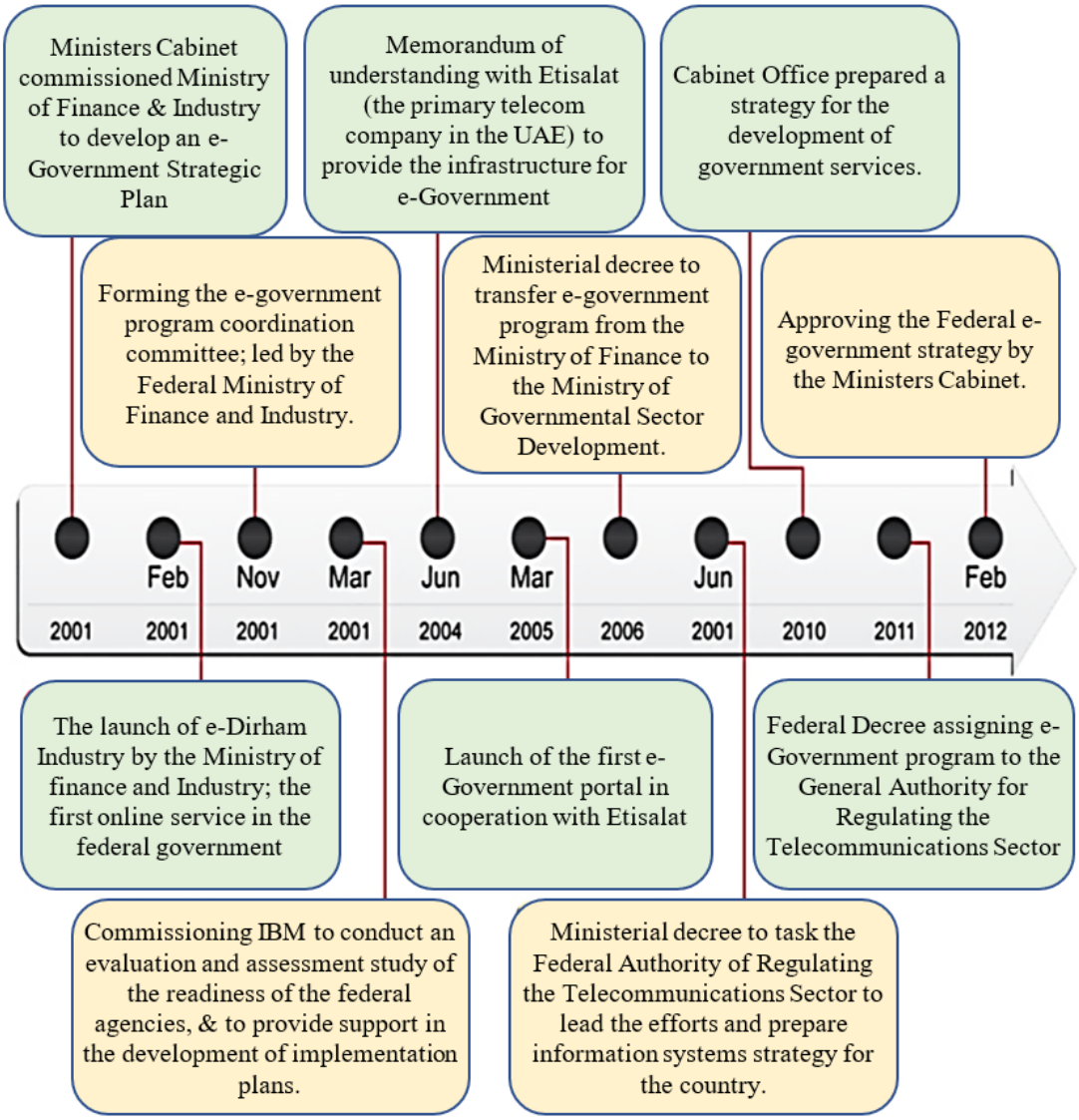

Figure 2: E-government evolution of the UAE
(Source: Al-Khouri, 2012, p.134)

The UAE government provides e-services in a number of priority sectors like health, education, traffic, and few others (The UAE's Government Portal, 2019a). For instance, MOHAP provides online facilities to individuals for issuing health cards (UAE Ministry of Health & Prevention, 2020). One of the significant smart government initiatives can be observed Smart Dubai strategy 2021that aims to transform Dubai into one of the technologically advanced and leading cities (Smart Dubai 2021, 2019). Furthermore, the government also has adopted strategies to

leverage emerging technologies like AI and blockchain to transform government services and make them more efficient (The United Arab Emirates' Government Portal, 2020). While there have been a number of country-level initiatives, each emirate also has made considerable progress in implementing smart government services. For instance, Al Athmay (2015) stated that each Emirate has its own portal for providing e-services to its customers. In line with this, the Abu Dhabi government's smart government initiatives are discussed next indicating their effectiveness. Following this, the next section highlights on Abu Dhabi government and its smart government initiatives linking the same to the municipalities. The analysis aims at providing a clear outline of the country's governance, its structure, and how Abu Dhabi municipality's smart services are aligned to the broader framework and strategic initiatives.

3.2.1 Abu Dhabi government

Established in 1971, the UAE is a constitutional federation consisting of seven emirates including Abu Dhabi, Dubai, Sharjah, Ras Al Khaimah, Umm Al Quwain, Ajman, and Fujairah (The UAE's Government Portal, 2020). The Supreme Council of Rulers, the highest authority for policy-making in the UAE and selects the president of the federation for a renewable five-year term. The Prime Minister is appointed by the President and is also approved by the council (UAE Embassy, 2019). Under this council, the individual Emirates and their governance systems are constituted.

H. H. Sheikh Khalifa bin Zayed Al Nahyan rules Abu Dhabi Emirate. The emirate has an Executive Council that is led by the crown prince H. H. General Sheikh Mohammed bin Zayed Al Nahyan (The UAE's Government Portal, 2020). Under this council, the government departments are constituted that function like ministries. It

also has certain agencies and government entities that are autonomous and has their own power and rights. In addition to this, there is also a National Consultative Council with 60 members representing the main tribes (The United Arab Emirates' Government Portal, 2020).

3.2.1.1 E-government strategy of Abu Dhabi

The E-government strategy of Abu Dhabi looked to transform of various government services from manual to digital services (The UAE's Government portal, 2019a). The strategy has established clear and measurable objectives, KPIs (Key Performance Indicators), and mechanisms and entails a roadmap for creating a smart government primarily focusing on E-government services to its citizens. The roadmap also serves as the guideline to absorb and different kinds of government services under the electronic services. The strategy also outlines the role of other partner government bodies in implementing E-government strategies and incorporating eService for the users. Finally, the strategy aims to position Abu Dhabi E-government as the most efficient and leading smart government in the world that is driven by innovation and is committed to delivering effective digital services for building the foundation of a technology-enabled society (The UAE's Government Portal, 2019b). The government of Abu Dhabi provides its residents with various electronic services through its local government portal. Some of the key services include modifying or updating one's personal details like traffic profile (including license, address) with Abu Dhabi Police (TAMM, 2020a)

3.2.1.2 Abu Dhabi smart government initiatives

Abu Dhabi Government has made several strides and is moving towards making the Emirates smart (The UAE's Government Portal, 2019b). The government of Abu

Dhabi has launched TAMM that aims to achieve excellence in service delivery and is adopting a 'one government' framework that increases inter-government collaboration for providing the customers with a unified and integrated experience (TAMM, 2020b). The enriching experience that it seeks to provide its customers, is founded on innovative new technology integration that is fast, efficient, and proactive and can be transformed into tools for better user-friendly service facility to the customers (TAMM, 2020b). The four success pillars underpin the smart government approach of the Abu Dhabi government. First is personalized that refers to a customer-oriented approach to better understand citizens and residents need to provide effective customized solutions (TAMM, 2020b). The second pillar is convenience that refers to greater accessibility of governments' services to the citizens (TAMM, 2020b). This implies increased accessibility of public services by the customers at any time across the government entities. Although it indicates the parameter of accessibility, it does not reflect whether customers actually can get access to the required services. Also, the user-friendliness of the website, clarity of information, and personalization that determines accessibility to a great extent are not clear. Moreover, it is not clear whether the customers find services as useful and whether they meet their requirements. In order to fully comprehend the research relied on primary data from the service users.

The third pillar is fast and efficient that is ensured by the employment of advanced technology that provides the citizens with a seamless and omnichannel experience to people. Finally, the fourth pillar signifies a proactive government that reaches out to customer offering help. This is done by assessing consumer history, behavior, and design solutions that are cutting-edge and proactive (TAMM, 2020b). These sorts of smart systems and processes can reap potential benefits by reducing uncertainty, predicting risks, identifying future trends, learning new skills, and

restructuring daily operational procedures to make it more agile and efficient (Nowacki & Bachnik, 2016).

3.2.1.2.1 Onwani

Abu Dhabi government introduced ‘my address’ system or what is currently known as Onwani. It is the smart addressing system whereby the streets in the city are addressed by a number and can be used to find their exact location and find the way to those streets (The United Arab Emirates’ Government Portal, 2019a). QR codes have placed in various buildings and establishments that embeds the details of the location (The UAE’s Government portal, 2019f). Residents can use these codes and scan them and share them with anyone who might be visiting their place.

3.2.1.2.2 CityGuard applications

This is one of the free applications of the Abu Dhabi Government and by using it one can raise a complaint regarding the services offered by the Abu Dhabi government (The United Arab Emirates’ Government Portal, 2019b). The users can also share a video clipping as a description of the issue that they are facing as an attachment. The app will register such complaints and take it forward to the department, however, it is only available in the blackberry (The United Arab Emirates’ Government Portal, 2019b).

3.2.1.3 Smart government services by Abu Dhabi government

The TAMM portal of Abu Dhabi provides a number of digital services to the residents (TAMM, 2020b). The services are divided into various government departments under which specific services are listed. The digital services include services from Department of Health, Abu Dhabi Police, Municipality Department, the

Agriculture and Food Safety Authority, Economic Development, Retirement Pensions & Benefits Fund, Tourism Department, Housing Authority, Education and Knowledge Department, transportation center, Federal Authority for Identity and Nationality, Social Welfare and Minors Affairs Foundation and a few others (TAMM, 2020a). Each of these services is further divided into various numbers of specific services. For instance, digital services provided by the Department of Health Services includes validating sick leaves, searching for approved medicines by the health authority, accredited insurance companies, finding a pharmacy, health facilities, insurance policies, birth certificate amendment requests, and several others (TAMM, 2020b).

Ease of access drives the service provision of TAMM. It provides a unified and integrated platform that enables all the citizens, residents, businesses, investors, and all the customers to avail services from a single source. Such services are essential for building a smart government. The customers can easily access different kinds of services from the TAMM portal without being physically present in the municipality and seek services from various kinds of government departments. The portal caters to different categories of customers and strives to make constant improvements to serve the customers effectively (TAMM, 2020a). The webpages in the portal are neatly done with simple words graphics and clear explanations wherever required. This dimension is further explored in this study by analyzing customers' opinions.

In addition to the various online services for the customers and the businesses, the Abu Dhabi government has also established a Digital Authority (ADDA) that works alongside various government entities to build smart systems for various government services (Abu Dhabi Digital Authority, 2020). The authority supports Abu Dhabi's digital government initiatives and foster services that are secured, proactive,

as well as collaborative. It drives digital transformation by adopting various strategies, standards, and policies, and provides various advanced solutions to government entities.

3.2.1.4 Abu Dhabi municipality (ADM)

While the previous section outlined the country-level initiatives towards, smart government goals, this section particularly focuses on ADM and its smart government. Established in 1962, ADM is responsible to provide various kinds of public services and oversee the planning of the city focusing on activities like maintain the road networks, doing various maintenance services, city lighting, and sewage systems. Along with the growth of the emirate, in 2005, the ADM was merged with Al Ain Municipality, Al Ain Agriculture and Animal Production Department, and Works Department from streamlining the administration and providing effective services to the customers. However, later separate municipalities were formed for Al Ain, Al Dhafrah, and Abu Dhabi (DMT, 2020). The municipality aims to create an effective living environment for the residents with modern amenities and services. To this aim, it has come up with a number of new services that provide the citizens with greater accessibility and ease. The below section provides a comprehensive discussion about the ADM's smart government services.

3.2.1.5 Smart government services of ADM

According to Sebugwaawo (2018), 46 services provided by ADM are digitalized post-launch of Smart Hub Platform. The primary aim was to reduce the use of papers as well as improving citizen service delivery of the municipality across all the emirates (Sebugwaawo, 2018). The below discussion provides a discussion on a number of initiatives of ADM and indicates their effectiveness.

3.2.1.5.1 SmartPass

The government has launched SmartPass which is the unique credential of the individual to access various UAE government services (The United Arab Emirates' Government portal, 2019b). This is another feature of a smart government that helps the government manage citizen's data for all kinds of online transactions. Every individual can register themselves with their Emirates ID, username, and password and gain access to all kinds of electronic government services. Smart Pass can be used for availing both local and federal government services (The United Arab Emirates' Government portal, 2019b). The smart passes are aimed to improve the experience of the users and their satisfaction by improving quality, convenience, and efficiency. The ultimate goal of the eGovernment or electronic government is to improve user satisfaction and happiness which is achieved by implementing such services (The United Arab Emirates' Government portal, 2019b). While SmartPass helped in enhancing user experience, it also helped managing customer data more efficiently that further enhanced the service provision of the government by taking account of customers' data (The United Arab Emirates' Government portal, 2019b). Thus, it can be stated that Smart Pass as offered by the municipality has increased the government's service efficiency and has also provided ease of e-service usage by the customers. By logging into their account, the customers can avail a variety of services offered by ADM that are more convenient and efficient. Such initiatives point towards the effectiveness of the municipality's smart government services. However, to understand whether such initiatives have actually provided the service users with ease of service, it is important to analyze the customers' perspective.

3.2.1.5.2 Increased accessibility to data

The services offered by the municipality are listed well in the government portal and one is able to search the portal by using filters such as individual-level services or organization-level services. For instance, government entities may request to provide data regarding population and forecast for future developments. They can also request for feasibility studies to carry out developmental projects (UPC, 2017). Such initiatives can be regarded as its initiatives towards the country's open data policy that has been adopted by several departments and governmental authorities at the country level (UAE Ministry of Finance, 2019; UAE Ministry of Health & Prevention, 2020). In line with such open data policy, the municipality is also obliged to conform to the overall policy guidelines such as the published data would be of value to the customers, the data shall be accessible without any obstacle, it can be downloaded easily, the customers can comment on the data, and the like (Federal Customes Authority, 2019).

Thus, it can be stated that the municipality government has adopted the overall UAE framework for open data and made efforts to serve the public with greater information access. While secondary sources indicate initiative surrounding accessibility, little research has been done to understand whether these efforts have actually assisted the service users to avail the required services. The given research aims to fill this gap and understand the accessibility of the required services and resources by the customers of ADM that determines effectiveness.

3.2.1.5.3 E-Services

The municipal government of Abu Dhabi offers a wide range of e-Services to the customers in a smarter and more convenient way. The users can filter the municipality's services by all customer segments, businesses, consumers, investors, or

professionals. The portal also enables keywords search option and one can choose the location as Abu Dhabi, Al Ain, or Al Dhafra. The category of services is wide-ranging and includes areas such as building permits, land and properties, community services, investor services, planning, and developmental approvals, training and certifications, and few others (DMT, 2020).

Such filter options and search functionality of the municipality's portal indicate ease of use and accessibility that shows effectiveness as discussed earlier. For instance, one can register for Estidama training services and apply for it on the portal of the municipality (DMT, 2020). It also provides relevant information regarding documentation, and service access, along with process description. Similarly, each of the services listed under the municipality portal has detailed information so that it is easier for the user to avail electronic services. Such detailed information also increases the adoption of e-services as the customers get guidance and assistance to use such new kinds of services. The availability of adequate information also increases transparency and further contributes towards increasing effectiveness. Furthermore, the portal also provides the user with related links such as the TAMM website. Such an interconnected experience provides the user with an enhanced integrated experience and helps them to avail services as per their needs and requirements. In addition to this, the portal also asks for user experience, however, only with emoticons and not in a detailed fashion.

3.2.1.5.4 Smart hub

Another significant initiative of ADM is the introduction of the Smart Hub platform and called all the individuals and government entities to use the portal (DMT, 2018). This platform provides all the digital services offered by the municipality. Such

services are aimed towards the digital transformation of the government services and making them available to both the private and public sector firms (Emirates News Agency, 2018). The users can avail the services through one-time registration to the portal. The Smart Hub platform clearly indicates the municipality's effort to integrate all of the three municipality's digital services (Abu Dhabi, Al Ain, and Al Dhafra) and enhance the experience of the users (Emirates News Agency, 2018).

Therefore, it can be concluded that ADM paid attention towards ensuring customer satisfaction and has made significant strides towards the digital transformation of its services. Although the discussion indicates the effectiveness of the services in terms of accessibility, ease of use, customers' perception related to these aspects needs to be assessed. Moreover, from the secondary sources, it is not clear how e-service privacy and security is maintained by ADM. In addition, the trust and confidence of public can only be justly analyzed by looking into the customers' perceptions and opinions. Thus, the research comprehensive analysis of the customers' opinion regarding the smart government service effectiveness of the municipality.

3.3 Chapter summary

The discussion presents various e-services provided by the country government, Abu Dhabi Emirate, and the ADM in particular. It is observed that there exists a commitment to enhance user experience and provide services in a smarter way that is more convenient for the residents. The government has also taken several initiatives to improve e-services and adopted smart government strategies to make government procedures and processes more user-friendly and customer-centric. The next chapter discusses the methods and research process of the study.

Chapter 4: Research Methodology

4.1 Introduction

The discussion in this section centers on research design and a brief discussion of the case study of ADM. The chapter includes a comprehensive discussion of the quantitative and qualitative data collection tools and methods, shedding light on the sampling techniques. For each of the choice, the researcher provided the rationale behind the selection. Finally, the ethical issues of research were highlighted indicating the specific considerations for this research.

As a mixed methods research, the study has focused on both numerical as well as subjective and qualitative data. The primary independent variables included in this study are gathered from the review of extant literature conducted in Chapter 2 and include privacy and security, performance expectancy, public trust and confidence, and accessibility. The review suggested that the independent variables have a determining influence on the smart service effectiveness. The present study considers these variables and attempts to establish whether these variables actually impact the service effectiveness of ADM. While quantitative study assesses the impact of these variables on service effectiveness, the qualitative analysis studied the initiatives adopted by ADM to enhance smart service effectiveness offered to the users. This was attained by conducting a qualitative analysis of the interviews undertaken with the managers in the municipality.

4.2 Design of the study

Apart from the conventional, qualitative, and quantitative research design, there also exists mixed methods research following pragmatism as chosen for this particular

research (Lewis et al., 2012). The mixed method research design is suitable for this particular research as it can help quantify the impact of the chosen parameters on the efficiency of the e-services of the municipality. It aims to measure the perceptions and opinions of the customers regarding the effectiveness of the E-government services based on certain parameters (performance expectancy, privacy and security, public confidence, and accessibility). However, a quantitative approach cannot adequately meet the research purpose as it also aims to recommend ways to enhance smart government service effectiveness of the municipality. In line with this, the study also attempts to identify the specific challenges faced by the municipality and analyze the initiatives adopted by them to improve smart services. The mixed method design as carried out in this research is elaborated in the below section and is based on the provided by Johnson and Onwuegbuzie (2004) and Creswell (1999).

4.2.1 Steps followed for preparing the research design

In the first place, the research objectives were considered to evaluate the suitability of mixed methods research. On one hand, it has the quantitative aim of assessing the impact of independent variables (performance expectancy, public trust and confidence, accessibility, and privacy and security). On the other, the research also aimed to provide certain recommendations to improve smart service effectiveness of ADM that required a detailed analysis of the challenges and measures adopted by the municipality to enhance service efficiency. This led to the selection of mixed-methods research and helped to attain the desired research objectives.

Once the appropriateness of mixed-methods research was determined, the tools available and the methods of data collection were analyzed. It was determined that a survey can be employed to collect quantitative data that can help assess the impact of

the independent variables on the dependent variable. In addition, an interview was also considered necessary to gain qualitative insight into the smart service management process of ADM. However, due to time constraints, the researcher resorted to an online survey. This also helped reducing the cost of data collection and gather the required number of respondents for conducting the research.

Once the data collection was done, the analysis techniques were assessed. It was found that with the help of SPSS quantitative data can be reliably analyzed. It can help assess the level of service effectiveness of ADM and the percentage of respondents who report highly on the independent variable. This also helped in assessing the overall service usefulness by analyzing the customers' opinions. In addition, the qualitative data gathered from the participants needed to be assessed using codes and themes. Thus, a thematic analysis technique was employed in this research.

Finally, the results received from both the data sets were compared and convergence was sought. This comparison also helped establishing further validity to the chosen methods of the study and strengthen the research outcome.

4.3 The case study: ADM

The present research is based on the case of ADM's smart government services. By employing certain parameters, the study aimed to assess the effectiveness of the municipality's smart government services for meeting customers' requirements. Both quantitative and qualitative data were collected in the research in order to attain the purpose of the research. In addition, secondary research was also carried out that revealed some of the significant services provided by the Abu Dhabi Government as well as the smart services provided by ADM. In the previous chapter, the researcher

analyzed various services provided by the municipality like smart pass, e-services, the newly launched smart hub portal that provided a clear indication of the municipality's smart government services and their effectiveness.

However, the study cannot reach its purpose on the basis of secondary data, since it aims to analyze the service effectiveness from the perspective of the customers. To this end, the researcher collected primary data from the customers of Abu Dhabi municipality. The researcher also carried out an interview with the ADM managers from the IT department to understand the challenges faced by the municipality in providing smart electronic services to its customers, the initiatives adopted to overcome such challenges, as well as their suggestions for improving e-services to the customers.

The chosen case study research approach was found to be effective for arriving at a detailed evaluation of the research phenomena and assessing the effectiveness of Abu Dhabi municipality's smart government services. The research solicited customers' opinions and perceptions about smart services and measured their ability to meet their needs and requirements.

4.4 Process of data collection and analysis

4.4.1 Data sources

The present research thus considered both primary and secondary sources of information. The primary data for this study has been collected from two sources, firstly the survey included customers using Abu Dhabi Municipality's smart government services and secondly, the interview included managers from the municipality office who provided insights into the service effectiveness of the

municipality. Such data helped in addressing the research questions and objectives and arriving at a definitive conclusion. In addition, the secondary sources comprised of the existing literature that is collected from the past work of the researchers. It includes journals, articles, conference material, company reports, government credentials, online news sources, and books. These sources provided the researcher with useful information that helps them attainment of a broad knowledge of the research issue, the chosen context, and relevance of the study. It helped identifying research gaps and formulates objectives towards that end. Several journal articles were used as secondary data sources like 'Journal of public administration research and theory', 'Public Administration Review', 'Transforming Government: People, Process and Policy'. Along with this, a thorough review has been conducted for government websites like Abu Dhabi Digital Authority, TAMM, and Department of Municipality and Transport.

4.4.2 Data collection: survey

Lewis et al. (2012) noted the survey as the most widely used research strategy in quantitative research. Through survey a wide population can be covered within a shorter period of time and the method is also cost-effective. Through this method, the survey is conducted among the customers of ADM to know their perceptions and opinion about the effectiveness of E-government services. The survey was conducted online, and the link was active for more than one month. The choice of the platform was determined by considering the researcher's bias that may affect the response of the participants. In addition, due to the recent situation of COVID-19 in the country, the researcher resorted to an online survey.

In the first place, the researcher approached the municipality to gain consent for conducting the research. Initially, they were hesitant because of confidentiality issues.

However, the researcher explained the purpose of the study and made them aware of the academic research protocols for ensuring the respondents' anonymity. After they were assured, they provided with their approval to carry out the research. The employees of the municipality were approached, and they were requested to provide access to customers' database to which they refused because of the protection of customers' personal data. Thus, the researcher requested the municipality to help gathering the sample to which they agreed, and they helped circulating the links to the customers of the municipality. Since they have an internal database of the customers, it was easier for them to circulate the links. It helped the researcher the required number of respondents to reliably conduct the survey. The survey link with a note of invitation was shared with the participants to provide their response. The survey was based on a questionnaire that is discussed in the next section.

4.4.2.1 Development of the questionnaire

The questionnaire that was developed for this study was primarily based on four categories that include performance expectancy, privacy and security, trust and confidence, and accessibility. These constructs are drawn from the analysis carried out in the literature review that strengthened the questionnaire design and service effectiveness of Abu Dhabi municipality's smart services was measured on the basis of these parameters. The constructs were measured through a number of questionnaire items in the form of statements and the participants were asked to express their extent of agreement to those. The responses that were set were founded on a five-point Likert scale that started from 'strongly agree' through agree, to finally 'strongly disagree'. In other words, the respondents provided their responses to the number of questions based on a pre-determined set of responses (De Vaus, 2002) based on the Likert scale that

helped in ensuring uniformity of the answers for quantitative analysis. Such a wide array of choices provided them to freely respond that closely match their thoughts and opinions with the set categories of response. The questionnaire as developed is given in Table 1.

Table 1: Research questionnaire

Variables	Statements/questions asked by the respondents
Trust and Confidence	I have confidence in Abu Dhabi Municipality's ability to provide online services.
	I feel confident using internet to make online transactions for E-government services.
	I feel that online services provided by the municipality is safe and secured
	I feel that the information provided online by the municipality is accurate.
	The smart government services of the municipality encourage participation and collaboration from the residents.
Safety and security	I believe that the online services exist to help citizens.
	I think the online services offers privacy in terms of protection of personal information.
	Online services of the municipality help in identity checks
	I have not come across any privacy or security breaches in the online services of the Municipality
Performance Expectancy	I can perform the online transactions with ease.
	I feel that the E-government services of Abu Dhabi Municipality meet my purpose of saving money
	I feel that the E-government services of Abu Dhabi Municipality meet my purpose of saving time
	I feel that the E-government services of Abu Dhabi Municipality meet my purpose of saving effort
	All (or most) of my needs and requirements are fulfilled through the municipality's online services.
	There are chances of rectifying errors in the online services provided by the municipality
Accessibility	I feel that the municipality provides relevant information to access online services.
	I feel that the website for online transaction is user friendly.
	I feel that the availability of the information on the website is comprehensive and clear.
	The smart government services of the municipality are personalized

4.4.3 Data collection: semi-structured interview

As a mixed methods research, combining survey with a semi-structured interview has been effective in addressing the proposed aim and objectives of the research. Semi-structured interview helped generating qualitative data required to understand the initiatives adopted by ADM in enhancing the effectiveness of the electronic services. The study developed an interview guide that helped the researcher facilitate the interview and direct the interview to gather information required for the present study. Following (Easterby-Smith et al., 2015) the questions were formed in an open-ended manner that provided the respondents enough scope to provide answers to the interview questions and freely express their ideas and opinions.

At first, the municipality was approached to provide their consent of carrying out the research. This was done during the phase of survey. Post-receiving their consent, they were invited for an interview. The authorities of the municipality were reluctant and many of the employees declined from participating in the research process. However, they were provided with the required information and was requested for their participation. They were also assured of their confidentiality and anonymity during the research process. Since, the research aimed to understand the smart service effectiveness, personnel dealing with service design and maintenance, particularly from the IT department were required. For this study, two interviews were conducted with the managers of ADM from their IT department. Due to the governments' mandate on social distancing for addressing COVID-19, the interviews were conducted via telephone and they were asked questions about smart service, the challenges they face, and the measures they have adopted. The below section provides a detail of the process of interview guide development.

4.4.3.1 Development of interview guide

The interview guide that was developed for the purpose of carrying out this research followed certain guidelines. Although there are no prescriptive guidelines on conducting interviews Kvale (2008), however, stated that they should consider the nature of the questions asked to the participants and ensure that they are not leading in nature. It should also provide them the scope to freely express their ideas, share experience and opinion. In other words, the research participants should be considered as knowledgeable resources who can provide valuable inputs for addressing the research questions (Bryman, 2004). In addition, stated that the researcher needs to consider of the leading questions that may affect the responses of the participants in a certain way (Gioia et al., 2012). Thus, caution must be adopted to avoid chances of generating biased responses. The below questions were framed and asked the research participants to know the effectiveness of the electronic services provided by the municipality.

1. To what extent do you think ADM is able to meet the needs and requirements of the customers through E-government services? What benefits do they get by using these online services?
2. Do you think they face any challenges in using the municipality's online services? If yes, please provide an example.
3. How do you ensure the privacy and security of the services? How do you protect the system from threats and cyber-attacks?
4. What kind of support do you provide to the customers to benefit from these E-government services?

5. What would you recommend to improve the online services provided by the municipality?

The above questions were based on understanding the effectiveness of the smart government services and thus centered on the benefits gained from the e-services, challenges encountered by the customers, measures are taken to ensure privacy security, additional support offered to the customer to enhance adoption of smart services, and the areas of improvement. The below section highlights the data analysis process of both the kinds of data.

4.4.4 Data analysis: qualitative and quantitative

The quantitative data and qualitative data that were collected from the respondents were analyzed with separate analysis techniques. The survey data was downloaded in a spreadsheet from the online platform. Prior to the start of the data analysis process, the researcher runs a thorough check of the missing values. The responses that were partially answered or those that indicated that the respondents left the survey were eliminated from the spreadsheet and thus were excluded from the consideration of the study. After the data cleansing was carried out, the total usable responses were 154 that were included in the research for data analysis. In the first place, the nominal variables, like age, gender, devices used for online services were coded and converted into numeric for ease of analysis through SPSS. In addition, SPSS software was used for descriptive statistical analysis like mean, standard deviation. For instance, means were calculated for all the independent variables (performance expectancy, privacy and security, trust and confidence, and accessibility) and reported that depicted the average score. A high mean score indicated the effectiveness of the municipality's services while a low score indicated areas of improvement. This helped

in understanding the customers' opinions and beliefs about the effectiveness of the services provided by the Abu Dhabi municipality. In addition, percentages were calculated and graphs, tables were used for presenting the data and interpreting the same.

The qualitative analysis was based on thematic analysis procedure. In the first place the data was recorded with permission from the managers of ADM. Thereafter a verbatim transcription of the audio records was performed. This ensured retaining the accuracy of the narratives and eliminated any kind of bias that may contaminate the findings of the study. Following this, a thorough content analysis was carried out of the data to understand the patterns across the data sets and coding them into existing or emerging themes. For instance, the responses provided by each of the participants in regards to the challenges were coded into privacy and security (existing code from literature review), increasing expectations from the customers, technical issues, and challenges to attract all sections of the people (emerging codes from the data). The participants' responses are also grouped together under these codes to provide a comprehensive analysis of the topic and were substantiated with the literature where applicable. Thus, the existing themes were primarily based on literature analyses and the constructs outlined by previous studies while the emerging themes included those that were derived from the answers of the research participants. Codes were identified by carefully studying each phrase and paragraph of the participants to understand their ideas and concepts. These were then compared with the existing research studies to identify similarities and differences. Such coding also helped in corroborating the findings with the existing literature analysis carried out in chapter two and also note the point of divergence. It also assisted the researcher to evaluate the convergences and divergences of the findings in comparison to the existing studies. At the end of

both quantitative and qualitative analyses, a convergence was sought to understand if both the sets of data, i.e. qualitative and quantitative matches with each other and indicates the same findings. Such mixed methods analysis techniques provided useful analysis and interpretation and helped to answer the research questions.

4.5 Validity and reliability

4.5.1 Questionnaire validity and reliability

One of the significant considerations in any kind of research is the issue of reliability and validity (Creswell & Miller, 2000). In mixed methods studies of the research instrument and its validity is of utmost importance as it employs both kinds of methods. While validity refers to the credibility of the data obtained (Kvale, 2008), reliability refers to the consistency of such data (Silverman, 2013). Since the research has employed both questionnaire and interview guide, validity and reliability have been ensured for both.

Burton and Mazerolle (2011) stated that during the process of questionnaire development, testing the validity of the constructs is significant. For this, the researcher carried out an exploration of the previous research studies and chosen the existing constructs that helped to strengthen the validity of the questionnaire. For instance, the aspect of privacy and security as a significant construct of smart government service effectiveness was derived from the past researchers like Liu and Carter (2018), Mutimukwe et al. (2017), Losavio et al. (2018). Similarly, performance expectancy was highlighted by authors like Jacob et al. (2016) and Alraja et al. (2016). In addition, accessibility was derived from the studies conducted by Bannister and Connolly (2011), Carter and Bélanger (2008) as well as Schaupp and Carter (2010).

Finally, the aspect of trust and confidence was derived from the work done by Luna-Reyes et al. (2014), Shamsi et al. (2018) and Venkatesh et al. (2016).

Furthermore, Zikmund (2003) stated that the questionnaire needs to be sensitive to the answers of the responses. In other words, it needs to provide the respondents with adequate number of choices from which they can reliably choose their answer. In line with this, the study adopted a 5-point Likert scale that included responses ranging from ‘strongly agree’ to ‘strongly disagree’ along with the option of ‘neutral’. The questions under each of the constructs were listed as statements and the respondents were asked to express their level of agreement to each of them. Such wide array of choices helped gaining the accurate answer from the respondents as compared to dual categories like ‘yes’ and ‘no’. Specific attention was laid on the design of the questionnaire. In other words, following Lewis et al. (2012) the wordings and phraseologies used in the survey were simple. The responses were closed-ended, and the items were given in the form of lists and categories so that it is easier for the respondents to choose and provide their answers. The questionnaire and was then uploaded to the online platform. Finally, reliability was confirmed by carrying out Cronbach’s Alpha that is one of the rigid statistical tests for assessing questionnaire reliability.

4.5.2 Interview guide validity and reliability

In qualitative interviews, since there is a greater involvement of the researcher in the data collection, ensuring validity and reliability is of utmost importance. Validity in qualitative methods can be established through triangulation, researcher reflexivity, disconfirming evidence, peer debriefing, and member checking (Creswell & Miller,

2000). In this present study, researchers' reflexivity, members' checking, and triangulation have been applied.

The researcher disclosed her personal beliefs, notions, and judgments so that the value position of the researcher is clear to the reader. This is known as researchers' reflexivity. In addition, member' checking is applied whereby the qualitative data obtained from the participants were transcribed and a copy of it is given to the participant to assess the accuracy of the narratives. This further validated the data and strengthened the findings of the study. Finally, triangulation is done whereby the quantitative and qualitative data was converged and observed whether the same result is derived from both the sets.

4.6 Research sampling

4.6.1 Sampling technique and size

Since this is a mixed methods research, two sampling technique was adopted to gather the sample required for quantitative and qualitative data. For the survey, the sample was selected by using a simple random sampling technique that is one of the useful probability sampling methods and provides a fair chance to each and every unit of the population for getting selected (Easterby-Smith et al., 2015). Following Bryman and Bell (2011) at first, the researcher approached the municipality to provide the total number of customers of the municipality. However, due to confidentiality reasons, they refused to provide such data. Following this, the researcher requested municipality to assist with the online survey and circulate the link to some of the customers to which they agreed. Additionally, the researcher also approached some of the customers from her personal contacts to collect a reliable number of samples. Following this total number of respondents gathered was 205 out of which 154 replied

to the survey. This method of sample selection can help the researcher avoid any bias in selecting the sample and the respondents are not recruited based on any subjective preference or criterion (Lewis et al., 2012). Moreover, Lewis et al. (2012) stated that a simple random sampling method helps increasing the representativeness of the sample.

In addition, a purposive sampling method was employed for selecting the managers of the Abu Dhabi municipality. In qualitative studies, Bryman and Bell (2011) stated that purposive sampling is a suitable method of sample collection as it assists selecting those participants to possess the right knowledge and experience and can offer insights into the research issue. Since the managers have good insight into the municipality's smart government services, they were selected for a semi-structured interview. By applying the purposive sampling technique, two managers of the municipality were selected who were required to provide their detailed ideas and opinions in the research topic. Since the study is based on assessing the smart service effectiveness of ADM, it was important to include individuals who have technical background and have an oversight of the processes to ensure customers' needs are met. Thus, the researcher purposely selected the Director of IT Planning and the Head of the Department of IT design services.

At the beginning of the research, the two IT personnel were briefed on the research purpose and their consent for participating in the research was solicited. After gaining consent, they were invited for a face-to-face interview. One of the primary challenges was to convince the participants to take part in the interview. The majority of the managers in the municipality were unwilling and were apprehensive of data confidentiality. After several follow-ups and reassurances of the data confidentiality,

the researchers were able to select two participants to gain an insight into the municipality's smart service effectiveness. This has been one of the drawbacks of the study.

4.7 Ethical consideration

The ethical codes are the moral principles that every researcher should abide by. According to Silverman (2013), these ethical principles are created for protecting the researchers' effort from any infringement. Informed consent is the most important ethical considerations in any research. In line with this, in the present context, the informed consent was received from both the survey respondents and the interview participants. A note of invitation was sent to the respondents that provided them with the required information about the research, its purpose, the estimated time to complete the survey, and the number of questions asked. The respondents were asked to provide their informed consent after reading the details. In the case of interview, the participants were briefed about the study and they were made aware of their rights and responsibilities. Following Easterby-Smith et al. (2015) the maintenance of data confidentiality and anonymity were also assured by the researcher. For reporting the data, the participants' personal details (like name) were coded to protect their identity. Finally, the data gathered was accessible only by the researcher and was stored in personal computerized folders with suitable encryption.

4.8 Chapter summary

The present chapter provided a detailed analysis of the researcher's methodological stance. While discussing the concepts and methods, it also offered justification for selecting each of the techniques. As a mixed-method research, it also provided a brief outline of the steps of the research design along with the key

considerations. This discussion guides the further analysis carried out in this study and the next chapter attempts at a critical assessment of the qualitative and quantitative data and sheds light on some significant findings.

Chapter 5: Data Analysis and Findings

5.1 Introduction

From the discussion carried out so far in the previous chapter, it is clear that ADM has taken several initiatives towards the smart goal agenda of the nation. After conducting a thorough secondary analysis, the research now shifts towards scrutinizing the primary data in order to address the primary objectives of the research, i.e. assessment of the effectiveness of ADM's smart services.

Following the mixed-methods research approach, the study will analyze the quantitative data at the first place, gathered through the online survey. From the total 200 sample participants, the total number of respondents who responded to the survey questions was 154. Therefore, the total sample size for the study is 154 (N=154). The participants provided their response regarding the four primary aspects of effectiveness (privacy and security, performance expectancy, public trust and confidence, accessibility) as outlined in the literature review and methodology chapter.

The present chapter is divided into two sections quantitative analysis and qualitative analysis. Based on the mixed method framework, the first part of the chapter presents the analysis of the survey of the 154 customers of ADM. At the beginning the chapter will highlight the demographic profile of the survey participants

5.2 Quantitative analysis

5.2.1 Demographic data

The below table provides a detailed analysis of the demographic data of the respondents. It shows the age and gender of the respondents. In addition, the participants were asked about the device used for availing the smart services of ADM,

the location from which they avail the services, as well as the frequency of using such services. As can be observed from Table 2, 60.4% of the respondents are female while 39.6% are male. The majority, i.e. 52.6% of the respondents belong to the age group of 25 to 34 years of age, 22.7% from 35 to 44 years of age, 19.5% from 18 to 24 years of age, and the remaining 5.2% from 55 to 64 years of age. It can, therefore, be stated the majority of the service users are youngsters or mid-aged individuals who are more technologically adept and are keen to use such services. The majority of the respondents, i.e. 86.4% use smart devices for availing services and 74.7% of the respondents are availing the services from home.

Table 2: Respondents' demographic profile

	Frequency	Percent
Age		
18-24	30	19.5
25-34	81	52.6
35-44	35	22.7
55-64	8	5.2
Total	154	100.0
Gender		
Female	93	60.4
Male	61	39.6
Total	154	100.0
Which device do you use for availing online services of the Abu Dhabi Municipality?		
Computer	8	5.2
Laptop	9	5.8
Others	3	1.9
Smart Phone	133	86.4
Tablets	1	.6
Total	154	100.0
Please indicate from which location you avail the online services of the municipality?		
Home	115	74.7
Municipality Smart Hub	10	6.5
Office	16	10.4
Others	13	8.4
Total	154	100.0
How many times you have used the municipality services in 2019?		
1-3 times	99	64.3
10 or more	17	11.0
4-6 times	28	18.2
7-9 times	10	6.5
Total	154	100.0

Another useful information that the survey revealed is the frequency of use of ADM's smart services in 2019. 64.3% stated that they used the smart services 1 to 3 times, 18.2% reported using 4 to 6 times, 6.5% used 7 to 9 times, and 11% used 10 times or more. From the data it can be stated that the level of use of the smart services is still at a low level as evident from the majority of the responses.

5.2.2 Reliability analysis

In order to establish the impact of each of the independent variables (privacy and security, performance expectancy, public trust and confidence, accessibility) on ADM's smart service effectiveness, it was important to first establish the validity and reliability of the research instrument (survey questionnaire) used for collecting data. Although the chosen constructs were derived from the exhaustive analysis of the works done by previous researchers, it was important to validate the items formulated and its relevance in measuring the actual variable in the context of the UAE. In order to achieve this, Cronbach's Alpha was carried out to assess the reliability of the measures developed for this study. The below table reflects the test results for each of the chosen constructs.

Table 3: Cronbach's Alpha

Reliability Statistics	
Measures	Cronbach's Alpha
Privacy and security	0.83
Performance expectancy	0.875
Public trust and confidence	0.90
Accessibility	0.873

As can be observed from Table 3, all the measures have strong internal consistency and reliability. As the results show, the Cronbach's Alpha for public trust and confidence has a strong internal consistency with α=0.90, followed by performance expectancy with α=0.875, accessibility with α=0.873, and privacy and security with α=0.83.

5.2.3 Descriptive statistics

A descriptive statistical analysis has been carried out for each of the study variables and is depicted in Table 4.

Table 4: Descriptive analysis

Variables	Minimum	Maximum	Mean	Std. Deviation
Public Confidence and Trust	8.00	25.00	21.2597	3.39897
Safety and security	6.00	20.00	16.7338	2.62477
Performance Expectancy	6.00	30.00	24.3856	4.10892
Accessibility	8.00	20.00	15.8442	2.64977

Descriptive statistical analysis was carried out for public confidence and trust and revealed that it has a mean (M) of 21.2597 (with SD=3.39897). Similarly, safety and security have a mean (M) of 16.7338 with (with SD=2.62477), Performance Expectancy has a mean (M) of 24.3856 with (with SD=4.10892), and accessibility has a mean (M) of 15.8442 with (with SD=2.64977). A high mean score of all the chosen variables indicates that the effectiveness of ADM's municipality services. For instance, it has been observed that public confidence and trust have a mean of 21.2597

while the maximum score for the variable is 25. Therefore, the study concludes that customers of ADM have trust and confidence in the municipality's smart government services. Similarly, in terms of safety and security, the mean is 16.7338 while the maximum score obtained from the survey is 20.00. A mean closer to the highest value of the range depicts that customers rely on the smart services of the municipality and believes in the privacy and security of the online services. Similarly, performance expectancy also depicted a mean of 24.3856 while the maximum is 30 and for accessibility, mean is 15.8442 while the maximum in the range is 20. Following this analysis, percentages were calculated to show the number of participants falling below the average (Mean) and those who are at and above the average. This analysis is well-depicted in Table 5.

Table 5: Percentage of respondents above and below the average score (mean)

Variables	Mean	Frequency above the mean	Percentage (%) above the mean	Frequency below the mean	Percentage (%) below the mean
Public Confidence and Trust	21.2597	98	63.64	56	36.36
Safety and security	16.7338	116	75.32	38	24.68
Performance Expectancy	24.3856	102	66.23	52	33.77
Accessibility	15.8442	117	75.97	37	24.03

From the tabular representation above, it is evident that the majority of the respondents are above the mean (M) derived for each of the independent variables in the study. For instance, for public confidence and trust the 63.64% of the respondents

are above the meanwhile 36.36% are below the average. In terms of safety and security of the smart services, 75.32% of the respondents are above the mean score while 24.68% is below the mean score. 66.23% is above the average in relation to their performance expectancy of ADM's smart services while 33.77% of the respondents are below the average score. Finally, in terms of smart service accessibility, 75.97% is above the average, while 24.03% is below the average. These are depicted in Figure 3.

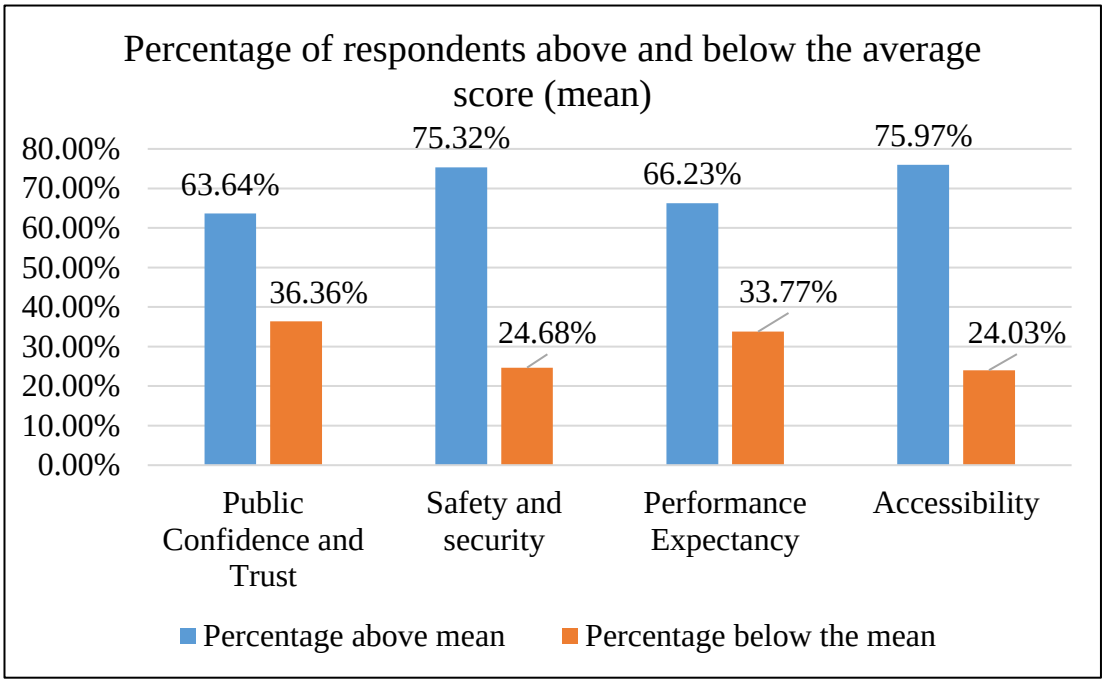

Figure 3: Percentage of respondents above and below the average score (mean)

Thus, from the quantitative analysis, it can be stated that the individuals find the services of the municipality as effective. The majority of the respondents have demonstrated their trust and confidence of the services of the municipality. This aspect can be further explained by the argument offered by Venkatesh et al. (2016) who stated that since smart services are newly emerging fields often individuals are apprehensive of using these. However, since a majority of the customers (i.e. 72.1%) belong from the age of 18 to 34 years and are the young generation, it can be stated that they have

a greater awareness of the services. This also has a greater influence on service adoption. A high level of confidence and trust in the services implies the effectiveness of the services offered by the municipality.

However, a considerable percentage of the population also are below the average that depicts room for further improvement of the services provided by the municipality. Similarly, a high percentage of population is above the mean in terms of privacy and security that depicts that the majority of the customers believe that the services are safe and secured. However, 24.68% were below the average that can be considered as another aspect that needs to be improved by the municipality. A number of researchers have considered privacy and security as the most important dimension that determines service effectiveness (Elisa et al., 2019; Liu & Carter, 2018; Losavio et al., 2018). Although the majority of the customers believe the security of the smart services, it can be stated that ADM still needs to implement robust measures to improve the security of the online services. This will also improve the level of trust among the customers and will be able to draw customers from all the age group.

Similarly, in terms of performance expectancy, although the majority have noted that the services meet their expectations, and depicted an above-average score, a considerable percentage stated that a considerable percentage of the respondents also fall below the percentage. Such gaps also need to be addressed in order to enhance service effectiveness of ADM. As stated by Alraja et al. (2016) one of the significant aspects that determines smart service effectiveness is fulfillment of users' needs and requirements since the primary purpose of smart services is to improve their quality of life and provide customers with a better experience while engaging with transactions with the government. However, if there remain gaps in fulfillment of such requirement,

the services fail to meet their core functions and thus cannot be considered as effective. From this analysis, it can be stated that ADM needs to now look into customers' needs more closely and understand them based on their demographic characteristics. This can help them identify areas to meet customers' requirements more closely and meet their demands more effectively.

Finally, in terms of accessibility, it can be stated that a majority of the participants have reported high accessibility to the municipality's smart government services. However, a considerable minority have a below average score that indicates that there are challenges to access smart services. One such case might be e-literacy and the digital divide as pointed out by Carter and Bélanger (2009). Although the UAE has access to the internet (Al-Khouri, 2012), it can be argued that ADM needs to ensure that customers from all levels and age groups have access to the services offered by the municipality. This can also be enhanced by providing offline support to those who are unable to use such services that can further improve the service effectiveness of the municipality.

From the discussion carried out so far, it is established that ADM's smart government services are effective as evident from the high mean score for each of the independent variables. However, it can also be stated there are considerable minorities in each of the categories who have demonstrated a low score that implies rooms for further development and improvements for all of the dimensions. In order to gain a detailed understanding on these points a qualitative analysis was carried out with the managers of the municipality. The below section highlights the data obtained from the interview and interpreted with supporting literature.

5.3 Qualitative analysis

In line with the mixed-methods research, the study gathered qualitative data from the managers of ADM. Since, the study analyzes service effectiveness and takes into account aspects such as privacy security and online resource accessibility, the study interviewed personnel from the IT departments. Participant 1 is the Director of IT planning in the municipality (Alhammadi, 2020) and Participant 2 is the head of the IT design services department (Al-Maamari, 2020). The respondents provided some useful insights that were presented in this section on the basis of themes.

At this point, it is important to mention that by the Department of Municipalities and Transport runs ADM, Al Ain Municipality and Al Dhafra Municipality that are considered three different government entities. The participants provided insights, particularly on ADM.

5.3.1 Fulfilment of customers' needs and requirements

As stated by Alhammadi (2020) "undoubtedly, the online services made a significant improvement". This is evident from the result of the first customer satisfaction survey that reported 70% of the customers who were satisfied which "has become more than 90% now". The participant further added that "this means that the municipality exerts the utmost effort to satisfy and meet the needs of the customers". In this regard, Al-Maamari (2020) noted that "ADM has adopted the digital transformation upon instructions of the senior leadership to provide simple services to customers without the need to visit the customer service centers in Abu Dhabi or Dhafra, and this led to creating the smart platform. Currently, we have 157 services online. The customer, a person or a company may apply for any service on the platform and pay its fees using the website and get the final product online. The customer shall

not visit any center, the services are easier and simpler now". This clearly indicates the focus on customers' needs fulfillment and meeting the expectations they have out of these online services. The idea provided by Alhammadi (2020) and Al-Maamari (2020) can also be substantiated by the views provided by Liu and Huang (2014) and highlighted in Chapter 2. These authors emphasized that one of the criteria that determines service effectiveness is customer needs fulfillment. Thus, if the services of the government (or the municipality) meet the needs of the users they can be considered as effective. Similar ideas are offered by the research participants who indicated the strong customer-centricity of ADM. One of the significant efforts is the customer survey that proves the effort directed by the municipality to understand the satisfaction of the users in relation to the online services.

Such ideas are also echoed in the opinion of Alhammadi (2020) who stated that: "The digital transformation of the Municipality's services is financially efficient for the customers, as it has achieved remarkable financial savings. Before that, customers used to visit municipality offices three times in order to get on service. At that time, around one million customers were dealing with the municipality and every customer used to come in person three times to get a service or a document. Now, customers can get services while they are home. Unlike before, customers can get services at night and on Fridays and Saturdays. It has become very easy for the customers who are not required to visit municipality offices or get approvals after multiple steps. We found that the digital transformation's returns on customers hit around AED 1,390 million and saved more than 9 million hours of driving. These figures were calculated based on that the fact the customers used to leave their works and visit municipality offices for two or three times in order to get services".

The above quote of the participants can be closely related to the performance expectancy dimension that takes into account cost-saving, time-saving, minimal effort investment, and convenience and ease (Alraja et al., 2016; Jacob et al., 2016). The services of the municipality have paid particular attention to enhance the service by providing the customers ease of availing online services from the comfort of home, saved time and energy, and also contributed to financial saving. They are no more required to stand in the long queue and meet the municipality personnel in person that shows the effectiveness of the municipality's smart services. Al-Maamari (2020) also stated that "currently, everything is available online and the customer may apply for the services he needs whether he is inside or outside the country. The customer can visit the website from anywhere and get the final product (pdf document), which is recognized by the other government bodies, local or federal bodies. Once the customer goes to any government body with a property ownership certificate, title deed or plot layout, it will be dealt as an official document issued by the Municipality". However, the municipality has not imposed online services to the customers. As noted by Al-Maamari (2020), "we have never forced the companies to use our online services, we let the counters and customer services outlets provide the services for a period of time and then we stop such services in the counters and guide people to the platform". This clearly indicates the level of support that ADM provides to its customers to gradually transition towards smart service. A rapid transformation may witness resistance and there may be apprehension among the customers regarding online service usage. However, a gradual transition and progress have helped the customers to learn the new services that facilitated their adoption in the long-run.

5.3.2 Challenges faced by ADM in terms of smart service

When asked about the challenges, the participants primarily indicated about the privacy and security issues. Also meeting the ever-increasing needs of the customers is also another area of challenge. These are outlined as below.

5.3.2.1 Privacy and security

One of the significant areas of challenges faced by ADM is privacy and security. As narrated by Alhammadi (2020) an incident where the customer was not willing to share his personal details (like username or password) even to the close family members because of the privacy and security breaches that occur frequently in case of online services. Such aspects, however, are also highlighted by previous researchers (Elisa et al., 2019) who stated that privacy and security is the most significant facet that indicates smart service effectiveness. The customers are apprehensive of the smart services and doubt the robustness of the security measures employed by ADM. This significantly affects the service adoption and loses its effectiveness to provide the required services to the customers.

5.3.2.2 Increasing expectations from the customers

As pointed out by Alhammadi (2020), “the more you develop the service, the more people will expect. They consider such development as a step and wait all the time for the best. Previously, customers used to wait for many days to get services, now they demand instant services and do not want to perform multiple steps in order to get the services they want”. The participant provided an example in this regard. “Sometimes, the customers have to apply for another service before getting other ones, for example, if a customer wanted to establish an awning in front of his house, he had

to apply first for another service, which is the service to make sure that the meant sidewalk can accommodate an awning. From the customer's point of view, these steps are meant to be done by the municipality and he should get the service immediately after applying for it without going into the details". From the opinion of the participants, it is clear that the customers' needs and demands are widening that are putting pressure on the municipality to enhance their service effectiveness and even expand their services to better meet their requirements. Such challenges, however, can act as a push factor and drive the governments' service effectiveness.

5.3.2.3 Technical issues

As commented by Al-Maamari (2020) "sometimes there are some technical challenges facing us in the system. Sometimes the system is lagging down, but we overcome it because we have a response plan provided by our Technical Planning Department". The participant further added that whenever the system is down, the team is there to help, and the services are available 24/7. This indicates the alignment of the municipality's smart government agenda and its alignment with the smart government goal as highlighted by the UAE cabinet ministry and highlighted by His Highness (analyzed in 2.4). Thus, it can be stated that there are certain technical issues of implementing smart services, however, the effectiveness is indicated by the proactive actions taken by ADM to address such issues to ensure that the customers get the required services on time.

5.3.2.4 Challenges to attract all sections of the people to use smart services

As pointed out by Al-Maamari (2020) "of course, we sometimes have a challenge with some customers who insist to submit their application through the counter, telling us that they are unable to use the online ways or do not know how to

use the site, so in this case, we refer the matter to the municipality". The participant further elaborated that "old people and sometimes even young people insist to take services manually through the counter. Some still of an old school and reject the idea of change". This is significant to note and can be corroborated with the data presented under quantitative analysis. It has been observed that the majority of the respondents belong from the age of 18 to 34 years and thus, it can be stated that popularity of the online services is somewhat low among the senior citizens. Such aspects need to be addressed to enhance ADM's smart service effectiveness. Despite the challenges, the municipality has adopted a number of measures to enhance service effectiveness.

5.3.3 Measures adopted for overcoming challenges to enhance effectiveness

ADM adopted a number of measures to overcome the challenges faced like privacy and security, inability to draw customers from various segment, identifying areas of improvements, and lack of awareness of e-services provided by the municipality. Table 6 provides a comprehensive discussion in this regard.

Table 2: Measures adopted by ADM to enhance smart service effectiveness

Target areas	Measures adopted	Participants' Opinion
Privacy and security	SmartPass	"To protect the customers' privacy, the login was linked to SmartPass, i.e. you cannot access services without logging in with the SmartPass. That meant nobody would view the customer's information except for the customer himself/herself. No one can see his/her lands of other property. Previously, the counter staff used to view the property of the customer, now, it is different, and the privacy is highly maintained" (Alhammadi, 2020). "SmartPass is an entry gate that has been created years ago for digital transformation of the government services in the Country by the

Table 6: Measures adopted by ADM to enhance smart service effectiveness (Cont.)

Target areas	Measures adopted	Participants' Opinion
		Telecommunications Regulation Authority. As for its security, the person firstly registers himself using his identity card and fingerprint. And so, it is confirmed that such a person is the one who registered online. SmartPass obtains data such as name, telephone number, and such things from the identity card and so we will make sure that the person who applied online is the same person. As for privacy and information security, this person may not use someone else's user account and apply through it. He will go online using his account and apply it on behalf of any other person. We use the identity card as a primary key for the customers' profiles in the land systems" (Al-Maamari, 2020). "Telecommunications Regulatory Authority (TRA) has launched this digital identity which is considered as an upgrade to the "SMART PASS". The digital identity is currently working as an alternative for ID Card, by which you can access the government websites of the Department of Municipalities and Transport (DMT) and even the other entities" (Al-Maamari, 2020).
	Permit	For the customers who are unwilling to share personal details with others "Now, only the customer or those who are permitted by him/her will be able to view his/her property" (Alhammadi, 2020).
Increase in adoption among different customer segments	Supportive services	"Around 3% of the customers still visit municipality offices, and we still serve them" (Alhammadi, 2020). "In such cases, our employees at ADM are trying to simplify the matter for them, they explain how to register step by step and are very willing to help and we have also provided them with the technical support number that is 800850 in case someone

Table 6: Measures adopted by ADM to enhance smart service effectiveness (Cont.)

Target areas	Measures adopted	Participants' Opinion
		faces a problem or something. If anyone failed to submit his application, he can easily contact them, and they will explain the matter to him". (Al-Maamari, 2020). "When customers call at night, agents are there to answer their inquiries and try to solve the problem or even guide them how to apply for the service using the platform" (Al-Maamari, 2020). "VIPs who cannot come to the municipality headquarter for the purpose of registration; we provide a certain service for them in order to be able to book an appointment. They may say that they are too old to visit the municipality. Therefore, we, as employees of the ADM, go with laptops accompanied by an identity reader to such person and sign up for them" (Al-Maamari, 2020). "We initiated a call center that used to work only 8 hours in the morning, but now customers get services all the time. Even at the time of Friday sermons that used to be a free time of work, people finish around 70 services, that's why we provided support all the week" (Alhammadi, 2020).
Identify areas of service improvements	Customer feedback	"All the online services shall face some challenges and obstacles; therefore, your feedback will be highly appreciated. After your service is completed via the platform, an SMS will be sent to the customer and it will be shown even on the site as well. The SMS to be sent to the customer or that will appear on the site is deemed as a survey to know what do you think of service (X) that has been provided to you; in case of the customer was unhappy or dissatisfied with the service, he will be asked to provide us with some suggestions to improve our service. This is the main aim of such feedback … improving our service. We are following up, on a weekly and monthly basis, the

Table 6: Measures adopted by ADM to enhance smart service effectiveness (Cont.)

Target areas	Measures adopted	Participants' Opinion
	Collaboration with Services Development Department	opinions of the customers 'satisfaction on the electronic services, and we see what we can quickly amend in the system, and what might take time to improve". "improve our services in cooperation with Services Development Department that is responsible for coordination with the departments that own the service so that we improve the system and reduce the procedures further and even trying to decide what services we are able to provide immediately, with no accreditation procedures with a view to save our customers' time".
	KPIs	"Most of the services are provided with a KPI. Any service is launched firstly as a trial one for a specific period and then it has a performance indicator (KPI). Such performance indicators measure the time passed since the application is submitted by the customer until it reaches the Municipality. This is of course in coordination with the Relevant Department and our Performance Department. We even put KPI on each service to be measured monthly. It is followed up in the event of a performance index has exceeded the previously agreed upon (KPI). We tell them, give us a reason. What is the justification for such a delay? Here we discover any challenges facing the Department itself in some services".
Increasing awareness	Leveraging social media channels	"We are trying to increase people's awareness through the municipality's social media accounts including Twitter and Instagram. We post videos explaining how to use the services and the method of submission. We have reached so many people, consequently, they became aware of our services in the platform" (Al-Maamari, 2020).

5.4 Recommendations

When the participants were asked about recommendations or suggestions to improve ADM's services, Alhammadi (2020) stated that "we work to make the services instant, i.e. you apply for the service and get it immediately. By the end of this year, 50% of our services, 400, will be instant. Customers will need no approval, discussions, or waiting periods to get the services". It can be stated that such instant services can improve the effectiveness of ADM's services. It can help meet customers' expectations (performance expectancy) and thus improve their satisfaction. Furthermore, Alhammadi (2020) also stated that "we want now to provide predictive services before the customer requests it. For example, if we know that a certain customer buys food products in the beginning of month, we send him/her an email asking them if they want to buy the food products and if "yes", we send the food products and deduct the money". Following this, it can be stated that such proactivity can enhance the service effectiveness of the municipality.

In this regard, Al-Maamari (2020) stated that "We have a working team to manage electronic services and communications. We follow-up on our services, so every week we submit a report to the senior management. We follow up the performance of services, what services are included within the indicator and how many services and then the senior management would transfer the same to sectors such as the land sector or the town planning sector".

Furthermore, following the initiatives discussed around customer feedback, it can be stated that ADM considers the recommendations and improvements from the customers and address repeated problems. As highlighted by Al-Maamari (2020), they report and coordinate them with the concerned team for the development of services

and adequate technical planning. This indicates customer-centricity and participation of the customers in creating and improvising smart services provided by the government. Such aspects are also highlighted by previous researchers discussed in Chapter 2 (Mizrahi & Vigoda-Gadot, 2009).

Finally, Al-Maamari (2020) also stated that “we try to unify an electronic channel to include all the services of the municipality. No more than one electronic channel, it is just one channel. This is almost all the matters that are related to the Smart Hub and the smart platform”. Such initiatives have contributed towards providing an integrated experience to the municipality’s smart service users and enhanced their adoption.

In the final analysis, therefore, it can be stated that although ADM has faced a number of challenges in terms of privacy threats, technical issues, addressing the needs of all customer segments, and meeting the widening demands from the customers, it can be stated that the municipality has taken a number of initiatives as well. Such efforts have contributed towards increasing the municipality’s service effectiveness and increased customer satisfaction. One of the significant initiatives, as drawn from the responses of the participants, is the increasing focus on the customers, their requirements, and needs. ADM through various support services has provided the users with convenience, assistance, ease, and comfort for availing the online service and has met the performance expectancy of the customers. Moreover, they have also focused on continuous improvements of their services based on customers’ feedback that has further contributed towards enhanced smart service effectiveness of ADM.

5.5 Chapter summary

The findings obtained from the survey and interviews were presented in this section. While quantitative data indicated that the independent variables significantly determine the service effectiveness of ADM, qualitative data indicated the nuanced dimensions of the constructs. It has been observed that customers and their demands are one of the prime areas of concern for the municipality and the efforts and initiatives adopted by ADM have centered on improving their satisfaction. Although the municipality has faced challenges, they have also taken proactive measures to address those issues. The quantitative data and qualitative data converged and showed that the senior citizens and residents have lagged in terms of smart services, however, qualitative data highlighted the support services to enhance their effectiveness and encourage adoption. Another positive initiative revealed in this study is the use of social media to increase awareness, establish customer interfaces, and promoting awareness of ADM's smart services. Such efforts are unique and clearly indicates the service effectiveness of the municipality and its contribution towards the UAE's smart government vision.

Chapter 6: Discussion, Conclusion and Recommendation

6.1 Discussion

The present research aimed to analyze the effectiveness of ADM's service effectiveness in terms of privacy security, public trust and confidence, accessibility, and performance expectancy. To this end, the researcher adopted a mixed methodological research approach and combined survey and interview to gather quantitative as well as quantitative data for the study. The study carried out a survey among the ADM's customers and asked for their opinions and views regarding the service effectiveness of the municipality. The analysis of the quantitative data revealed a high mean score for each of the independent variables of the study that indicated that a high level of service effectiveness of the municipality. Further analyses were carried out to see the percentage distribution of the respondents above the mean and percentage of the respondents below the mean. From the analysis, it was observed that the majority of the respondents were above the mean score that indicated satisfaction with ADM's services among the customers. From this, it can be concluded that ADM has high performance in terms of public confidence and trust, safety security, performance expectancy, and accessibility.

Therefore, the research achieved its aim of assessing the service effectiveness of ADM's smart services. It revealed that all the chosen dimensions of effectiveness have a strong determining influence and the majority of the customers find the services of the municipality to be useful and effective. Thus, the findings corroborate the existing studies that also highlighted the chosen dimensions in determining the level of service efficiency. It was found that ADM has ensured its service effectiveness by focusing on all the chosen parameters of the study and met customers' demand. In addition,

following the aim, the research also revealed some challenges in providing smart services by ADM. One of the major lacks that was revealed by the quantitative data was that the majority of the customers of ADM belong from a young age group. In other words, 72.1% of the respondents belong from the age group of 18 to 34 years of age. This indicates that the low-level of adoption of the services among the older generation or mid-aged individuals. Since younger generations are more tech-savvy, the adoption of the services is more. In order to enhance the adoption among the other people, it is important to provide assistive services and support and such findings were taken into consideration to provide certain recommendations in the given study.

6.2 Conclusion

Thus, following the first aim of the research, it can be stated that the ADM has successfully met the needs and demands of the customer. The high mean score that the results depicted in the previous chapter attest to the service effectiveness of ADM. It has been observed that ADM provides a number of assistive services. For instance, they guide those individuals and help them register for online services and also provide the technical support. The municipality also has a support center that particularly is dedicated to serve these groups of customers and enhance adoption of the electronic services provided by the government. Such support systems are active 24/7 that provide the customers guidance to use the municipality's portal and online services. The also extend such assistive services to the VIPs who are unable to travel to the municipality to avail the services. In such cases, ADM takes proactive measures and offers services to those customers. Finally, those who are unwilling to go for the online services the municipality assists them through the physical counters. Such efforts

clearly demonstrate the municipality's customer-centric focus that is key to deliver smart services.

The research analyzed the dimension of privacy and security and customers' perception regarding the same. It was found that while efforts have been implemented for strengthening the privacy and security of the services of the municipality, technical issues have remained one of the challenges of ADM. Although the research found that the perceived privacy and security is high among the customers, it can be stated that it needs to be strengthened more to increase adoption of the services by all the customers. It was found that the adoption of e-services is comparatively low among the older age groups. This might be because of their privacy and security concerns that also impact their trust and confidence on the electronic services of the municipality.

As highlighted in the literature review, the uncertainty in the new technology is one of the determinant criteria of service adoption. If the electronic services are not perceived as secure and reliable, trust and confidence will automatically be reduced. Therefore, trust and confidence that is one of the dimensions of service effectiveness may be analyzed as strongly connected to other dimensions of privacy and security and thus needs to be addressed specifically to enhance effectiveness.

In addition, the results revealed that the technical system sometimes is down that affect providing smart services to the customers. This can also be connected to the performance expectancy dimension that relates to the perceived ease of service use by the customers. If the customers face challenges in using online services, they will not be willing to adopt such services as they do not meet their performance expectations and do not fulfill their service needs. Therefore, such issues need to be carefully addressed to enhance service effectiveness and usefulness of the municipality and meet

customers' demands. However, with the online services of the municipality, the customers can apply for any service on the platform and pay its fees using the website and get the final product online. The customers are not required to visit any center, the services are easier and simpler now. Such efforts have positively contributed to ensure ease of use and met performance expectancies of the customers.

In terms of accessibility, ADM has taken a number of initiatives. For instance, the participants stated that currently the municipality has 157 online services for the customers. In addition, the interviewees also stated that in order to ensure accessibility they also visit customers' (especially old people) house to help them register online services. They also offer assistive services with their 24/7 support center and technical support number. The call center is operational all the time and is ready to offer customers assistance and help.

Another significant aspect revealed by the research is the ever-increasing needs of the customers in terms of electronic services. ADM customers now demand instant services and are not willing to wait for long to receive assistance. They also demand the expansion of services to reduce their burden. Such increasing demands puts additional pressure on the municipality to meet the services of the customers. Performance expectancy thus emerges to be a critical dimension in this research that implies that ongoing improvement and upgradation is required for fulfilling customers' expectations as their needs change with the changing situations and changing times to improve service effectiveness and usefulness.

Finally, it can be argued that ADM has adopted a number of initiatives to enhance service effectiveness. For instance, it has paid particular attention to improve user experience of electronic services. The user-centricity is clearly evident from the

municipality's attempt to capture the feedback of the service users. ADM undertakes survey and asks for their feedback about the online services of the municipality and, thus the services were further improvised based on their feedback. It helps them to identify the key areas of improvement and thus take corrective measures. The municipality also follow-up with the customers on a regular basis to know their service experience and understand the challenges they faced in terms of online services. Finally, the findings also revealed that the municipality has utilized social media channels to increase awareness of the municipality's smart services. All these efforts have positively contributed towards service enhancement of the municipality and augmented them towards the realization of Abu Dhabi's smart government objectives. These also have an impact on the overall smart government goal of the UAE.

6.3 Recommendations

While ADM has already adopted measures to enhance smart service effectiveness, the researcher provides some additional measures to further service effectiveness. For instance, key attention needs to be provided to ensure the privacy and security of the online services of the municipality. While there are secured login platforms using SmartPass, technical infrastructure needs to be improvised and made it more robust to protect customers' identity. Emerging technologies can be implemented to address security threats and privacy breaches. This will also increase confidence of the users and increase the likelihood of adopting the online services.

Another area that needs further improvement is incorporating all the groups of the customers. While there are assistive services, the senior citizens or old people also must be counselled for making them understand the benefits of using e-services. Using social media can be helpful in this regard, however, it will not reach to the customers

who are not active on social platforms. Thus, ADM needs to take a consultative approach and counsel the senior citizens and customers to use and adopt the services. Assistive services thus needed to be combined with counselling approach to make all segments of the customers aware of the benefits of electronic services.

Another challenging area that needs to be proactively managed by ADM is the increasing demands from the customers. To this end, the municipality can ask the customers about the services they would like to see in the future and understand the areas of needs. While surveys can help analyzing the effectiveness of the existing services, an in-depth analysis of the customers' requirements can help ADM understand the areas for future service creating. This can add further effectiveness and effectiveness of the municipality's services.

6.4 Research implications

6.4.1 Theoretical implications

The study is founded on theoretical and conceptual analyses and chosen the constructs or variables from the extant literature that validated the selection of the constructs for the study (privacy security, performance expectancy, accessibility, and public confidence and trust). It contributed to the existing literature by showing the impact these variables have on service effectiveness.

The study also created new knowledge in the chosen research field as the UAE was not adequately studied till date. By conducting empirical research, it contributed to the limited body of knowledge in the UAE and generated new knowledge in the chosen area of research. In addition, the study focused on municipality level of government that establishes a critical link between the government and the residents

or citizens. By drawing on the empirical evidence it shed light on the various services that municipal government offers and how technology can help enhancing service effectiveness. It also provided an understanding of customers' views and opinions that determine e-service effectiveness of government.

6.4.2 Practical implications

The results derived in the study can be useful for ADM to understand the customers' opinions and views relating to the online services. These can be employed for identifying areas (like privacy and security) to adopt a more robust measure to enhancing service quality and increasing their adoption. By considering the results of the survey, one can understand the factors that impact service effectiveness and provide useful insights for understanding customers' perceptions. For instance, the mean scores obtained in this study can be analyzed to understand the areas that ADM needs to focus to improve service effectiveness. It can also take into consideration the number of respondents below the mean score and understand their grievances and concerns for identifying the challenges faced by them and addressing those to meet their requirements.

In addition, the recommendations proposed in this research can be considered for improving the service effectiveness of ADM. These suggestions can add further value to the e-services and help the municipality target all the segments of the population more effectively.

The results may be used by leadership and policymakers who are in-charge of managing the smart services. Since municipalities are at the basic level of government and the customers, the results can help understand the areas that require greater

attention in terms of financial investments and policy formulation. These considerations can further add to the enhancement of the service quality and effectiveness and help fulfilling the requirements of the service users more effectively.

6.5 Limitations of the study

One of the primary limitations of the study is the small amount of sample size. Due to the recent situation of COVID-19 in the country the researcher was not able to gather the data by going to the municipality and exploring the customer database of ADM. Instead, the researcher relied on the personal contacts and the assistance provided by the municipality to gather the research sample. Thus, the sample cannot be considered as representative of all the customers of ADM. Moreover, the interview was also conducted with only two personnel from ADM's IT department that hindered collection of wide-ranging perspectives on the research issue.

Another limitation of the study is that it is confined to the municipality in Abu Dhabi and does not include the other two municipality under DMT, i.e. Al Ain Municipality and Al Dhafra Municipality. Therefore, the research results may not be applicable for all the municipal-level government. Moreover, the study focused primarily on the municipal-level government and thus cannot be applied for country-level government entities.

6.6 Future directions

The study can serve as useful base for conducting future research in this area. For instance, future researchers may carry out a comparative analysis between ADM, Al Ain Municipality, and Al Dhafra Municipality, and analyze the best practices adopted by each of them to enhance service effectiveness. Such studies can provide

useful insights into the measures for improving e-service quality and overcome challenges related to it. It can also help overcoming the shortcoming of a small sample size.

Furthermore, future research studies can explore the impact of the chosen factors (performance expectancy, accessibility, privacy and security, and public trust and confidence) in the broader context of the UAE's smart government framework. Such studies can help in understanding the extent of impact and provide predictive value for measuring service effectiveness. Such robust quantitative analysis can be helpful for strengthening the overall smart government framework of the country.

Along with the quantitative analysis, qualitative analysis can also be carried out across the UAE to understand the customers' perspective about the smart service effectiveness. In addition to the four dimensions considered in this study, future studies can also incorporate the dimension of e-participation to assess the smart service effectiveness of the UAE.

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Appendices

Appendix A

قسم الحكومة والمجتمع

22 أكتوبر 2019

إلى من يهمه الأمر

تقوم الطالبة هاجر سعيد أحمد الكويتي بإعداد دراسة علمية كجزء من متطلبات الحصول على ماجستير الحوكمة والسياسة العامة بجامعة الامارات العربية المتحدة / كلية العلوم الإنسانية والاجتماعية/ قسم الحكومة والمجتمع بعنوان "الحكومة الذكية في بلدية أبوظبي: دراسة تحليلية لآراء العملاء" بإشراف الدكتور سامي الحسن. لذلك نرجو من سيادتكم التكرم في المساعدة بتسهيل اجراءات الطالبة في هذا الأمر.

وتقبلوا فائق تقديرنا واحترامنا ،،

د. محمد بن هويدّن
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- Sample of the email sent to the ADM customers

Dear customers,

You are invited to take part in the survey for evaluating Abu Dhabi Municipality's smart government services and the way they meet your requirements. It attempts to capture customer's opinion about the electronic services provided by the municipality and their effectiveness.
The survey is conducted as part of my Master's thesis in Governance and Public Policy and the research project will be submitted to the UAE University. It is a purely academic work and the responses provided by you will be used only for the academic purpose with professional confidentiality. The data will be completely anonymous, and your name will not appear anywhere in the research process.
I will be greatly thankful for taking some time in filling up the enclosed questionnaire. Thanking you, in advance, for your help in helping me.

- Sample of the email sent to ADM for permission

Dear Sir/Madam,

I am a student of United Arab Emirates University pursuing my master's degree in Governance and Public Policy. As a part of the degree I am required to conduct a research and I have chosen the topic of smart government service and its effectiveness. As UAE government has made several efforts in providing the customers with online services, I am really keen to understand how Abu Dhabi Municipality is working towards the country's agenda and working to provide its customers with smart services. I am aware of the few initiatives towards digitalization and launch of SmartHub and want to learn more about your services and the way they fulfill customers' requirement.
For accomplishment of my research project, I request your kind cooperation and help. It would be great if you can help me with the required information and data. I would like to visit the municipality and do some interviews with the managers from your IT team. The data that I will collect will remain confidential and nowhere will it be published. It would be treated with extreme confidentiality and will be stored in a secured manner with proper password protection. I would not require any personal details of the employees except their basic background information line designation, years of experience etc.
I sincerely hope that you would allow me to conduct the research and help me fulfilling my academic requirement.
Many thanks in advance for your kind cooperation and support.

Appendix B

Survey Questionnaire

- Demographics

1. Please indicate your age group

    a. 18 - 28
    b. 29 - 38
    c. 39 - 48
    d. 49 - 58
    e. 59 years and above

2. Please indicate your gender

    a. Male
    b. Female

3. Which device do you use for availing online services of the Abu Dhabi Municipality?

    a. Smart Phone
    b. Tablets
    c. Laptop
    d. Computer
    e. Others

4. Please indicate from which location you avail the online services of the municipality?

    a. Home
    b. Office
    c. Municipality Smart Hub
    d. Others

5. How many times you have used the municipality services in 2019?
    a. 1-3
    b. 4-6
    c. 7-9
    d. 10 or more

6. What is the purpose of using the online services?

- Customers' Opinion on Abu Dhabi Municipality Smart Government Services Public Trust & Confidence

1. I have confidence in Abu Dhabi Municipality's ability to provide online services.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

2. I feel confident using internet to make online transactions for E-government services.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

3. I feel that online services provided by the municipality is safe and secured

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

4. I feel that the information provided online by the municipality is accurate.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

5. The smart government services of the municipality encourage participation and collaboration from the residents.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

- Safety & Security

1. I believe that the online services exist to help citizens.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

2. I think the online services offers privacy in terms of protection of personal information.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

3. Online services of the municipality help in identity checks

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

4. I have not come across any privacy or security breaches in the online services of the municipality

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

- Performance Expectancy

1. I can perform the online transactions with ease.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

2. I feel that the E-government services of Abu Dhabi Municipality meet my purpose of saving money

a. Strongly agree
b. Agree
c. Neutral
d. Disagree
e. Strongly disagree

3. I feel that the E-government services of Abu Dhabi Municipality meet my purpose of saving time

a. Strongly agree
b. Agree
c. Neutral
d. Disagree
e. Strongly disagree

4. I feel that the E-government services of Abu Dhabi Municipality meet my purpose of saving effort

a. Strongly agree
b. Agree
c. Neutral
d. Disagree
e. Strongly disagree

5. All (or most) of my needs and requirements are fulfilled through the municipality's online services.

a. Strongly agree
b. Agree
c. Neutral
d. Disagree
e. Strongly disagree

6. There are chances of rectifying errors in the online services provided by the municipality

a. Strongly agree
b. Agree
c. Neutral
d. Disagree
e. Strongly disagree

- Access to E-government services

1. I feel that the municipality provides relevant information to access online services.

a. Strongly agree
b. Agree

c. Neutral
d. Disagree
e. Strongly disagree

2. I feel that the website for online transaction is user friendly.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

3. I feel that the availability of the information on the website is comprehensive and clear.

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

4. The smart government services of the municipality are personalized

    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

Appendix C

Interview Guide

1. To what extent do you think Abu Dhabi Municipality is able to meet the needs and requirements of the customers through E-government services? What benefits do they get by using these online services?

2. Do you think they face any challenges in using the municipality's online services? If yes, please provide an example.

3. How do you ensure the privacy and security of the services? How do you protect the system from threats and cyber-attacks?

4. What kind of support do you provide to the customers to benefit from these E-government services?

5. What would you recommend to improve the online services provided by the municipality?

Appendix E

Interview Transcripts

- Interview 1

Alhammadi, A. A. S., 2020. Face-to-Face interview with Mr. Ahmed Abdul Sammad Alhammadi, Technology Planning Director, Abu Dhabi Municipality, on March 17 in his Office in Abu Dhabi.

To what extent do you think Abu Dhabi Municipality is able to meet the needs and requirements of the customers through the E-government services? What benefits do they get by using these online services*?*

Abu Dhabi Municipality is able to meet the needs of all customers, I mean the three municipalities: Abu Dhabi Municipality, Al Ain Municipality and Al Dhafra Municipality.

The interviewer: Are the three municipalities standalone entities or they are one entity?

Abu Dhabi Municipality, Al Ain Municipality and Al Dhafra Municipality are considered three different government entities but the three of them are run by the Department of Municipalities and Transport.

Undoubtedly, the online services made a significant improvement and what proves it that the result of the first customer satisfaction survey we did was less than 70% and has become more than 90% now, which is the best result in years. In the previous year, the percentage never exceeded the 70%, now, it is 90%; this means that the municipality exerts the utmost effort to satisfy and meet the needs of the customers.

The digital transformation of the Municipality's services is financially efficient for the customers, as it has achieved remarkable financial savings. Before that, customers used to visit municipality offices three times in order to get on service. At that time, around one million customers were dealing with the municipality and every customer used to come in person three times to get a service or a document. Now, customers can get the services while they are home. Unlike before, customers can get services at night and on Fridays and Saturdays. It has become very easy for the customers who are not required to visit municipality offices or get approvals after multiple steps. We found that the digital transformation's returns on customers hit around AED 1,390 million and saved more than 9 million hours of driving. These figures were calculated based on that the fact the customers used to leave their works and visit municipality offices for two or three times in order to get services.

Do you think they face any challenges in using the municipality's online services? If yes, please provide an example.

Yes of course, the more you develop the service, the more people will expect. They consider such development as a step and wait all the time for the best. Previously, customers used to wait for many days to get services, now they say, "we need instant services and not to do multiple steps in order to get the services we want". Sometimes, the customers had to apply for another service before getting other ones, for example, if a customer wanted to establish an awning in front of his house, he had to apply first for another service, which is the service to make sure that the meant sidewalk can accommodate an awning. From the customer's point of view, these steps are meant to be done by the municipality and he should get the service immediately after applying for it without going into the details. Sometimes, some services needed approvals from other entities and the customers thought they should not do all these steps to get the services. For example, the mortgage service needed the bank approval and used to take two months until it is completed. The customers were not satisfied and wanted to get the service as "one package". To satisfy the customers and save their time, the service duration has been reduced to only 6 days, but the customers still want it in less time. Also, the food products service has become digital and the delivery service was added to meet the requirements of customers who were not satisfied by only making the

service digital. All that increases the expectations of customers. Any other inquiry or you want me to continue?

The interviewer: please continue. Are these the most notable challenges? i.e. the more service gets developed, the more expectations for other facilities are seen … I mean the customers become overambitious?

It is expectations not ambitions. Also, to make the user experience exceptional and positive, the website should be usable and friendly. We should improve the user experience, and this is the third challenge. The website should be as easy as Google, nobody needs lessons to use Google.

How do you ensure the privacy and security of the services?

To protect the customers' privacy, the login was linked to SmartPass, i.e. you cannot access services without logging in with the SmartPass. That meant nobody would view the customer's information except for the customer himself/herself. No one can see his/her lands of other property. Previously, the counter staff used to view the property of the customer, now, it is different, and the privacy is highly maintained.

I remember a funny example of this mater:

One day, a customer complained to our boss, His Excellency the Chairman, saying "Oh brother, it is not appropriate that I give password to my wife so she can buy some food products and so on. Then she could view my property and said, "how did you managed to get all such property and you did not tell me about it". I have been really put in troubles because of that". That's why we initiated a solution that the customer may give a permit for his wife to get the service without viewing his property, in order to maintain privacy.

Now, only the customer or those who are permitted by him/her will be able to view his/her property. Even the counter or back office staffs can view the property of the customers who currently enjoy very protected privacy.

Indeed, the UAE data is securely saved in data centers that are developed in accordance with the best international standards and secured by the best information security tools.

Thanks god, our data is securely saved and kept away as much as possible from hacking and such problems. Also, we established what they call" Disaster Recovery" which is an alternative date center in another location (Al Dhafra area) so it works if the main one faces any failure and the information is kept safe.

What kind of support do you provide to the customers to benefit from these E-government services?

Previously, the digital services were a few, now, 97% of customers finish their services online. We initiated a call center that used to work only 8 hours in the morning, but now customers get services all the time. Even at the time of Friday sermons that used to be a free time of work, people finish around 70 services, that's why we provided support all the week.

The Interviewer: Call Center

Now the working hours of the call center 800850 is 16 hours a day. The customers are online all the time, so we developed the call center and worked very hard in this regard. In addition, we are going to provide registration the customers abroad in the embassies. To register, they will have to register their fingerprints in the embassy, that's why we try providing 400 registration machines to our embassies abroad. Such machines will help providing the best support to our customers abroad. We have also developed a Chatbot, so the customer will be speaking to a robot not a human to finish the services. The call center was developed, its procedures have become easier and the number of employees has been increased to help the customers in the best way.

What would you recommend to improve the online services provided by the municipality?

For sure, it is a development journey and people want more all the time. Now, we work to make the services instant, i.e. you apply for the service and get it immediately. By the end of this year, 50% of our services, 400, will be instant. Customers will need no approval, discussions or waiting periods to get the services.

The second thing that we are now connected to other governmental entities, for example, a customer wants to get "Property Ownership Certificate" to apply for a

residential land plot, we can give him/her the information the same as the Housing Authority so they do not need to visit us for a second time.

The third point is that we want now to provide predictive services before the customer requests it. For example, if we know that a certain customer buys food products in the beginning of month, we send him/her an email asking them if they want to buy the food products and if "yes", we send the food products and deduct the money.

The fourth point that we will make the services simpler and easier. In addition, we will connect our systems to make the experience easier.

The interviewer: I have a question, what about the old people, do they face any difficulty?

No, it has become very easy for all educated people to use technology. They easily use WhatsApp, Twitter, Instagram, Snapchat and other mobile apps. For the senior citizens, we have a special hall for them in the municipality, so if they come and see they cannot or do not want to use the digital service, we finish their services and all the procedures ourselves. Also, for the people of determination, we are ready to serve them all the time. As I told you, around 3% of the customers still visit municipality offices, and we still serve them.

- Interview 2

Al-Maamari, O. Z., 2020. Face-to-Face interview with Mr. Omar Zahran Al Maamari, Head of the Electronic Services Design Division, Abu Dhabi Municipality, on March 17 in his Office in Abu Dhabi.

To what extent do you think Abu Dhabi Municipality is capable of fulfilling the customer needs through the E-government services? What are the benefits which the customers will get by using these services via the website?

First of all, Abu Dhabi Municipality has adopted the digital transformation upon instructions of the senior leadership to provide simple services to customers without the need to visit the customer service centers in Abu Dhabi or Dhafra, and this led to creating the smart platform. Currently, we have 157 services online. The customer, a

person or a company may apply for any service on the platform and pay its fees using the website and get the final product online. The customer shall not visit any center, the services are easier and simpler now. The customer should not ask for permission from his work and look for a parking around the municipality building, where we are trying to avoid congestion in streets, to obtain a document such as a property ownership certificate. Currently, everything is available online and the customer may apply for the services he needs whether he is inside or outside the country. The customer can visit the website from anywhere and get the final product, pdf document, which is recognized by the other government bodies, local or federal bodies. Once the customer goes to any government body with a property ownership certificate, title deed or plot layout, it will be dealt as official document issued by the Municipality. We do not print papers on letterhead. Some services are immediate where once the customer applies for it, at night or dawn, he will get it and then he may head to any bodies requesting for such document. We have made the services easier and simpler. We have already activated the services online and now we are discovering any problems or necessary improvements. We never forget the service we launch, but we monitor it. Some services need to be improved as they do not need to get approval, such as the lands file does not to be approved as it is already approved previously. The person has a property ownership certificate and already paid its fees, then it will be ready it two minutes. These services are also provided to companies. A lot of companies use the online services. We have never forced the companies to use out online services, we let the counters and customer services outlets provide the services for a period of time and then we stop such services in the counters and guide people to the platform. The customers, persons or companies, register themselves in all municipality centers. We use the Smart Pass in the platform. Smart Pass is entry gate that has been created years ago for digital transformation of the government services in the Country by the Telecommunications Regulation Authority. As for its security, the person firstly register himself using his identity card and fingerprint. And so, it is confirmed that such person is the one who registered online. Smart Pass obtains data such as name, telephone number and such things from the identity card and so we will make sure that the person who applied online is the same person. As for privacy and information security, this person may not use someone else's user account and apply through it. He will go online using his account and apply on behalf of any other person. We use the

identity card as a primary key for the customers profiles in the land systems. For example, you had registered on Smart Pass and logged in, you will automatically have a profile on the Smart Pass once you try to apply for land services. We connect it with your profile through the identity card. Once you have a profile in the land systems, we link it with your account and activate the services and turn it into green floor. If you do not have a profile in the land systems, we get your application and create a profile for you which will be ready for future transactions once you buy a plot of land, or get a plot of land or a house from the government, your profile will be ready, and this is surely for the UAE citizens and for expatriates having units. The customer, who would like to buy a property such as the developers, should have a profile on the lands system where he may log in the platform and apply for a unit title deed. It is not limited to UAE citizens only, but the expatriates may also register, log in and apply for the services he likes. As for the companies, any person logged in Smart Pass may register for the company and apply for services on behalf of the Company. The data should be similar to the trade license. We have been connected with the Department of Economic Development regarding the commercial licenses. As for the licenses issued outside the Emirate of Abu Dhabi, we are able, to register them with Noon, with a view to make a system for each, i.e. whenever he registers, he gets the accreditation, and once the company's registration application is approved, he will have two separates profiles, meaning that there will be no confusion between the person's profile with the company's profile. Once he enters the platform, he will find the personal profile, I mean, he can finish his affairs whether he seeks services related to him or not. In fact, he can submit an application on behalf of the company, changing from the personal profile to the company profile, as if the said application is presented in the name of the company. However, who is the applicant? (X) person in the name of the company, just then we will separate the individual personal services and company services so they don't mix services, but all will be provided on the same page, sorry, I mean on the same website. The only thing it needs is to click twice to move from his personal profile to the company profile. Of course, there will be some challenges, I am not saying we are a perfect service provider or our services are second to none, all what I am saying is that all the online services shall face some challenges and obstacles, therefore, your feedback will be highly appreciated. After your service is completed via the platform, an SMS will be sent to the customer and it will be shown even on the

site as well. The SMS to be sent to the customer or that will appear on the site is deemed as a survey to know what do you think of service (X) that has been provided to you; in case of the customer was unhappy or dissatisfied with the service, he will be asked to provide us with some suggestions to improve our service. This is the main aim of such feedback …improving our service. We are following up, on a weekly and monthly basis, the opinions of the customers 'satisfaction on the electronic services, and we see what we can quickly amend in the system, and what might take time to improve. As I told you at the beginning, we keep in touch with our customers, I mean, we take feedback from the customers dealing with it and we already follow the services on a daily basis trying to increase and improve our services in cooperation with Services Development Department that is responsible for coordination with the departments that own the service so that we improve the system and reduce the procedures further and even trying to decide what services we are able to provide immediately, with no accreditation procedures with a view to save our customers' time. Surely, one of the challenges that we are facing is that some transactions need time to be approved or accredited, and sometimes it takes so much time, therefore, thanks to God, most of the services are provided with a KPI. Any service is launched firstly as a trial one for a specific period and then it has a performance indicator (KPI). Such performance indicator (KPI) measures the time passed since the application is submitted by the customer till it reached the Municipality, this is of course in coordination with the Relevant Department and our Performance Department. We even put a KPI on each service to be measured monthly it is followed up in the event of a performance index has exceeded the previously agreed upon (KPI). We tell them, give us a reason. What is the justification for such delay? Here we discover any challenges facing the Department itself in some services. I mean, they cannot approve the service directly because it is related to other services or procedures. In other words, they are trying to improve the procedures in order to accelerate the approval and accreditation of the basic service that is provided to customers. Sometimes there are some technical challenges facing us in the system. Sometimes the system is lagging down, but we overcome it because we have a response plan provided by our Technical Planning Department. So, whenever the system is down, there are here to help! Since our technical team is available 24/7, God willing. I assure you that if the system is down, our technical team will solve the problem as soon as possible. Of course, we

sometimes have a challenge with some customers who insist to submit their application through the counter, telling us that they are unable to use the online ways or do not know how to use the site, so in this case we refer the matter to the Municipality.

Do you mean you are facing such a problem with a certain class, for example, the elderly?

Yeah, some of them are old people and some even young people, I mean, I am insisting that I do not want to present this service through the counter. But in all cases, our employees in Abu Dhabi Municipality are trying to simplify the matter for them, explain how to register and are very willing to help. They tell the customer how to register step by step and we have also provided them with the technical support number that is 800850 in the event that someone faced a problem or something. If anyone failed to submit his application, he can easily contact them, and they will explain the matter to him. Praise be to God, most people accept it even the elderly, and the senior citizens, we have also provided the hall of service for senior citizens in all of our customer happiness centers. Actually, some of those who are not so familiar with technology came to us to register, I have met so many cases that came and said that they want to register even if they do not know how to make it therefore we register the user and the password for them, but once they knew that we have provided this service online, they say that their children will register and use these online services instead of coming over and over to the Municipality in person. This means that they have become already familiar and knew about the platform. Praise be to God, people started to get used with this idea, however, some still of an old school and reject the idea of change. I mean changing the culture of people or a person is difficult since he is accustomed to use the previous system insisting to submit his application in person via the counter. But now everything is online, and if you submit your application online, you are able to trace it through the KPI, and in case of delay, the concerned department will be held accountable, and the department entrusted with the service will be held accountable as well. But praise be to God, in that regard, I mean, any challenge we face, we try to seek solutions for it, whatever it is, whether internal or even sometimes seeking help from the suggestions and ideas of our customers who send their feedback or by using the customer satisfaction survey sent to them by SMS or shown in the website.

Concerning the question of the privacy and security of services.

Obviously, we apply certain standards of services about which Ahmed Abdel Samad may told you at the level of the Emirate of Abu Dhabi. In addition to any standards that are applied for the systems used or as security, I can tell you about the "USERNAME" only, since I have explained to you the "SMART PASS". However, until now the Telecommunications Regulatory Authority (TRA) has launched this digital identity which is considered as an upgrade to the "SMART PASS". The digital identity is currently working as an alternative for ID Card, by which you can access the government websites of the Department of Municipalities and Transport (DMT) and even the other entities.

What kind of support do you provide to customers to benefit from the smart government services?

Definitely, as I have mentioned before, we have all the customer service outlets. In such outlets, agents register for the customers in the smart platform and explain to them the mechanism of registration. Furthermore, we have activated the service of the technical support number for the smart platform, which is 800850, and thankfully, we have done so almost from the second quarter of 2019. The agents, during the working hours, were answering the calls. Currently, praise be to Allah, the technical support service is working 24/7. In other words, when customers call at night, agents are there to answer their inquiries and try to solve the problem or even guide them how to apply for the service using the platform. Moreover, we are trying to increase people awareness through the municipality's social media accounts including Twitter and Instagram. We post videos explaining how to use the services and the method of submission. Praise be to Allah, we have reached so many people, and consequently they became aware of our services in the platform. However, there is something about which they know nothing or, to be more precisely, they do not know that it is served on the platform by us. I mean in each period, every two weeks or every month we announce a group of services provided by us, not to mention our participation in conferences, exhibitions, or even residential councils. In such events, we explain these services that we provide and even to sign up for people who are not yet members in the platform. In addition, we have another service, yet I forgot to mention it. It is

considered as a support service; for those elderly people, males or females, or even the VIPs who cannot come to the municipality headquarter for the purpose of registration, we provide a certain service in the platform for them in order to be able to book an appointment, in other words they may say that they are too old to visit the municipality. Subsequently, we, as employees of the Abu Dhabi municipality, go with laptops accompanied by an identity reader to such person and sign up for them. Even though, we go to the offices of the VIPs, general managers and ministers. Therefore, such service is provided for the elderly people and the VIPs.

However, I can tell you that some of those people are VIPs who visit the municipality and register. Thankfully, most people have known about the SMART HUB services and they already use them to the extent that, in 2019, we have reached almost ninety percent of the municipality services that are provided during 2019, via the website. This means that we have achieved the highest number required. Since we, as a government authority, are required to increase the percentage of using the electronic services. Thanks to Allah, the percentage has been increased and we have made it easier for customers to sign up in the platform. Our primary objective is to facilitate the service for the customers. Even though, if you notice, whenever you visit any customer service center in the main building of Abu Dhabi Municipality or Sub-municipalities, you will find no customers there. If the number of customers who visit the platform over the day increases, it would reach 80 persons, most of them are already provided previous services or have an inquiry, or they don't know how to surf the internet. Therefore, they are helped to register and then leave.

What recommendations do you provide to improve the electronic services provided by the municipality?

Well, it shall not be called improvements. We have a working team to manage electronic services and communications. We follow up our services, so every week we submit a report to the senior management. We follow up the performance of services, what services are included within the indicator and how many services???

We follow up the marked index and submit it to the senior management then the senior management would transfer the same to sectors such as the land sector or the town planning sector. In the event that you have late transactions, you can consider them

and we may include the same in the report which is the improvements, I mean we consider the recommendations and improvements during such week, if we noticed repeated problems or services to be improved, we try to report them or even coordinate them permanently with the development of services and technical planning. Since, eventually, the department of services development coordinate with the departments that own the service and technical planning in the event of any technical challenges that we can solve or improve quickly without affecting the service. However, in the event that such challenge has changed, the procedure of the service shall change. We must quickly consider the matter of modifying the service procedure with the owner management. Subsequently, the same shall applied in the smart platform by technical planning department. At the same time, we are following up and improving the existing services; we are working at the same time to create new services. This means that we have never stopped our activities. For example, last week we have activated almost 6 services on the smart platform. During this week, we are working on activating more new services. We try to unify an electronic channel to include all the services of the municipality. No more than one electronic channel, it is just one channel. This is almost all the matters that are related to the SMART HUB and the smart platform. Do you have any questions, if I forgot to mention anything?

Not at all, you have mentioned them all. You have covered all the questions, thank you for the information and forgive us if we annoyed you.

May God grant you success and we apologize for the delay. During the last period, you know the current situation.