Management and Design of Persuasive Smart Services: the Case of United Arab Emirates

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Abstract

Smart services are advocated to enable institutions to provide a not only continuous, but also ubiquitous support to their users, with the aim to reduce the time and effort required from both parties from the establishment to the finalizing of any transaction. Nonetheless, the adoption of Smart Services could face different obstacles including those related to infrastructure, legislations, usability when accessed through mobile phones and the lack of standardization. Furthermore, one of the main obstacles relates to users perceptions of smart services, their ease of use as well as the usefulness. On the other hand, in order to change people behaviour and attitude, such services can be designed to embed certain persuasive techniques and would need to be introduced in a way that makes them accepted by present and potential users. Consequently, this thesis addresses this problem and proposes design principles and processes for augmenting smart services with persuasive elements, and also for the introduction of such services in a way that take full advantage of the motivation of the anticipated users. Nonetheless, motivation and persuasion can be significantly affected by the socio-cultural framework of the users, therefore the thesis focused on the UAE as a hosting environment. In addition, e-government smart services are the main domain of applications to investigate in this thesis. As a matter of fact, the thesis is built on two main models:

- Fogg's eight steps process for designing persuasive technology
- Technology Acceptance Model and proposes amendments

Additionally, the thesis is adding additional considerations to the two different models based on the investigation and the data analysis that took place during the study. Moreover, the thesis followed an empirical approach and involved key stakeholders, including present users as well as experts from various domains that are linked either directly or indirectly to the topic of discussion, through a series of empirical studies. As a result, the proposed process and design principles were validated with key informant and, accordingly, it was concluded that the proposal is both valid and useful for supporting the decision making and process of designing and introduction of smart service in a persuasive and motivational style.

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1.   CHAPTER 1: INTRODUCTION

1.1   RESEARCH CONTEXT

Noticeably, the use of smart phones and devices is on the rise. This includes almost every aspect of our daily life including socializing through social networks, monitoring health conditions, planning activities and communicating for work-related matters. Therefore, the dependency on such devices is increasing both from the business and public perspectives, and it becomes harder day after day to avoid coping with that change when it comes to business. Moreover, there is a mutual benefit both from the provider side and the consumer side, which is a natural result to the use of technology when it influence certain aspects such cost savings, or better time management. In addition, it is advocated that these services could lead to a collective gain by reducing the need for in-person accomplishments of services. Nonetheless, the reciprocal relation necessitates the involvements of both perspectives in the design process of applications running on smart services.

Smart services have also attracted attention within the domain of e-government. In fact, the basic idea is to enable citizens and residents reach any needed governmental services regardless of the location, and whenever needed. Accordingly, this introduces indeed a new range of facilities in comparison to the stationary access through personal computers. For illustration, reporting a car accident at the moment it occurs and uploading pictures in real-time are activities which can benefit from the smart phone, and the dedicated smart services. In other words, the portability of smart phones and the continuous Internet connection can be exploited for real-time and everywhere access to e-government services. Theoretically, this will open the door for a better user experience and a better quality of life on the short and long term.

Nevertheless and despites the potential, the exploitation of accessing and achieving services via smart phones still seems to have obstacles among the present users (summarized in Figure 1), or the attraction of potential users such:
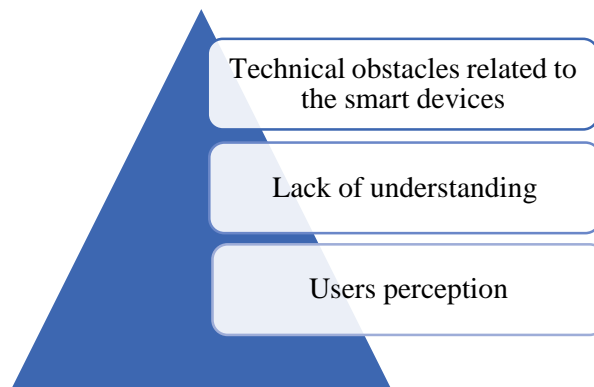
FIGURE 1-1 SMART SERVICES DIFFERENT OBSTACLES

Consequently, there is a need for engineering such services in a way that takes its context, modality of usage and the nuances of the service itself and its traditional version as well as the business process. This is mainly because of the new factors introduced that are not common for users that are usually using their personal computers. This relates to a wide range of factors that are driven from the possible obstacles of the smart services application such:

- The characteristics of mobile access and mobile devices
- The economic value of using them to access e-government services
- The perceived usefulness and ease of use and the technical skills required.

Despites the continuous increase in power of smart devices in terms of computation, memory, and operating systems, there remains a range of technical issues that can hinder the design and adoption of smart services. For instance, the relatively small screen size may limit the amount of functionalities, which can be implemented in respect to smart services. Therefore, it could indeed make a service implementation as a smart service infeasible especially when a high volume of data is needed to complete a transaction, and also when the process requires much interaction. On the other hand, the battery lifetime is another issue especially when the service requires excessive operations like producing and exchanging multimedia and continuous monitoring of the user activity. In addition, in order to be able to use the smart services certain technical skills are required. Besides the skills, there are also genuine requirement for physiological abilities such as the sight and the fingers movement. Subsequently, these facts may preclude certain users groups from engaging with smart services, or use them in erratic style.

In addition to the technology-related obstacles, there seem to be another factor, which relates more to the lack of understanding of how the new business model and the interaction methods of smart services can integrate with the existing business processes, and whether it should be considered as a replacement or an alternative to them. For example, fine payment in the traditional way could indeed give flexibility by the meaning of a human operator in a position

to discuss with the customers the mitigating circumstances, and this may result in reducing the fine or waiving it off. On the other hand, when same scenario is implemented as a smart service, the payment process may not enjoy the same flexibility unless a call between the customer and the customer support is present. Consequently, this would indeed introduce additional dimensions to the effect of online communication, and whether it has the same impact on both parties, positively and negatively or not.

Besides the above challenges, there is a prominent challenge that is linked to the users' perception of such services. According to the Technology Acceptance Model (TAM) (Venkatesh et al, 2000), such a perception concerns two main aspects. The first relate to the ease of use of the services and it relates to both getting the services achieved in an easy way, and also configuring the software including it is various settings such as privacy and security in an effective and easy approach. The second relates to the users perception of the usefulness of that use. This can become a complicated issue if we consider that smart services have a wide range of variables, which can affect the decision making of their users. For instance, while one could argue that they reduce time and efforts, others could argue that users may indeed like to go in person and have a more personalized service and perhaps interact with a human operator, who would possibly customize the services to their individual needs more efficiently and meaningfully.

1.2 DESIGNING SMART SERVICES FOR ADOPTION

Given the obstacles that may face the process of design and adoption of smart services, there is a need for customized principles and design framework, which are specialized to resolve and soften those obstacles. Nonetheless, the range of obstacles varies and it includes a wide range of factors that would not be all addressed through the design and the introduction of smart services. For illustration, the discrepancy between the way the service is accomplished through smart phone and in-person is beyond the design of smart services itself. Accordingly, this calls for a holistic consideration of the design and introduction as well as looking at it as a part of a more integrated process.

Furthermore, one of the main factors, which need to be tackled through the design and introduction of smart services, is the human aspect. Although this human factor can be due to objective and material reasons, such as pricing, connectivity and coverage, there seem to be other aspects, which relates solely to the perception that can be changed or moderated towards a more engagement action with the smart services concept. Yet, engagement here refers to being receptive to know the smart services features, and facilities and taking informed decisions, as

well as maintaining the level of usage, and work towards increasing it should they consider it useful.

In fact, the human factor in accepting smart service is indeed supportive to the view that the services design and introduction processes, are enriched to accommodate and boost users motivation as a first class concern. This can be done through paradigms like Persuasive Technology (Fogg, 2003) and Gamification (Deterding, 2012). However, it remains questionable whether this would be efficient enough, especially when considering domains like e-government services. On the other hand, this relates to the perception of governmental services and the value system that characterise them of being of societal benefit rather than profit making. The application of such paradigms in the domain of e-government is limitedly explored; therefore, we would need to explore it with more security for the smart e-government services that is the recent incarnation of e-government services.

Nonetheless, motivation can be culture dependent issue when it comes to smart services. For example, taken Ciladini principles of influence (Cialdini, 1987), social proof and authority could have dissimilar weight when applied in a collectivist culture in comparison to individualist one. Thus, embedding persuasive techniques in the design of smart services should cater for the cultural differences, and does not assume the same degree of effect when applied in different socio-cultural frameworks. Yet, motivation could also differ at the personal level and in relation to other demographics including gender and age. This suggests that although we can recommend certain options at the cultural level, it remains uncertain whether it will be as efficient as desired at the personal level or not.

Example 1. Suppose a smart phone application meant to help people to register to a renewal of their driving licence, and to pay the fee online. Such an application can be augmented with persuasive techniques of the kind of social proof, e.g. "95% of the people who installed this app found it easy and recommended it to others". On the other hand, another technique could be the progress bar that shows to the user how much of the process has been established so far, so that they feel the temptation to complete it. Another mechanism is to give users points, which can be then translated to a discounted fee in future engagement with smart services.

Besides the design of persuasive techniques in the smart services, the introduction to the public would need to go through a careful process so it maximizes the perception of ease of use and the usefulness. The TAM model (Venkatesh, 2000) is well known for this step. However, an argument could be made that TAM is meant to increase the acceptance level, but motivation could be assisted in a more emphasized way through dedicated mechanisms. Additionally, acceptance and motivation can be culture dependent and they may also depend on the domain

of technology being introduced. We would then need to investigate it further if we explore the new domain of Smart Services when applied to a certain cultural framework.

Example 2. Let us assume one of the ministries that would like to introduce a service for online booking of appointment via smart phone applications. The ministry will need to introduce the service first through some kind of advertisement, online and in person in order to increase awareness, aiming to increase people responsiveness of the usefulness of the service and also the ease of use. However, the process can still benefit from the principles of influence and utilize them during the introduction process, so that they complement the embedded principles in the service itself through its design. For instance, the use of authorities to declare how users used the service could motivate others to install and try. On the other hand, the introduction of the service and the way it is done is subject to a number of external variables. Such variables relates to the domain of smart services and also to the culture of the place where it is supposed to be used.

1.3   SMART SERVICES IN THE UAE

In fact, the use of smart services in UAE is continuously increasing. This includes vital sectors such as health, governance, transportation, education and banking. Nonetheless, it has roots already in the e-Commerce and e-Government and it is benefiting from the increased power and coverage of connectivity to Internet. In addition, is it benefiting from the skills development programs in schools and learning centres, which raise the technical skills of the public in their different age, professions and location.

Furthermore, smart services concept is actually a global trend, and it seems that many of the governments around the globe is moving towards making all of their services available online. Yet, the main drivers behind that are many with focus on mainly the save on time, cost reduction in comparison to in-person applications, and the efficiency of services when applying such concepts.

Consequently, smart services adoption requires some efforts from the government, as it is not easy to be implemented without good planning due to the involvement of many different aspects such:

- Internet providers cooperation
- Connection stability and infrastructure
- Cost efficiency from both users and providers
- Culture strength

Therefore, the adoption of the smart services is influenced by many factors, which need to be taken into consideration from either the government, or the design team, which is responsible of achieving an appealing design.

Naturally, there are some obstacles that are expected to face the application of the smart services, which will hinder the switch process from in-person to e-services, and accordingly the government need to be ready, and work towards the elimination of the any obstacles in order to achieve smooth conversion. On the other hand, obstacles can take different formats such:

- Users perception of the smart services concept in general
- Internet coverage in rural areas
- Giving up on the unwritten benefits of the in-person services
- The readiness of the customer support team to handle different issues
- User friendliness of the applications

1.4 RESEARCH PROBLEM AND QUESTION

Undeniably, smart services is a promising paradigm which can result in an increased access to government services and enhancement in the efficiency of getting those services done from both, the perspective of providers as well as the final consumers. Despites of that, there seem to be still a segment of users who abstain from using the available services for various reasons. Yet, some of the reasons are related to infrastructure and technical skills, which could take longer, time to overcome, while others are highly human factors, which should be investigated wisely and eliminated when possible. While the first can be fixed through enhancing the infrastructure and developing personal skills and also making better designs, the second would need designated processes to mitigate.

This thesis focuses on the users' motivation in perceiving, trying; exploring and adopting smart services applications. Since this dimension can be culture dependent, the thesis will focus on the case of one country, the United Arab Emirates. In addition, the thesis will focus on the domain of smart services for e-government, which are services that are introduced to the public as users, and also non-profit in nature. To this end, the thesis will explore the perception of smart services among different user groups, as well as the various motivational elements within UAE, and enrich the literature with bespoke principles and customized design processes to the nature of smart e-government services for UAE.

The research question of this thesis could be then phrased as:

"How to increase the motivation of the public to use, explore and adopt smart services both in their design and introduction process".

The research will focus on the UAE as a hosting environment, and e-government smart services in particular as an application domain. Nevertheless, the results could be generalized to similar socio-cultural frameworks and also application areas, however this requires further research.

It is worth pointing out that the research question of this thesis has been calibrated after the first two objectives were achieved.

1.5   RESEARCH OBJECTIVES

To achieve the final aim of this thesis a number of objectives were selected after a deep analysis, planned to investigate furthers, and consequently achieved. It is worth pointing out that the research question of this thesis has been calibrated after the first two objectives were achieved in full. Furthermore, all the objectives were investigated and achieved based on the UAE as a hosting environment and for smart e-government services as a particular domain of application. Figure 2 summarizes the list of objectives and below is the explanation of each:
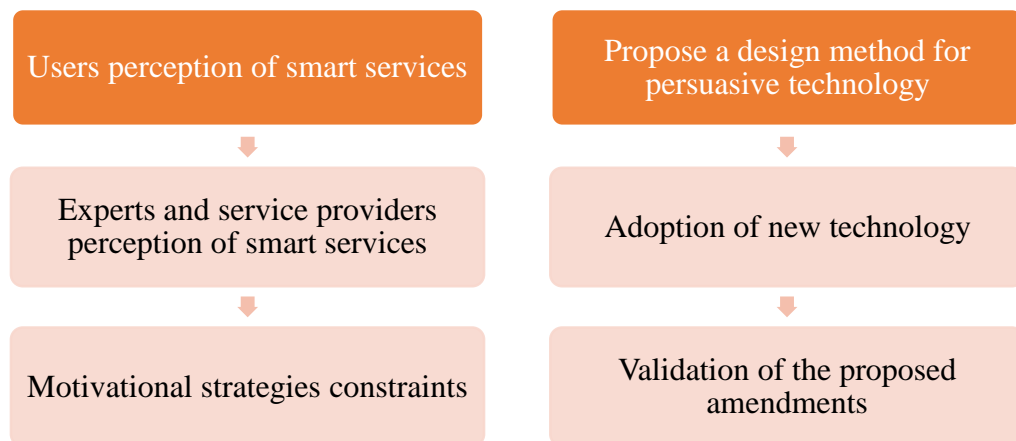
FIGURE 1-2 THESIS OBJECTIVES

- **Objective 1:** To explore the users perception of smart services in general, their usage in terms of engagement, benefits and obstacles faces or acquired by users. This objective will explore the status of smart services adoption in breadth.

- **Objective 2:** To explore the other players in form of experts and service providers perspective of smart services, their status, restrictions and obstacles from their point of views. Similarly to Objective 1, this objective will explore the landscape and the status of smart services from providers and experts' perspective.

- **Objective 3:** To explore the potential and constraints for various motivational strategies to increase the adoption of smart services, both from users and experts perspectives. Starting from this objective, the focus of the thesis will be on the human factor in relation to the adoption of smart services.

- **Objective 4:** To enrich a mainstream design method for persuasive technology in order to accommodate the peculiarities of smart services applied for e-government, and within

the socio-cultural framework of UAE. The chosen method was the Fogg's eight steps process (Fogg, 2003).

- **Objective 5:** To augment a mainstream framework for enhancing the adoption of new technology to embed persuasion and the influence in general, that fit the smart services applied for e-government and within the socio-cultural framework of UAE. The proposed and chosen framework was the Technology Acceptance Model (TAM) (Venkatesh, 2000).

- **Objective 6:** To validate the proposed amendments and enrichments proposed in Objectives 4 and 5 and refine them accordingly.

1.6 RESEARCH OUTCOME

As a result to the decision made on the objectives, every goal was investigated separately by different means, in order to reach acceptable outcome when possible. However, due to the different in nature of every selected objective, the outcome was and indeed varies in terms of nature. Below we can find explanation of the outcomes separately:

- **The outcome of Objective 1:** Will be a list of success and problem areas as seen by participant users of smart e-government services in UAE. Nonetheless, this will be in a form of statistical data and also qualitative judgement and feedback collected from users.

- **The outcome of Objective 2:** Will be a very rich picture and in-depth exploration of the typical obstacles and spotted issues that were faced by users, in relation to the public adoption for smart services for e-government in the UAE in particular.

- **The outcome of Objective 3:** Will be an assessment of each of the principles of Influence of Cialdini individually (Cialdini, 1987), when applied for enhancing the UAE people motivation to use and engage more with the smart e-government services. Nonetheless, Cialdini principles are representatives for a wide range of persuasive technology techniques, and they are also used without technology, e.g. awareness campaigns and classic advertisement and learning programme.

- **The outcome of Objective 4:** Will be an amended, enriched and customized version of Fogg's eight steps process so that it fits the UAE model as a culture, and naturally the smart e-government services as a domain. Yet, the amendments will be in terms of additional activities to the model itself, in order to be taken in each step and potential constraints to adhere to, and obstacles to overcome.

- **The outcome of Objective 5:** Once again it is amendments to TAM model so that it can fit the introduction of smart e-government services to a UAE society smoothly. However, the amendments will be in two parts. The first will show the usage of Cialdini principles (Cialdini, 1987), to augment the motivational nature of the technology introduction

process, i.e. before the public starting to use it. The second relates to the external variables, which needs to be taken into account when planning to increase the perception of ease of use, and the perception of usefulness.

- **The outcome of Objective 6:** Will be in the form of an evaluation report of the amendments of the two used models, Fogg's process and TAM model. Moreover, it will contain additional findings and refinements in relation to the two models separately.

1.7 RESEARCH METHODS

As the objectives of the thesis varies in terms of nature and areas of investigation in general, as well as the dissimilarity in terms of outcome based on the different involved parties. Therefore, it is natural aspect to use diverse methods during the investigation process, in order to better match the different objectives environment and characteristics. Below we will introduce the various approaches used

- **To achieve Objective 1:** A survey method will be adopted. The survey questions will be made basic so that they aid the exploration of the range of issues under investigation. On the other hand, the research observation and the analysis of the current practice and technical reports will both inspires the set of questions to be asked in the survey. To allow further insights and additional options, the survey will contain comments boxes in order to encourage the participants to fill them in if they want to add extra information. A quantitative and qualitative analysis will be conducted afterwards.

- **To achieve Objective 2:** An expert study will be conducted. And the participants will be chosen from different domains, in order to allow coverage of the various aspects of the smart service development and adoption lifecycle. This includes experts in the underlying technology, laws, strategies, human resources and standardization of services.

- **To achieve Objective 3:** An expert study combined with a user study will be conducted. The expert study will be based on face-to-face interviews and will revolve around the use of Cialdini six principles of influence for motivating UAE users to use smart services for the e-government domain in particular. Nonetheless, the users study will be a technique to confirm and enhance the findings of the expert interviews analysis. It will follow a survey approach with space for comments for any extra information. The reason behind the choice of Ciladini's six principles of influence are their representative nature of the various persuasive techniques. For illustration, scarcity would represent an extensive range of persuasive techniques such as linerboards, lottery, limited offers, etc. On the other hand, reciprocity represents gamification and persuasion techniques of the type of loyalty points and offers with return on investment. Nonetheless, social proof represents also the persuasion through peer comparison and peer pressure. That is to declare that Cialdini's six principles are limited in number but representative in nature. Furthermore,

to make the interview manageable, the researcher chose this set of principle so that the number of the questions of the interview remains reasonable. To summarize, the representative nature of Cialdini's principles of the wide range of persuasive technique and the relatively small number of principles stated at a high level of abstraction were the reasons for choosing Cialdini.

To achieve Objective 4: The findings of the previous objectives will be utilized in order to propose an augmented version of the Fogg's eight steps process for designing a persuasive technology that to be used to serve the smart services e-government applications. In fact, there are many reasons that Fogg's eight process was chosen to develop the persuasive techniques that can be added to the smart services, but the main explanation is that the model is established and refined and follows a longstanding experience in the field. In addition, the Fogg's process tends to be receptive to customization. For example, the action of building on previous success does not preclude customization for the nature of the domain of the research. Accordingly, the thesis will refine that to specify how such a customization to the domain of smart service with respect to the society of UAE would be like. Accordingly, the flexibility of the Fogg's process motivated the researcher to adopt it as a backbone for the customized process. In addition, the eight steps of the Fogg's process tend to be conceptual and relate to the early stages of the analysis and design of persuasive techniques. Given that the thesis is mainly concerned about that phase, and since the other objective is to augment TAM model, which is meant to assist these early stages, the choice of Fogg's process was naturally made.

- **To achieve Objective 5:** The findings of Objective 1, 2 and 3 will be utilized to augment the TAM model with additional steps and influence techniques, with the focus to cater for the peculiarities of UAE society and smart e-government services.

- **To achieve Objective 6:** An expert study will be conducted, which will involve a range of domain experts via interviews. Furthermore, it will take 2 main smart services in UAE as a subject of discussion to assess the usefulness, as well as the soundness of the two proposed model, i.e. augmented Fogg's process and TAM models.

1.8   CONTRIBUTION TO KNOWLEDGE

The results of the carried over research regarding this thesis, is believed to contributes to the knowledge in expanding the understanding of the engineering of persuasion-augmented smart services in respect to design, and introduction to their socio-technical environment. More concretely, the thesis central contributions to awareness include:

- Increasing the understanding of the background of individuals' usage of smart services in the UAE, and addressing the main reasons of the shortcomings in using a wide spectrum of these services.

- Increasing the understanding of the logistics, practical and managerial challenges that proved to hinder the success of the wide and sustainable adoption of the smart services applications.

- Increasing the understanding of the feasibility and suitability of various persuasion and influence techniques for the population of UAE. This understanding will pave the way to better designed persuasion-assisted smart services, that are able to suit the cultural and social framework of UAE.

- Introduction of a process to design the layer of persuasive technology to augment the smart services with new digital motivation techniques. This method is based on the Fogg's eight steps method.

- Proposing a model to introduce smart services in a way that facilitate the maximization of their acceptance in the UAE. This takes as a baseline the TAM model and augments it with external variables detected through various empirical studies in the UAE, and the influence principles as shown to be suitable for that society.

1.9 THESIS STRUCTURE

The first phase is an exploratory phase. As a start to the thesis, a user study will be conducted in order to recognize the public perception of smart services and the obstacles, which hinders the adoption of its applications at wider scale (Chapter 3). On the other hand, and to have a more holistic view, the experts' perspective will be also discovered through another study (Chapter 4). Accordingly, the results of both studies indicated that motivation is a main factor and that the lack of motivational techniques and processes would lead to a great minimization of the chance of smart services adoption. Chapter 5 will look in depth to the feasibility and acceptance of motivational principles as seen by the UAE population. A mixed method approach including users and participants will be conducted at a later stage.

The second phase of the thesis will be focused mainly on the design aspect phase where the findings of Chapters 3, 4 and 5 will inform the researcher's work on contextualizing two main frameworks for designing and introducing technology that increases the motivation of people to adopt it and follow certain desired behaviour. The first framework is the Fogg's eight steps process discussed in Chapter 6 and the second one is the Technology Acceptance Model (TAM), which is to be discussed in Chapter 7. Nonetheless, the amendments to these two models take not only the findings of Chapter 5 but it also warn and provide considerations to the feasibility and potential risks informed by the findings of the Chapters 3 and 4.

Consequently, the evaluation phase will concern the products produced in Chapter 6 and 7, i.e. the amended Fogg's process and the amended TAM's model. To some extent, these two products

are validated already by the fact that they are built on a bottom up style following the studies in Chapter 3, 4 and 5. However, given that they were also subject to a non-empirical research and the researcher's views on translating the findings to design guidelines, a further validation was indeed needed. Moreover, chapter 8 performs further validation by reverse engineering to the main smart services system in the UAE, and using that as a baseline for a walk through exercise involving experts in the numerous areas of smart services development and strategy making.
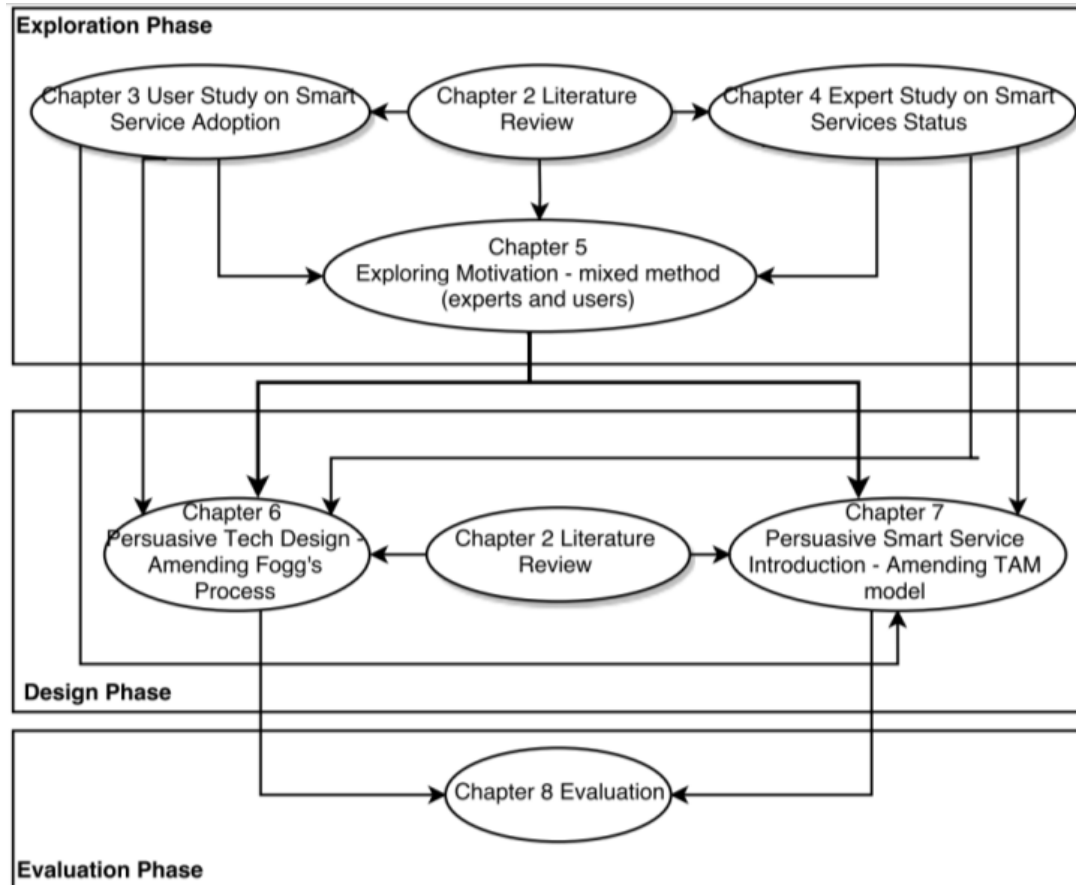
The Chapters in this thesis are aligned with the objectives. Chapter 2 reviews the literature. Chapter 3 reports on the results of the user study in relation to adoption of smart services in the UAE. Chapter 4 contains the result of the expert study in relation to the main issues and challenges in adopting smart services in the UAE. In Chapter 5 the results on culture-aware motivation principles in the case of UAE are presented. Chapter 6 explains the amendments and considerations proposed to Fogg's eight steps process to fit the application domain and the hosting environment. Chapter 7 propose amendments and enrichment to TAM model to fit this domain and environment. Chapter 8 presents evaluation results of the proposal presented in Chapter 6 and 7. Conclusions and future work are presented in Chapter 9.

1.10   PUBLICATIONS ARISING FROM THIS THESIS

- Abdelrahman Alnaqbi, Gernot Liebchen, Raian Ali, Keith Phalp. Culturally-Aware Motivation for Smart Services: An Exploratory Study of the UAE. In the proceedings of

the24th International Software Quality Management Conference. Mar 21st, 2016. Bournemouth, UK

- Abdelrahman Alnaqbi, Sofia Meacham, Raian Ali, Keith Phalp. Public Awareness and Attitude about Smart Services: A Study in United Arab Emirates. In the proceedings of the24th International Software Quality Management Conference. Mar 21st, 2016. Bournemouth, UK

1.11   SUMMARY

In this chapter, the research content and problem were introduced and motivated. The objectives and outcome were also explained. An overview of the methodology was presented. The chapter paves the way to the next chapters and explain the structure and the rationale of the thesis.

2. CHAPTER 2: LITERATURE REVIEW

This chapter will introduce the terms and factors regarding the online services that are offered and the theories that they are based upon. This will lead into the introduction of smart services and their importance to the UAE government.

Many factors have played an important role in the introduction of smart services such as the general technological development during the last decades. The enhancement of scientific fields such as marketing and information technology has helped in the creation of smart services. However, for the adoption and use of smart services the use of persuasion techniques is necessary, especially in the UAE context. All these will be analysed below in further detail. The topics to review in this chapter are various and the underlying principle for this review is the consideration of smart services from an e-commerce perspective, i.e. as a service or platform to advertise, and the direct relation to its business and organizational context. The thesis falls into the management of IT solutions categorisation, and this is the reason why the orientation of the literature is more into the business models for e-commerce and e-marketing approaches.

As a start, the chapter will review a number of foundations for the smart services including the decision making behind them, their added value and their technological requirements (Section 2.1). Subsequently, the chapter will lessons smart services as a business model that has its requirements and public interface (Section 2.2 and Section 2.3). Naturally, the review of such facet is critical for the thesis, as it will help contextualizing the proposed studies and solution within this remit. On the other hand, the thesis emphasizes the human factor in the development and deployment of the smart services, and the need to embed that consideration in the design itself. For this reason, this chapter will include a discussion of foremost behaviour change theories, which are meant mainly to understand how people attitude and consequently behaviour can change over time (Section 2.4). Consequently, this will profound the design of persuasive technology and its embedment in the smart services. The literature review then delves into the particulars of motivation and persuasion (Section 2.5) seeing that this will be needed to design the studies about the understanding of feasibility, and attitude towards motivation and persuasion with respect to the UAE population. As the thesis is going to propose a design process for the persuasive technology, a mainstream models for such a purpose are reviewed, i.e. the Fogg's model (Section 2.6).

Furthermore, the review of these topics will facilitate in various ways, as IT helps the design of the user studies by giving them the business and management perspectives of the IT technology. Additionally, it also helps the design of the user study on motivation by prefunding it with the

right terminologies and facets to cover. The analysis of the collected data will also benefit from this review by providing theoretical frameworks, which can also support the insights drawn further. On the other hand, a gap has been detected in the literature and this will justify the reason for this thesis (Section 2.7).

2.1   SMART SERVICES FOUNDATIONS

In this section key concepts of smart services will be presented. This included their business and technical views.

2.1.1   TECHNOLOGICAL DEVELOPMENT AND SMART SERVICES

"The telephone took four decades to reach 50 million people. The Internet has managed this within four years as digital technologies provide such efficient channels for business and consumer interactions transactions." (Gay et al. 2007).

Recent technological development and the use of the Internet are affecting in many ways the performance of businesses. Nonetheless, it is still observed that certain industries are not involved with technology or taking the expected advantage of it, whereas other industries such as the service industry witnesses an enormous and direct impact. In general, the service industry relies on the use of technology in different aspects, but most importantly in the customer relation development (Mousavi et al., 2008).

Additionally, Szwark (2005) argued that most of the existing organizations, despite their centre business model, are continuously focusing on end user relation management, as well as loyalty improvement in order to retain their clients and not risk a drop in the current customer's base.

Gay et al. (2007) emphasized that the main concern of companies is related to service development and customer relations. However, it has been observed that the customer relation progress is as fast as the service development improvement, since companies are realizing the involved costs of losing an existing customer, in comparison to the involved costs incurred in the process of acquiring a new one.

Jha (2008) highlighted the need for companies to adopt methods in order to enhance their customer relation management. This can be successful if organizations use the existing technology to their benefit, by widely using the Internet and the available communication tools, in order to develop new marketing techniques and communication channels, as well as to provide the best customer relation management solutions to the end user.

2.1.2   SMART SERVICES AND E-MARKETING

Similarly to the above need of various companies to adopt new technological services, the UAE government needs to market its services online. Based on Rust and Kannan (2002), since smart services are similar to any other services offered online and they include e-marketing activities thus it is crucial to understand the nature and characteristics of e-marketing.

More specifically, e-marketing is the relevant approach to the transactions that happen online between business entities and their customer database. According to Gay et al. (2007), e-marketing impacts all trade formats such as:

- Business to business
- Business to customers
- Customers to customers

Nevertheless, marketing is a wide discipline, and is part of any business's long term and short-term strategy. At the same time it is a vital reason leading to success for any company, thus the UAE government as well, once it is established and implemented in a superior way. On the other hand, Gay et al. (2007) argued about different definitions of e-marketing as a concept, but according to them, e-marketing has been identified by the Institute of Direct Marketing as: "The use of Internet and related digital information and communications technologies to achieve marketing objectives" (p. 5).

2.1.3   SERVICES AND INTERNET CONNECTIVITY

Internet is believed to be everywhere, however not everyone can access the Internet. Strauss and Frost (2012) stated that Internet access is still not feasible for every consumer around the world, and more than half of the world population is still unable to access directly the Internet via different technological means such as laptops or mobile phones and without limitations.

Strauss and Frost (2012), argued that in 2009, 1.8 billion consumers had constant access to the Internet, which meant only 27% of the global population could access the web freely with no connection restrictions, while 73% of the world consumers during the same year still had no access to the Internet. However, the percentage is increasing over the years. According to the International Telecommunication Union (2014) almost 3 billion Internet users exist around the world, representing 40.4% of the world population, a fact reflecting a rapid change. Nonetheless, the Internet is gaining new users daily and it is a growing market place for service providers. Also, it is an easily accessible place for customers to use the services offered by companies and governments online (Barfield et al., 2012).

Hence, governments are uncertain whether to introduce online services or not, and to identify market priorities, especially with the current online movement tendency. This aims to an

increase in customers, generating more revenue, and offering better services to end users. Despite of the increase (See Figure 2-1), companies are still focusing on developing markets where the Internet is still not fully available.

Furthermore, the smart services offered by the Emirati government are also influenced by the internet coverage and reliability across the country. Hence, wide coverage and means of connections are vital before recommending such solutions; otherwise they will offer no benefits.
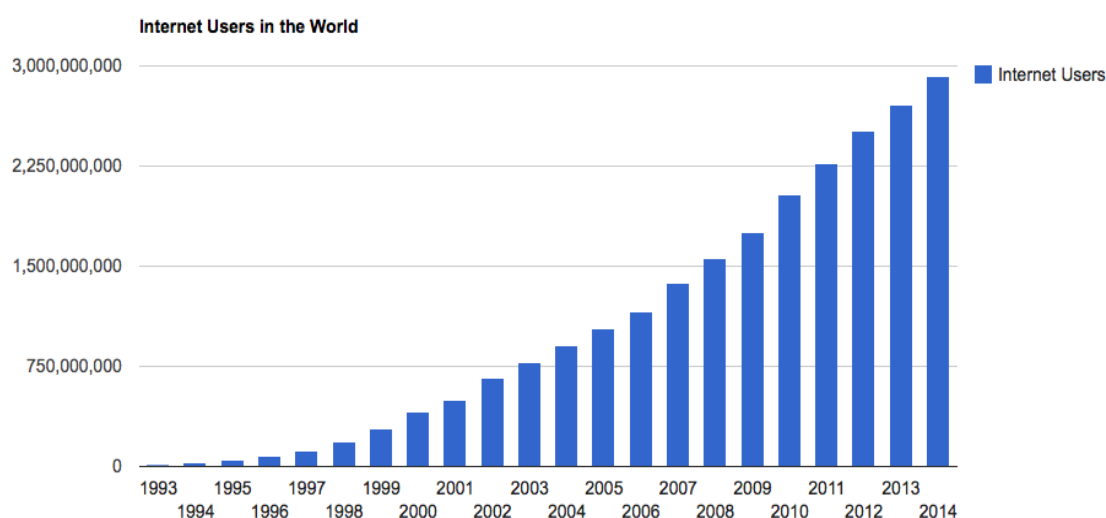
FIGURE 2-1 INTERNET ACCESS AND ITS INCREASE (MANUAL FOR MEASURING ICT, ITU)

2.1.4 INTERNET BENEFITS AND E-MARKETING

According to Gay et al. (2007), there are many aspects that outline the e-marketing concepts and practices. However, three main pillars are the key characteristics:

- The use of marketing strategies to produce better customer division of clients sharing same characteristics.
- Better promotion and pricing of services and goods.
- The satisfaction of Satisfy customer needs via the achievement of organisational short and long term goals.

Nevertheless, Sharp (2009) argued that, companies understand the advantages and disadvantages regarding the online market. Thus, businesses cannot ignore the Internet's power which can enable companies to:

- Target new markets abroad and locally without intermediary.
- Attract new groups of customers by identifying new needs.
- Enhance imagery of the organization through new practices.

- ▪ Save costs on marketing and advertisement.
- ▪ Extend working hours and availability by means of technology.

However, Gay et al. (2007) indicated that the advantages of technology, influencing online marketing, are based on the access to statistical data regarding industries and customer behaviour. Furthermore, possession of technological devices has increased recently, since individuals have immediate access to a variety of devices. Hence, this results to quick and inexpensive access. Additionally, the development of mobile phones, laptops, as well as other devices is increasing online services. This increase, together with the e-commerce spending of around $230 billion in 2008, and the increase of up to 44% in Europeans using Internet banking services (Statista, 2015) encourages governments to offer more services online compared to the past.

2.1.5   ON-LINE DECISION-MAKING IN SMART SERVICES

Smart services are transactions between provider and users. Accordingly, it is critical to understand the decision-making process of users, to establish reliable strategies and tackle expected challenges. Decision-making in general is a multi-phased process (Phillips-Wren et al., 2014). As a result it is essential for the purpose of this thesis to understand the nature of user's online decisions and the different phases involved.

According to Rayport et al. (2004), the customer's decision-making process involves a chain of essential factors such as loyalty building. In today's business models, companies are spending a lot of money to provide high quality loyalty programs to existing customers, since companies are very much aware that the involved costs to attract new customers are much higher than the expenditure of keeping existing ones. Moreover, governments are also aware that turning away clients of smart services will result in enormous costs in order in re-attracting them.

However, Gil-Garcia and Martinez (2005) argued that governments can provide services that are unique and competitive, such as smart services. Nonetheless, this still could be unsuccessful for the applied business model, if the understanding of the customer decision process has not been taken into consideration from the beginning. Hence the governments are advised to cope with users' behaviors, as well as to show willingness to adjust strategically in order to match the possible changes in customer's behavior.

Furthermore, Rayport et al. (2004), argued that the decision making process involves sub phases. Yet the main points can be identified in three main stages. These are illustrated in Figure 2-2 and explained as follows:

- **Pre purchase:** The customer identifies a need, and starts to search for solutions in order to satisfy that need.

- **Purchase:** The customer decides to purchase a specific service from an undeniable provider after the evaluation of alternatives.

- **Post purchase:** The customer usually decides to either be loyal or not to the provider and this decision is heavily influenced by the incurred experience during the acquired phases.
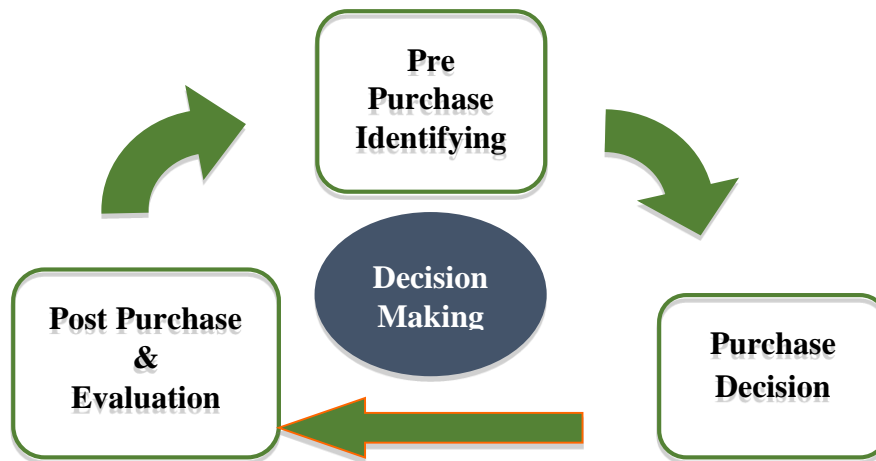
FIGURE 2-2 DECISION MAKING PROCESS

As illustrated in Figure 2-3, the three stages are applicable to the smart service model. More specifically:

- The customer identifies a need in order to pursue a transaction with the government.

- The client examines the available solutions for the satisfaction of this need by either visiting the local authority office or using the smart service application.

- The client evaluates the involved experience in the transaction, and upon that, reaches a decision whether to use the same channel in the future or search for an alternative.

FIGURE 2-3 DECISION MAKING PROCESS IN SMART SERVICES

Additionally, Strauss and Frost (2012) explained that it is essential for online service providers to understand the various factors that motivate existing and potential users, and also to identify

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the most influential factors regarding online service decision-making within each industry. Consequently, service providers will be able to set accurate short and long term strategies, by aligning them to the influential factors and assuring that they are not only attracting new clients and segments, but also satisfying current users. This will be feasible via understanding and quickly adapting tithe changes of the user's behaviour and thus offering customized products.

2.2   LOYALTY DEFINITION AND FACTS

Loyalty is a main factor in smart services offered by the Emirati government. After the use of the services, the customer decides to either remain a loyal customer or search for new service channel.

Kotler and Caslione (2009) argued that loyalty as a term could be identified by two distinctive views. Primary, loyalty exists when an organization requests customer loyalty, and attempts with all existing means to acquire and maintain it as well as potentially increase it.

Secondly, loyalty arises as soon as the consumers perceive that they are distinguished from other interested parties. This typically occurs whilst the company is consistently more loyal to different partners such as:

- Investors
- Employees
- Unions
- Business partners

Kotler and Caslione (2009) stated that companies are risking their clients' database, if clients experienced the feeling that the business is more loyal to another involved party rather than the actual customers base generating revenue to the business.

Loyalty has been defined differently, and according to Oliver (1999, p. 34) "Loyalty is a deeply held commitment to re-buy or re-patronize a preferred product or service in the future despite situational influences and marketing efforts having the potential to cause switching behavior".

According to Brink and Berndt (2008), loyalty as well as consumer behaviour is the two key factors, and core pillars of customer relationship management. However, Buttle and Maklan (2015) mentioned that customer relations are a wide aspect, and also include other not less significant factors such:

- Customer bonds
- Customer retention
- Customer migration

Nevertheless, Brink and Berndt (2008) also argued that loyalty is a vital term and broader than just making a repeated use of a service from a specific provider. More specifically, in customer relation management, loyalty is essentially being committed to a certain brand or provider for a longer period of time than just during a single transaction, and also by being keen to help in the improvement of the provider, and engage in the service's development along the way. Considering that user dedication by itself is not enough, resistance to offers from other providers is considered part of customer loyalty. Furthermore, loyalty can be analysed regarding the channel of use, for instance, a customer can be loyal to a certain channel of interaction such as the government, a website, or a public office.

Likewise, customer loyalty is a fundamental measure in the decision-making process for both online and traditional service providers. According to Bouyssou et al. (2006), customers follow the following phases of decision-making:

- Identifying a need
- Seeking recommendation
- Evaluating available solutions
- Making a decision
- Evaluating the involved experience from the first to the last phase

Additionally, Lantos (2011) researched loyalty behaviour, and concluded that customers are loyal to a certain service channel for several reasons depending on the customers' preferences, as well as other existing providers. However, varieties of reasons affects online loyalty and below are some of the main loyalty enhancers:

- A certain channel satisfies a customer's needs in the best way.
- Risk involvement with this channel is less compared to the alternatives.
- Image and reputation of the brand or channel is attracting.

2.2.1 E-LOYALTY AND INFLUENTIAL FACTORS

Since a smart service application involves the loyalty on behalf of the client, it is critical to understand the factors that enhance customer loyalty and result in repeated behaviour when using the new channels offered by the government (Gil-Garcia & Martinez, 2005).

Gao (2005) described e-loyalty similarly compared to the traditional loyalty, with one major difference, which is the existence place of the services. Since loyalty is linked to trade activities in a traditional marketplace, likewise-loyalty is refereeing to the Internet as the unique marketplace. Additionally, Gao (2005) highlighted that e-loyalty is determined by the repetitive visits to a website or a specific channel of service, and in some occasions to the action of

searching and collecting knowledge about a certain product or service from a website, and/or making frequent trustworthy transactions from the same website. Moreover, Gao (2005) identified a series of factors that could have an impact on e-loyalty and have direct influence on its development, and might improve or obstruct it. These factors are the following:

2.2.1.1 TRUST

Trust has been defined by Gefen (2000, p. 727) as the "willingness to engage in activities where a person is exposed to risk without the ability to control the related behaviour of others".

According to Gao (2005), there is direct relation between trust and e-loyalty, and it is quite noticeable, in the same way as it involves repetition of business transactions with a sense of trust in the provider's available services. Trust exists relatively in every single phase of online transactions and according to Johnson (2015) trust could be in any of the below areas:

- Trust in data provided by a website.
- Trust in the website security, regarding the protection of personal data.
- Trust in online payments and disclosure of personal bank details.

Accordingly, trust exists in the smart services in similar areas such as:

- Trust in online payments and privacy protection.
- Trust in the updatability of the available information.
- Trust in the used technology so the transaction can be pursued accurately and timely.

2.2.1.2 SWITCHING COST

Switching cost refers to the expenses occurred upon customer's decision or consideration to switch providers, or websites either to get a better customer service or better quality services (Porter, 2008).

Nevertheless, Gao (2005) argued that a customer might decide not to switch, even if the provider does not satisfy their needs, since the switching cost could be expensive; thus the consumer might decide to continue using the specific provider unsatisfied. On the other hand, a customer might consider altering providers offering more benefits, greater than the cost of switching, resulting to overall higher satisfaction.

Consequently, an unsatisfied customer could be loyal, since the switching cost might discourage any potential changes. However, Oz (2009) explained that keeping unsatisfied users is not always the correct action, even if the user is offering revenue to the company. More specifically this disappointment on behalf of the customer might act negatively on the business's reputation, leading to a negative perception of the business among current and potential users.

Hitt et al. (2011) argued that even if the switch cost is high and customers do not decide to leave in order to avoid extra financial obligation, companies still need to address the issue as quickly as possible, and work on the enhancement of customer's satisfaction. Consequently, the switching cost is actually intensely affecting the e-loyalty, and many researchers are investigated the link between the two. For example, Colgate and Lang (2001) carried out a research on the switch cost effect on loyalty, while observing customers using the same service provider, and concluded that it is harder for users to consider the switch among providers or channels for satisfaction reasons.

For instance, first time users of amazon.com website are asked to fill in all their personal and payment details when they sign up. As a result, Amazon will be able to finalize repetitive transactions simply, by using the previously entered and stored personal and payment data. In view of that, the purchaser feels comfort and easiness and as a result transactions will relatively increase, visits to the website will continue and users will not prefer other providers trying to attract current Amazon users (Jelassi & Enders, 2005).

Smart services offer an alternative to the regular channels while at the same time the switch cost is between diverse channels rather than between different providers. The concepts of thrust and switching costs are very important for the application of smart services in the UAE context.

2.2.2   E-LOYALTY FACTORS AND SMART SERVICES

As mentioned above, trust and switching cost influence loyalty to smart services. On one hand, a government can guarantee the increase of trust via:

- Validating online information regularly.
- Applying high information security standards.
- Offering a better service level in comparison to the traditional channels.

On the other hand, Gao (2005) argued that customers can neglect their dissatisfaction due to the high switching cost. These factors are also linked to the application of smart services in the UAE Thus the government needs to take advantage of the link between the switching cost and loyalty in order to increase smart services loyalty via:

- Offering online discounts.
- Offering quicker service at the same cost.
- Offering more valuable services exclusively to online users.
- Using technology to communicate with users, prior and after the use of the service, in form of reminders and service evaluation.

2.2.3   E-LOYALTY CREATION

It is essential to understand the e-loyalty creation process and the different strategies available to businesses in order to use in their loyalty development. According to Gao (2005), companies tend to follow different strategies in order to establish and maintain a good level of e-loyalty, and the strategies applicable to e-loyalty are dissimilar to traditional approaches. Mann et al. (2013) argued that two of the most used and influential strategies are the *pull* and *push* loyalty enhancement approaches.

2.2.3.1   PUSH

The push approach involves high risk in loyalty but reasonably good revenue generation for the company, as it includes continuous pushing to the clients. The push approach is positive in terms of revenue, but gives less attention to loyalty. Accordingly, customers will consider switching providers to a large extent easily, if they have been offered a better service or value elsewhere, or they if they have been exposed to a competitor using a similar push strategy. Therefore, companies overcome low loyalty by increasing the switching cost. However, businesses might end up with many but unsatisfied clients or with less attention to satisfaction from the company in general.

2.2.3.2   PULL

A contradictory approach to the push strategy is the pull strategy which focuses on loyalty building as well as revenue, rather than only intensifying the switching cost. Once the pull strategy is implemented, companies are most likely to keep their clients for a longer time gaining a higher satisfaction rate in comparison to the push approach, since unsatisfied users can easily move elsewhere if needed with no restriction or expensive costs. As a result, governments with long-term strategies and a customer service focus are likely to follow the pull approach in order to gain revenue, as well as keep satisfied users.

The above are very important factors regarding the smart services in the UAE.

2.2.4   ONLINE LOYALTY LADDER

The online loyalty ladder is the detailed explanation of the different stages of the customer relationship improvement that the customers follow while using online services in order to establish a bond with a provider.

Brink and Berndt (2008) emphasized that the ladder steps are substantial to understand how loyalty is developed. According to Brink and Berndt (2008), the loyalty ladder consists of six

different phases, illustrated in Figure 2-4, and within every part, the user shows certain behaviour:

- **Prospect**: Identification phase, which includes the process of identifying the current consumers, whom are dealing with the business, but are not regular customers yet.

- **Purchaser**: All the customers that are characterized by being already a first time buyer. Namely, they have decided and made their first use of the service, but yet for some reasons have not decided to repeat the transaction in the future.

- **Client**: Happens when a first time user decides to repeat the business relation with the same provider, but still hasn't decided to be loyal. Accordingly, the client is moving towards a developing loyalty phase but still not a high contributor to business goals.

- **Supporters**: It includes all customers that are happy with the services, and make repeated transactions, but still not involved in the outside business promotion. In other words, clients that like a certain organisation and/or channel of services, but don't make an effort to promote it.

- **Advocate**: Includes clients that are most likely to promote the use of the provider services to peers, since they extremely believe in the provider superiority in comparison to competition within the concerned market.

- **Partner**: Clients that strongly bond to the organisation through one of the relationship tools defined by either the organisation or the market. Within this phase, the user is a strong contributor to the business strategic goals.
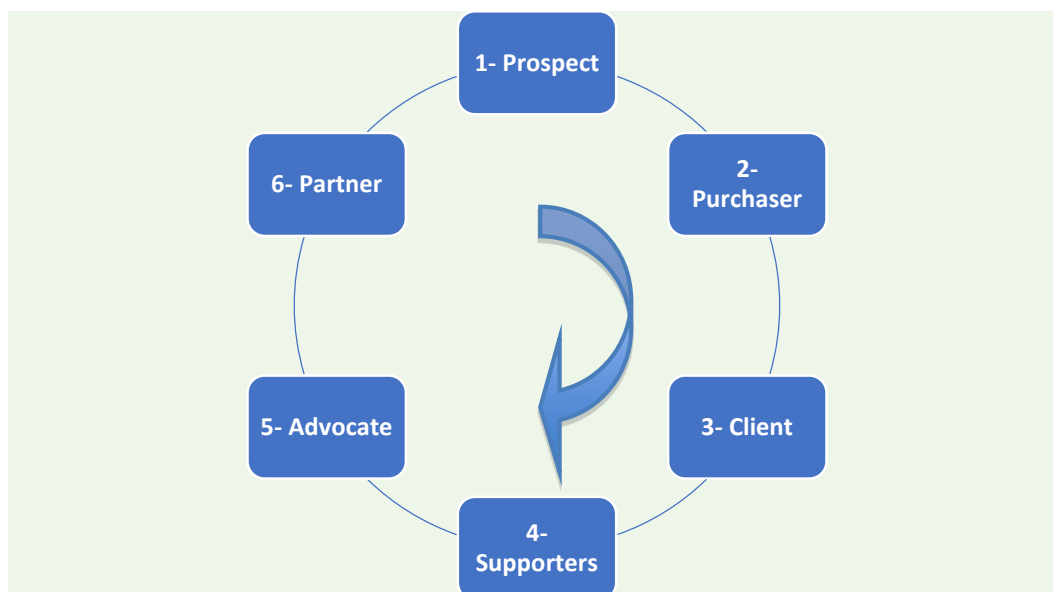
FIGURE 2-4 LOYALTY LADDER PHASES

2.3   SMART SERVICES AND E-COMMERCE

Smart services applications and websites are available to the public in exchange for a fee usually offered by regular channels. Accordingly, a commerce transaction is involved. In reality, electronic commerce has significant impact on the performance of economy, since it is considered prosperous in comparison to any offline trade, as it includes millions of daily transactions of customers, businesses, and organizations from different locations around the globe (Botha et al., 2008).

Nonetheless, according to Turban and King. (2012) traditional trade is organized by many written and unwritten rules and policies that systematize the flow of the business operations. Since the Internet is a place where many trade activities initiate, thus policies and regulations are needed, as well as business models to categorize and organize the operations between the different interested parties.

Internet includes trade of goods and also services to customers, and sometimes to business entities, which is represented by the term B-to-C. However, a transaction between entities as a part of the production cycle of services is described as B-to-B e-commerce activity (Miller 2012). Turban and King (2012) argued that a third format of trade is recognized as C-to-B. More specifically, customers offer their own services to different users by using the business as only a medium. A good example of C-to-B is the eBay.com e-commerce website, where clients sell their products all over the world via the website, representing a business selling users products and services rather than its own business goods to end users.

In addition, Turban and King (2012) mentioned that another form of e-commerce is known as B2B2C. In this format, two different businesses are involved in the transaction to sell to one final user. Furthermore, smart services could be a good example, since governments can hire companies to handle part of the online processes, which will result in two businesses working together to deliver the service to the end user.

Finally, it is also possible to deliver the service in form of B2C only, which shall eliminate any intermediary businesses, and will assure direct relation with clients. However, it all depends on the government's strategy, and the available infrastructure.

2.3.1   E-COMMERCE FACTORS

There are many formats that boost e-commerce and shape it. According to Schneider (2009) only three formats are recognized as the essential factors that put together the e-commerce business model, and contribute the most to its activities. These are summarized in Figure 2-6 and namely are:

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- Business to Business
- Business to Consumer
- Business process support

The graph below clarifies the sizes and relations between the different formats according to Schneider (2009). Furthermore, it confirms that business-to-business transactions are much greater than business to consumers.

In spite of this, still the third format that includes business support activities is larger in volume than all the other combined transactions of business to business, and business to consumers.

Business processes that support selling and purchasing activities

Business-to-Business electronic commerce

Business to consumer electronic commerce
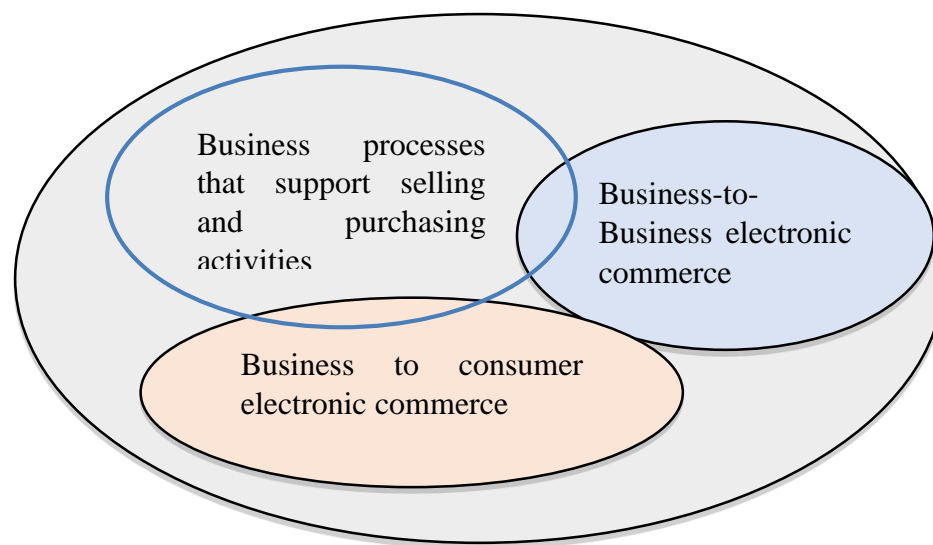
FIGURE 2-5 ELEMENTS OF ELECTRONIC COMMERCE

2.3.2   E-COMMERCE FORMATS AND BUSINESS MODELS

In the traditional market place, commerce can take different formats. Similarly, e-commerce exists in different formats, and even within single services such as the smart services, e-commerce can exist in different formats, since it depends on the involved parties delivering the service to the final user.

2.3.2.1   CONSUMER-TO-CONSUMER

According to Turban and King (2012), consumer to consumer refers to any transaction that happens and results in someone gaining ownership of item or service, and the second one gaining ownership or acquiring the offered item or service. However, the business portal involved in this trade format is only an organizing party, and the revenue is generated in form of a commission collected from usually all involved parties. The C2C concept initiated as a result to the sizeable numbers of online buyers and sellers. Accordingly, a need for a well-organized platform arises.

Therefore, dedicated business websites were established to gather different parties all in one website. This was feasible by providing to the organization services, protection and facilitating the communications between consumers.

Moreover, Turban and King (2012) argued that some challenges exist within this concept namely online payment security trust initiation between consumers themselves and trust towards the online portal. As a result to these challenges, third parties were initiated in order to solve them, for example the payment insurance company PayPal.

2.3.2.2   CONSUMER-TO-CONSUMER APPLICATIONS

The C2C concept was initiated as a result to the sizeable numbers of online buyers and sellers. Accordingly, a need for a well-organized platform rose. However, the business portal involved in this trade format was only an organizing party, and the revenue was generated in form of a commission collected usually from all involved parties. Therefore, as mentioned above, dedicated business websites were established to gather all different parties in one website by providing security and ease.

On the other hand, Turban and King (2012) emphasised that the available applications are many and the most important formats are the following:

C2C auctions: This is an auction, where an item is offered for sale, and users bid different prices to acquire the item. The role of the third party is to manage the auction where consumers can actively participate from all over the world.

Ads: In the case of ads, users offer an item and others browse the different available items for sale via the organizing portal expressing an interest when applicable. The ads can take different formats such as text advertisement, video advertisement and image advertisements.

2.3.2.3   CONSUMER TO CONSUMER MODEL

Trade connections are made from customer to customer representing the provider and the buyer. However, there is information involved in the operation in the form of data exchange between the different interested parties. According to Canzer (2006), this information is stored in big databases or might be transferred only without being saved through a central computer which is known as a server, rather than saved on the business data centres. Nevertheless, the business servers allow shortest information admission from involved consumers to the already stored data in the central computers. This occurs when the concerned parties disclose acceptance to trade in information files in order to finalise business transactions.

On the other hand, Canzer (2006) argued that consumer to consumer trade is not only about the exchange of media files, but also includes the exchange of tangible goods via online means, as well as the intangible exchange in form of data sharing practice. A good example of this role is

eBay that exclusively manages and has power over any risks. E-bay operates as an online auction hall to provide various services to users, either if they are offerings products or visiting the portal to purchase items.

2.3.2.4   *BUSINESS-TO-CONSUMER*

Manzoor (2010) argued that the business to consumer concept refers to any transaction that involves business as a providing party, represented by websites, and the consumers. Naturally, the provider offers services to consumers through the Internet, and charges them if they decide to proceed. However, the reputation of the business services, transferred within the online social networks, affects this format.

2.3.2.5   *BUSINESS TO CONSUMER MODEL*

According to Canzer (2006), online business success is linked to consumer behaviour, and consequently the business success depends on how the company understands the online behaviour of users, and how quickly it is able to adapt to behaviour transform.

Nevertheless, behaviour understanding is not the only factor impacting the success of online businesses. Further factors are the following:

- Pricing strategies
- Marketing innovation
- Quality control
- Market adaptability

On the other hand, O'Connor et al. (2004) emphasized that businesses can understand online behaviour and establish strategies, by answering various questions such as:

- Why consumers use a certain website?
- Would customers buy online, or just check prices?
- Which websites are regularly used?

Nonetheless, all is dependent on the understanding of online behaviour. This meaning that the more businesses invest and familiarise themselves with this understanding the more successful they will be.

2.3.2.6   *BUSINESS TO CONSUMER RELATIONSHIP*

Canzer (2006) emphasized that building a sustainable relationship is expensive, and companies are fully aware regarding the involved costs. In spite of this, they are still willing to invest more money and effort, since the expected profit generated from a loyal existing customer shall pay off the incurred preliminary costs to establish the good relationship with clients.

On the other hand, to build a sustainable business relationship is not easy, since the Internet as a market place increases the challenges, taking into consideration the global competition in the

same industry, and the enormous market size. In previous years, companies used to enhance relationships and keep customers for longer through traditional systems such:

- Club cards membership
- Point's schemes
- User discounts
- Additional free services

Internet by nature is a borderless market place. Chaffey et al. (2012) argued that all providers are instantly competing to reach the same client in different and innovative ways, as well as the fact that consumers have access to immediate different providers. All that increased the challenges for companies.

However, the Internet offers many advantages and customer relationship possibilities for improvement, which shall result in loyal customers, once implemented wisely and timely. Nevertheless, the development in available applications and technologies offers suitable replacement to the traditional loyalty channels, and also offers' unique techniques to present customized products and services to match the end users behaviour and needs, as well as enhancers for business to customer communication (Smith & Kidd, 2000). These are important elements to take into consideration for the understanding of smart services in the UAE context.

2.3.3   SMART SERVICES AND ONLINE EXTRAS

Bargain power offers sovereignty to every party in the online transaction while trading with the second party. It impacts the decision and negotiation possibilities when an online decision is needed. Bargain power values vary depending on the business nature. According to Coteanu (2005), the authority in business-to-business transactions is quite balanced between the two parties, since the two different entities show similar interest to finalize the transaction. While in the business to consumer model, the bargain power held by the business is much larger than the consumer's, since the consumer is in need to acquire a certain service. Consequently, the user is likely to search for protection to compensate the shortage in bargain power while trading with businesses online. As a result, the consumer realizes that the power of the provider is greater, and the consumer is weaker in B2C trade. Additionally the smart service users will face the same challenge, hesitating to use the new services if government power is more.

Wellington (2010) argued that extras are the added services that are offered in addition to the basic services the clients are searching for at no extra fee. For instance, a user wants to book a hotel room through an online website, observing that certain websites can offer extra services such as:

- Early check in
- Late check out
- 24/7 customer support
- Free cancellation
- Credit card payments

However, the available extras vary from a provider to another. According to Turban and King (2012) the added services are considered as an area of competition to attract and keep customers. On the other hand, it is noticed that in some industries, most of the providers are offering by default some inclusive extras with the basic service. For instance, most of the airline websites offer to travellers the option to choose their seats, while the core service here is flying from an origin city to a destination city, rather than choosing the seat.

Consequently, the smart services offered by the government can include a variety of added services to attract clients. And customers can benefit by getting extra services online at no extra cost, when using the available smart services applications:

- Less processing time for the same order if requested online.
- Free delivery to the user house or place of work upon completion
- Free document collection, in case extra documents are needed by the authority to finish the request.
- Post-paid orders, upon receiving the requested document.

2.3.4 E-MARKETING

Smart services are offered to potential users and are provided by the government. Consequently, it needs a marketing strategy in order to attract users and achieve the long-term government goals.

Dann and Dann (2011) argued that e-marketing as a concept involves all the marketing activities performed by online businesses and communication by different available tools to various business users. Nevertheless, it has been highlighted that e-marketing impacts all different formats of online trade such:

- B2B: Business to Business
- B2C: Business to Customer
- C2C: Customer to Customer
- B2B2C: Business to Business to Customer

Furthermore, Dann and Dann (2011) highlighted that e-marketing is also comparable to other concepts not only dealing with the ordinary business issues, but also sharing the same online nature such as:

- Marketing over IP
- Interactive marketing
- Mobile marketing

2.3.4.1   E-MARKETING DEFINITION

Researchers defined e-marketing differently. Gay et al. (2007) stated that e-marketing has been identified by the Institute of Direct Marketing as "The use of Internet and related digital information and communications technologies to achieve marketing objectivise" (p. 5). Thus confirming that the government needs to set a marketing strategy and apply it using available online means.

2.3.4.2   E-MARKETING ELEMENTS

The implementation of e-marketing strategies, in order to promote smart services and attract users, drives to the understanding of the e-marketing elements that influence the activities leading to the strategic goals of the government. These are important factors for the understanding of smart services in the UAE.

Rana (2009) explained that e-marketing includes many elements that have direct and indirect influence on the predefined businesses marketing strategies, as well as the marketing performance. Nevertheless, three main areas (illustrated in Figure 2-5) are relatively significant, and in general characterise e-marketing core functionality:

- **Segmentation:** This characteristic includes efficient use of marketing strategies to generate better client's segmentation.
- **Promotion:** This element includes the methodology of using all different available channels to achieve enhanced service promotion, and pricing strategies
- **Satisfaction:** This characteristic refers to the linkage between strategic organizational goals and customer satisfaction level.

FIGURE 2-6 E-MARKETING MAIN ELEMENTS

2.4 BEHAVIOUR CHANGE THEORIES

2.4.1 INNOVATION DIFFUSION THEORY (IDT)

The Innovation Diffusion Theory (IDT) is a theoretical model outlining acceptance patterns. Research in many fields such as education, sociology, marketing, computer science, and communication has used the IDT, which also might be seen as DOI (Diffusion of Innovation) (Agarwal, Sambamurthy, & Stair, 2000; Karahanna, Straub, & Chervany, 1999; Rogers, 1995). The word *innovation* used in the name of the theory can be defined as "an idea, practice, or object that is perceived as new by an individual or another unit of adoption" (Rogers, 1995, p. 11). Following that, *diffusion* is explained as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995, p. 5). The term of *adoption* was placed and explained in the context of someone choosing to adopt and use *innovation*. Thus, based on this theory, "potential users make decisions to adopt or reject an innovation based on beliefs that they form about the innovation" (Agarwal et al., 2000, p. 90).

Initially this theory was used to assess individual level adoption behaviour, but there are studies that have been using it to describe organizational level adoption (for example, Lai & Guynes, 1997).

Rogers (1995) highlighted five characteristics of innovations which are significant in an individual's approach towards the smoother acceptance and faster diffusion of technological innovation as well as the decision-making process. Namely: i) relative advantage, ii) compatibility, iii) complexity, iv) trialability and v) observability. More specifically, the definition of *relative advantage*, predicting in the best way the acceptance of an innovation, is the degree to which an innovation is assessed as superior than the one it substituted. The second characteristic is *compatibility,* which is the degree of the observed consistency of an innovation

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with the previous requirements and practices, present principles, and prospective users. Following the above two attributes, *complexity* is the level of difficulty that the users consider regarding the understanding of an innovation and how easy they are to use. The fourth element, *trialability,* is defined as the degree of testing on a limited basis an innovation. The fifth and final characteristic, *observability* is the degree of visibility of the outcomes of an innovation to the public.

This theory has been extensively used in the literature, has a concrete theoretical basis and validates prior experimental findings (e.g., Truman et al., 2003). However, the IDT has been significantly criticised due to its limitations in organizational level applicability (Chau & Tam, 1997). More specifically, there is no taking into consideration how organizational and environmental factors affect a technological innovation, hence applying an individualist approach (Lee & Cheung, 2004).

The means and methods that lead a company or organisation to the acceptance of a certain IT infrastructure are not fully explained by the IDT model (Brancheau & Wetherbe, 1990). This is because the particular model is focused on innovations that individuals adopt on an independent way (Fichman & Carroll, 1999). By contrast, IT adoption is a process that involves several individuals adopting the technique at the same time. Relatedly, the IDT model cannot explain all the steps of full IT implementation. The IDT model also fails to distinguish between adoption and innovation. In greater detail, the model does not determine whether innovation is utilised by the IT adopter. To its defence however, the IDT model can explain accurately the innovation adoption process at the individual level.

2.4.2   IDT IN SMART SERVICES

Additionally, a strand of the literature on smart services that have adopted the IDT have not used the original model but rather investigated the behavioural intention, as well as not exploring how trialability and observability affect adoption (e.g., Carter and Belanger, 2005; Shareef, Kumar, & Kumar, 2007). In addition, the second characteristic of the IDT, compatibility, was observed as non-significant in relevant studies. However, in the amount of smart services' studies using the above theory it has been demonstrated that the model has not been implemented as the exact, original model. Hence, the consequences of this model are difficult to assess practically (Rodrigues, Sarabdeen, & Balasubramanian, 2016).

2.4.3   THEORY OF REASONED ACTION (TRA)

Regarding acceptance patterns, the theoretical framework of TRA (see Figure 2-13) by Fishbein and Ajzen (1975) was one of the initial proposed frameworks in the field. According to the TRA, a person's will to show a specific behaviour, based on their attitude and subjective norms, forms their behaviour. *Attitude* can be defined as the dominant views of a person, regarding the outcomes of performing behaviour, which regulate the attitude, together with the evaluation of those outcomes. The definition that can be supplied for the term *subjective norm* is the user's view on the social factors that might influence him/her to perform the behaviour.

However, the TRA model has several limitations. Davis, Bagozzi, & Warshaw (1989) argue that the subjective norm concept is not very comprehensible. More specifically, the subjective norm might indirectly influence the behavioural intention idea via the approach towards that same concept. As a result, the distinction amongst the direct and indirect effects in the TRA framework will be more problematic. Additionally, another very important limitation is the fact that the concepts of TRA, that could be used to investigate the acceptance and use compound structures such as smart services, are not found significant.
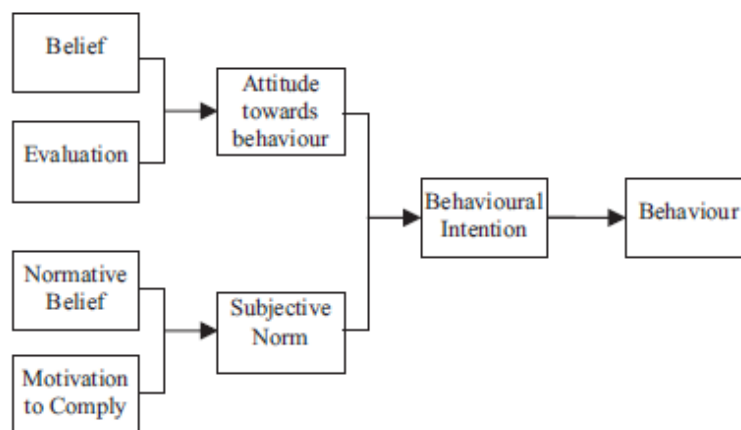
FIGURE 2-7 TRA MODEL BY FISHBEIN AND AJZEN (1975)

2.4.4   THEORY OF PLANNED BEHAVIOUR (TPB)

Directly influenced by the TRA theory, the TPB is the successor of the TRA. Ajzen (1991) added an extra element in TRA that influences the intention towards behaviour, the p*erceived behavioural control* (can be seen in Figure 2-14). Perceived behavioural control is linked to behavioural intention altering behaviour patterns. This element of perceived behavioural control had a significant effect on the estimation of intention and actual behaviour in the TPB (Armitage & Conner, 2001)

The TPB is an acclaimed behavioural model explaining user intended adoption behaviour. Hung, Chang, and Kuo (2013) investigated mobile smart services' acceptance and use in

Taiwan using the TPB and found that perceived usefulness, perceived ease of use, trust, interactivity, external influence, interpersonal influence, self-efficacy, and facilitating conditions are critical factors.
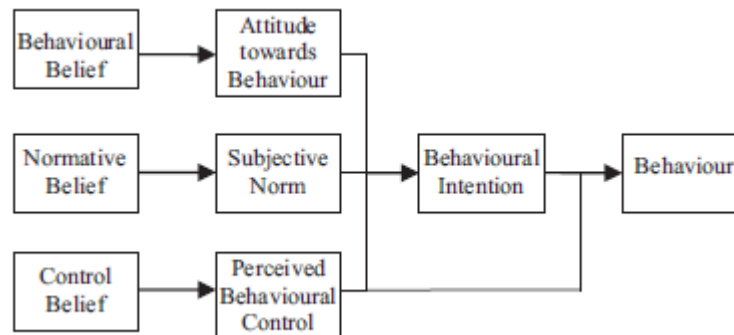
FIGURE 2-8 TPB MODEL BY AJZEN (1991)

2.4.5   TECHNOLOGY ACCEPTANCE MODEL (TAM)

The TAM (Davies, 1986) has been widely applied as an acceptance model of new technologies (e.g., Ozkan & Kanat, 2011). Proposed by Davis (1986) the TAM is one of the most recognized frameworks on the adoption and use of new technology. According to Ajzen and Fishbein (1980) this model has been influenced by the theoretical framework of TRA, focusing on the prediction and interpretation of a person's behaviour regarding the acceptance of technology. It was initially suggested by Davies (1986) and Davis et al. (1989) to offer an insight as to why someone adopts or not a technological implementation applying the TRA theoretical model.

The TAM is based on one's intentions, attitude, perceived usefulness of the system, and perceived ease of the system. The TAM consists of two cognitive attributes, namely *perceived usefulness* and *perceived ease of use* (Davis, 1989; Davis et al., 1989). This can be seen in Figure 2-15. Perceived usefulness is explained as 'the degree to which a person believes that using a particular system would enhance his or her job performance' and perceived ease of use as 'the degree to which a person believes that using a particular system would be free of effort' (Davis, 1989, p. 320). The two basic characteristics of the theoretical model impact the user's approach in using new technology. For the TAM model the attitude of a user correlates to their intentions and that will determine the use of the technological system.
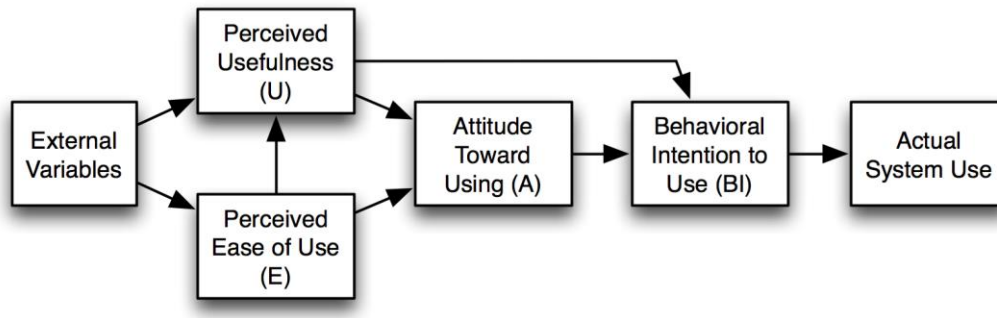
TAM 2 is a successor of TAM, proposed in order to give a further insight in the concepts of perceived usefulness, subjective norm, voluntariness, image, job relevance, output quality, result demonstrability and experience.

2.5 PERSUASION AND MOTIVATION

Persuasion exists in every business transaction as well as in everyday life activity. Accordingly, it is vital for businesses to be able to identify precaution strategies and to implement them in order to persuade customers. Nevertheless, the Emirati government faces the same challenge, since part of the strategy is to persuade customers to use the online solutions as an alternative to usual channels.

2.5.1 SMART SERVICES - USER CHARACTERISTICS

Users of smart services are different in nature and behaviour patterns with regard to the online services or provider. In spite of this, Moe (2003) explained that all online users could be categorized into two main groups, lookers and buyers. Smart services users can be viewed similarly to e-commerce as illustrated in Figure 2-7.

  i)   Lookers: This first group mainly uses the Internet to browse and collect information, in order to build up knowledge about certain services they might use in the future. Therefore, a smart service user, who is a looker, might use an offered application only to browse and then visit the responsible office to finalize a transaction.

  ii) Buyers: This second group uses the Internet similarly to the lookers to browse, however finalising a transaction online without visiting the responsible office.
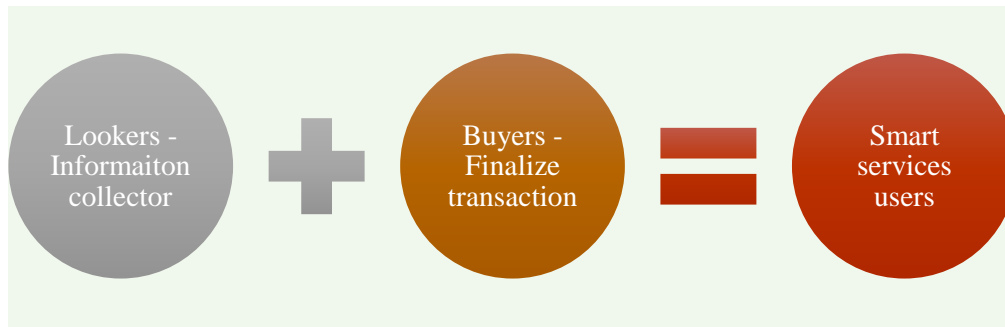
FIGURE 2-10 ONLINE USER'S CATEGORIES

Nevertheless, Nutt and Wilson (2012) argued that online buyers usually go through five business phases, illustrated in Figure 2-8, before finalising any deal, and these phases are mandatory for all users regardless of their behaviour pattern:

- Comparison between offline and online services and goods of interest
- Evaluation of their trust level in using the internet for purchases
- Decision on whether to use the Internet in general or not
- Decision to finalize the online transaction or not
- Evaluation of the experience after the purchase.
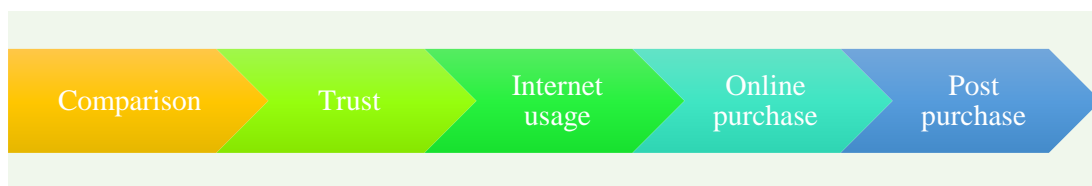
FIGURE 2-11 BUYERS ONLINE PHASES

On the other hand, Krogerus and Tschäppeler (2011) highlighted that there are further sub elements affecting the online buying decision. These factors are concerned more with the constraints of the Internet in broader terms as a market, rather than the online use behaviour:

- Website credibility
- Information credibility
- Technical requirements to use the website
- Security and privacy

2.5.2   PERSUASIVE DESIGN

Persuasion is a very significant element in everyday trade regardless of its nature and format, and it is almost involved in every part of the business transaction. Furthermore, it always exists in different forms, despite of the consumer behavior and characteristics. Yet, convinced consumers with a certain product or service might need further persuasion to finalize the transaction.

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On the other hand, Krizan et al. (2008) argue that persuasion level and need could vary from user to another, as well as from provider to another. For example, a user might get persuaded if the provider tackles various issues more aggressively than others, depending on the consumer needs and behaviour. The authors identified the following areas:

- Information security and quality
- Customer care and prices
- International existence
- Company reputation

Nevertheless, Mentor (2013) emphasized that companies follow different strategies in accordance to the company strategic goals, to work on the consumer persuasion enhancements. However, companies are indeed limited by many different aspects that could affect their consumer persuasion strategies such:

- Market needs and culture
- Business Ethics
- Competition performance
- Market and industry regulation

2.5.3   PERSUASION DEFINITIONS

Online persuasion is an active area of research, since the massive impact of customer relationship management involved. Accordingly, various definitions exists such:

- "Persuasion motivates users by taking advantage of persuasive tactics that will make them take action. The most persuasive web sites focus on making users feels comfortable about making decisions and helping them act on them." (Chak, 2003)
- Fogg (2003) definition: "an attempt to change attitudes or behaviours or both without using coercion or deception". Captology: Describes the area where technology and persuasion overlap.

2.5.4   PERSUASION AND ETHICS

A link between persuasion activities and ethics exist, and since ethics are something variable, consequently it is difficult to control and define in global terms what is considered ethical and what is not. Furthermore, Cheney et al. (2011) argued that persuasion involves trials from different providers to convince different consumers, or the same customer by different means, to buy or use certain service.

Additionally, a research carried out by Fogg (2003) highlighted the ethical issues posing two relevant questions:

- "Can persuasion be unethical? The answer clearly is yes. People can use persuasion to promote outcomes that we as a culture find unacceptable.
- "Is persuasion unethical" is either yes or no. It depends on how persuasion is used*"*

2.5.5   PERSUASION AND DECEPTION

According to Fogg (2003), persuasion is different than deception; on the contrary still people might be in confusion. In addition to that, users might consider wrong communicated information from provider is a false persuasion. However, it is actually deception rather than persuasion.

The Internet is a place of both persuasion as well as deception, since it is a wide area where providers can communicate, advertise, and deliver messages to the users across different channels. For that reason, it is possible that some companies advertise or send false information, deceiving rather than persuading the users (Fogg 2003). Moreover companies can deceive together with persuade. Hamburger (2013), argued that companies could work to persuade the users to interact with their business, nevertheless they tend to ignore

the fact that they are communicating false information leading to deception.

2.5.6 SERVICES AND ETHICS OF PERSUASION

Since there are ethical issues involved in persuasion, and as technology is relatively significant in online service trade, consequently, a relation exists between technology and ethics of persuasion. Fogg (2003) defined the issues where technology intersect with ethics, and might cause ethical challenge for governments or service providers in general. He grouped them in the following aspects:

1. **The novelty of the technology can mask its persuasive intent.** Consumers welcome technology development and the introduction of new technologies. Yet, a new technology always covers a persuasive desire from providers, to generate more sales and consequently better revenue.

2. **Persuasive technology can exploit the positive reputation of computers.** This occurs when providers introduce new solutions with persuasive desire and take advantage of the familiarity of computers by consumers.

3. **Computers can be proactively persistent.** The Computer pre-programmed solutions made it easy, to be constant proactively in the relationship between different parties, as well as the suitability of computers to adapt to different needs.

4. **Computers control the interactive possibilities.** Since computers are the medium where the provider and users interact, therefore, it controls all opportunities of interactions between the two involved parties in any online transaction.

5. **Computers can affect emotions but can't be affected by them.** Computers can influence the behaviour of users, and cannot be affected by them. For example, computer performance is unchangeable and regardless of the user's behaviour the result will be the same.

6. **Computers cannot shoulder responsibility.** In case of positive or negative experience, computers will not be responsible for any persuasive or deception acts, namely providers can use computers to establish good or bad persuasive techniques.

2.5.7 MOTIVATION AND DIGITAL MOTIVATION ENGINEERING

Undeniably, motivation is a big part of the thesis as it is a main obstacle to the increase use of the smart services in UAE. In this section, a review of central theories and models in motivation will be presented as a start to discuss the digital version of motivation and its engineering principles and challenges, with focus on smart services user behaviour.

2.5.7.1 MOTIVATION THEORIES

As a matter of fact, the theories on motivation are several. There are also existing principles and main drivers for motivation. Nonetheless, they mostly share elements in relation to the personality, the group, environment and motives. For the purpose of this thesis, the researcher focus is on the following theories:

- Cialdini's principles
- The role of technology in motivation
- Group dynamics
- The motivation-hygiene theory
- The ERG theory of Alderfer

Cialdini's principles are one of the examples about influence (Cialdini, 2007). The argument is that the influence is centred on 6 principles and their combinations. These principles are as the following:

- Scarcity
- Reciprocity
- Social proof
- Commitment and consistency
- Likeability
- Authority

Cialdini recognizes that these principles can vary according to various variables based on the context such as culture, personality traits, gender and age, etc. This means they will need customization to fit this range of variables.

However, Fogg added to the literature on motivation by introducing the role of technology in that (Fogg, 2003a). He argued that the technology could provide a spark so that the person starts to think of their ability and match it to the interest in a task. In other words, Fogg's argument is that people may not be fully aware of their capabilities, which also match tasks that can lead to meeting goals of interest.

Furthermore, group dynamics also play a role in the efficiency of motivational techniques on the individuals (Forsyth, 1992). For illustration, in case of motivations of a collective nature, i.e. the reward is given on a group-based performance; phenomenon like social loafing could deter the group cohesion and group consistency. This means that the design of digital motivation shall take into account the individual performance in relation to the group performance so that such cases are both quickly detected and handled. It is also argued that motivation on individual basis can lead to a reduced cooperation (Shahri, 2017). This can be further exacerbated if an individual is both motivated individually for one task, and on a group-based performance for another task, which will then require them to prioritize.

Moreover, the motivation-hygiene theory (Herzberg, 2005) emphasizes the significance of two factors. The first is the Motivator that can increase users satisfaction via techniques like recognition, responsibility and achievement. The second factor is the Hygiene aspect, which describes the environment such as work conditions, policies, salary, etc. The inter-relation between these two is important, as motivators by their own in non-supportive environments will be less effective.

Another motivation theory is the ERG theory of Alderfer (Alderfer, 1969) which conceptualize motivation around three pillars; Existence, Relatedness and Growth.

- Existence: which mainly concerns the capability to survive and exist, which should be the strongest, need.
- Relatedness: which refers to humans being as social creature and their need to be connected and related to each other and recognized.
- Growth: Here the focus is around the human's desire to own and expand their areas of ownership that includes intangible assets such as skills.

In fact, ERG theory is based on the Maslow hierarchy of human needs (Maslow, 1954) and its three pillars can be mapped to that hierarchy focus. These needs will inform the design of persuasive technology especially in the Relatedness and Growth part. Despite of that, it can be observed that the motivation and influence principles and theory are related mainly to the intrinsic motivation and readiness of the individuals as well as their readiness for the change. Nonetheless, technology can assist that and help them recognize their capabilities and monitor their performance. Thus, one would need to be realistic about the expectations of the digital motivation techniques, so that it is seen as a supplementary tool that should follow more substantial practical and managerial arrangements in a business environment.

2.5.7.2 DIGITAL MOTIVATION ENGINEERING

Motivation as an aspect, is quite big and includes many different sub categories, however digital motivation itself is an umbrella term which refers to the use of technology to change or boost certain intentions, behaviour and attitude (Shahri et al, 2017). This includes technology like gamification, i.e. the use of game elements in a non-game environment (Deterding, 2012) and the persuasive technology, which revolves around the use of technology applications to persuade the audiences, in order to encourage them to follow certain behaviour or change their perception (Fogg, 2009).

Nonetheless, the design for digital motivation has indeed a wide range of challenges and obstacles as explained twice in (Shahri et al, 2017) and (Shahri et al, 2014). These challenges include mainly:

- Ethical consideration
- Stakeholders' specification
- Hidden costs
- Negative side effects
- Sustainability issue

The study follows a series of users and experts' interviews and besides that, it highlights debates in the definition and the design principles as well as some consensus in certain area.

Digital motivation and playfulness: Amongst the debates is the dissimilarity between digital motivation and playfulness. The first view is motivating people should be always accompanies by some degree of playfulness especially when the behaviour to follow is not mandatory and there is a degree of freedom for the audience to accept the motivation technique. This would also apply in a stricter environment such as a work environment as being less game-centric may lead to employees rejecting to some extent the full engagement in the programme. It was also agued as a second view according to (Shahri et al, 2017) is that adding many game elements may lead to a misconception of the digital motivation as a trivialization of the work. On the other hand, and in the context of smart services, the thesis tends to agree with the second view as adding much playfulness may distract the public from the main purpose and also lead to a feeling that the service is more commercial focused, which is not the case for the type of services handled in this thesis, i.e. non-profit and government services. Therefore, the use of persuasion and motivation should be seen as an auxiliary mechanism that is integrated in a delicate and careful way with the main services.

Stakeholders involvement: Moreover, the stakeholders to be involved in the design of digital motivation and their decision rights are yet another issue. It has been argued that engaging users in the design of digital motivation can be undeniably beneficial but it can also deter the efficiency of the system all through reducing the aspect of surprise that usually accompanying digital motivation, i.e. when the reward system is transparent and clear, it may affect rewards of the exploratory type (Shahri et al, 2017). Algashami argued that the involvement of end users in a participatory style can lead to a reduction in the side effects of digital motivation such as reducing group conflicts, and making rules of the game clear and transparent to all involved parties (Algashmi et al, 2017). For instance, knowing how leader-board is designed and given the employees a voice in designing its computation model would not only increase the sense of ownership, but also the level of commitment by the group and reduce the debate about fairness and objectivity of measurement.

Personal variations: The personal differences are also another factor that need to be considered when designing digital motivation. Shahri et al in (Shahri et al, 2016a) and (Shahri et al, 2016b) reported Persons that typify the classic users' behaviour and reaction towards digital motivation. Personality traits, such as introversion, could affect the acceptance and also efficiency of the digital motivation used. For example, a leader board may not appeal much to people who are introvert, and accordingly would like to keep a certain degree of privacy even when they are top performers. Likewise, The study also showed that competitive personalities may do well in relation to individual tasks, and they may dislike group work unless there is a genuine interest in the shared task and where social loafing is minimized.

Adoptive approach: The design shall follow a continually adaptive approach. Shahri et al (Shahri et al, 2016b) argued that the concept of social adaptation (Ali et al, 2012) and Social Sensing (Ali et al, 2011) through the use of users' feedback (Sherief et al, 2015) as a software evolution mechanism (Sherief et al, 2014) should be used in order to maintain the knowledge about motivation and its engineering base up to date. In fact, this is crucial aspect for this kind of users' requirements given their human intense nature and the actuality of being subject to change. In reality, the idea behind the concept is that motivation is a volatile property and may lose its effectiveness as well as its attractiveness by time. Nevertheless, classic usability testing may produce a valid result but yet only temporarily. Users' feedback about digital motivation will inform the design team where there should be a change in the monitoring and rewarding system, and will naturally help them to detect conflicts and inconsistency to resolve.

It is argued that the view of motivation as a fundamental requirement to engineer implies a consideration of it within its organizational settings (Shahri et al, 2015). In other words, a requirement is usually situated within a set of other requirements including rights and duties of a particular stakeholder and the expectations of others from them. This means the motivation engineering should be handled as a supplementary to the mainstream requirements of the organization. For example, a digital motivation to supplement a smart service for citizens' passport renewals would be unlike it in comparison to the one for online reservation of seats, which takes offers into account. The nature of the requirements at the first is more critical than the second. Hence, motivation should be less distractive and more focused on the accuracy rather than informing of the various offers, as it is the case of the second example.

Consequently, this thesis will add to this main part of knowledge by customizing an established process for motivation and persuasion engineering, the Fogg's eight steps process, as well as to consider the acceptability and issues in relation to motivation principles, with the goal of making it suitable to the UAE social and cultural framework. Additionally, the findings of the empirical studies conducted in the UAE would not only clarify further the findings of the previous studies, but also to confirm or reject their validity in that socio-cultural framework. Moreover, it has been noted through the research in this thesis that some of the motivation principles could have different side effects if implemented there, e.g. the lottery style which may contradict with the ethical values of the community.

2.6   FOGG'S BEHAVIOR MODEL

Since it is vital to understand the individual's behaviour in order to motivate their engagement to use the smart services, it is crucial to investigate online behaviour models. This will be very important for the smart services in the UAE context. Fogg (2003) has identified the behaviour

model according to three different dimensions, which influence widely the individual behaviour of users:

- Motivators: Elements that motivate individuals and push them towards certain actions
- Simplicity: The personal barriers which hamper a certain desired behaviour
- Triggers**:** Elements that motivate individuals more towards certain behaviour.

According to Fogg (2003) each of three main elements of the behaviour model (illustrated in Figure 2-9) consists of many various factors. The next sub-sections will explain that.

FIGURE 2-12 THE THREE ELEMENTS OF FOGG BEHAVIOURAL MODEL

2.6.1   MOTIVATORS

According to Fogg (2003), The motivators could be classified into:
- Pleasure expected from behavior
- Pain and need for change
- Hope for certain outcome
- Fear from current conditions
- Acceptance to current situation
- Rejection of specific circumstances

2.6.2   SIMPLICITY (BARRIERS)

According to Fogg (2003), the barriers revolves around:
- Time
- Money
- Physical Effort
- Brain Cycles: contradictory consequences to the expected results
- Social Deviance: community and social barriers
- Non-Routine: break of the daily routine and change inherited by life style

2.6.3   TRIGGERS (CALLS TO ACTION)

According to Fogg (2003), and as illustrated in Figure 2-10, the triggers for action revolve around:
- Facilitation (makes it easier): tackling the barriers
- Signal (makes it more appealing): reminding individuals the positive outcome of their

behaviour

- Spark (just signal, not motivator): sending frequent signals with the positive outcome, and the need of satisfaction reminders.
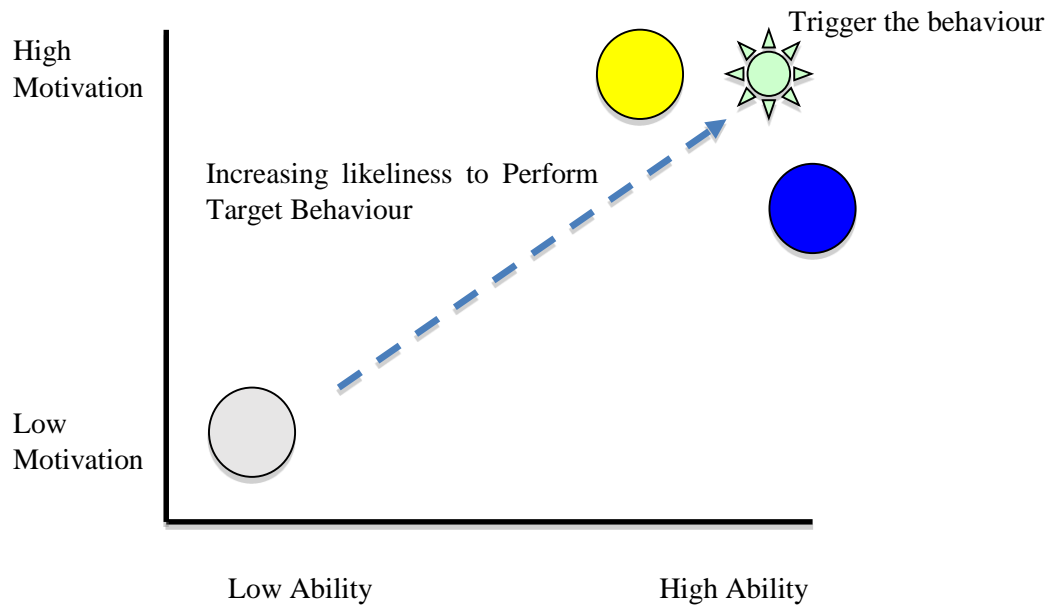
FIGURE 2-13 BEHAVIOUR MODEL OF FOGG (2003)

According to Fogg (2003), two unique different approaches describe the size and the nature of the persuasion goals of any business body, namely:

- **Macrosuasion:** This describes the general persuasion goal of a product or a service. For the smart services enhancement, the macrosuasion goal is to offer the ordinary services provided by the government to the public through smart solutions and online applications.

- **Microsuasion:** This describes the persuasion goals of small elements of the service, which by the end serve the general persuasion goal when incorporated together. For the smart services' enhancement, microsuation could be the information gathered online while providing the services. This collected information will help in the achievement of the final goal.

2.6.5   SMART SERVICES AND PERSUASION TOOLS

In general, it is required by the government to familiarise itself with persuasive techniques so the users can adopt the new services channels. Persuasion could be achieved by different means depending on the strategic goal and available tools. Summarized in Figure 2-11, Fogg (2003) identified the below seven different tools addressing different areas where persuasion could be achieved:
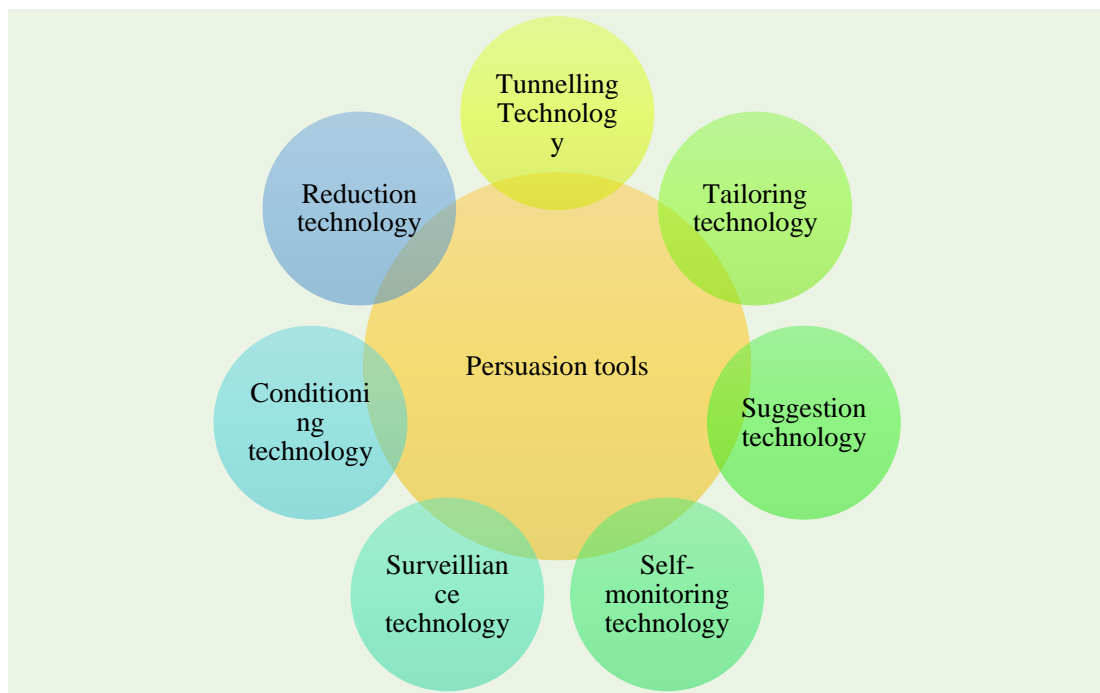
FIGURE 2-14 FOGG PERSUASION TECHNOLOGY TOOLS

Furthermore, Fogg (2003) argued that every technology has a different persuasion impact on the individual user, and consequently on the business itself. More specifically:

- **Tunnelling technology:** This is a method where persuasion is increasing step by step rather than offering an immediate effect. As a result full and well-built persuasion behaviour from the customer is achieved, while at the same time serving the business general goals. This method of persuasion is highly successful since it continuously informs the user that the goals are achievable.

- **Tailoring technology:** This approach relies on the customization aspect, where information is provided to every individual to suit their specific needs and behaviour in order to change individual reactions and build persuasion.

- **Suggestion technology:** This method proves a recommendation to the individual in the best moment where persuasion could be achieved. Accordingly, it is a time sensitive approach.

- **Self-monitoring technology:** Gives individuals the opportunity to evaluate their behaviour. Consequently a persuasion approach can be established in order to satisfy their need for a certain service.

- **Surveillance technology:** Individuals will be allowed to monitor other users' behaviour. Based on this, they can modify their behaviour in the desired way via observing other customers.

- **Conditioning technology:** This technology relies on clarifying the possible consequences of certain behaviour; subsequently the individuals can change their behaviour to avoid unwelcomed or welcomed consequences clarified to them earlier.

- **Reduction technology:** Via this method complex activities are broken down into simple steps; hence a more difficult goal seems more feasible to reach hence persuading the individual to engage in an activity.

				Technology			
Key factor	Tunneling	Tailoring	Suggestion	Self-monitoring	Surveillance	Conditioning	Reduction
	Step by step approach	Customize	Provide recommendations	Self observation	Monitor others	Outcome clarification	Simplicity Effect

FIGURE 2-15 TECHNOLOGY EFFECT ACCORDING TO FOGG (2003)

2.7 CRITICAL ANALYSIS

The literature reviewed in the previous sections is mainly to provide a background for the design of the users and experts' study, and moreover to update the design stage of the thesis by the meaning of proposing a method for persuasive techniques and the persuasive introduction of smart services. At the same time, the review has indicated a gap in the following areas:

- Although smart services are e-commerce services, there is a need to consider their technological and usability limitations. Hence, the added value of e-commerce solutions could be easily compromised through these usability and technical requirements obstacles. For example, the costs of Internet connectivity on mobile phone, the battery life limitation and the size of the device screen, etc.

- Based on the previous point, the consideration of smart services as an e-commerce solution should be handled with care, as the value might be unclear to the final customers especially when alternatives are available and faster to access, and resulting in similar outcome. This means the explanation of the added value is a key. Therefore, the public motivation is preconditioned by seeing the costs, the benefits and having the confidence of being able to harness the power of smart service.

- Although e-loyalty solutions do exist, but it seems that this is often inter-linked to tangible services and products. In the case of smart services, the benefits are not necessarily tangible or unmistakable. For instance, saving time and effort could be seen in a subjective way. Consequently, this introduces the need to personalize e-marketing approach, and treat it more like a dialogue of persuasion and raising awareness than using a classic marketing mindset.

- Even though the consideration of human factor is recognized, it seems that the cultural dimension has less emphasis. In particular, to the best of the researcher's knowledge, studying the suitability of the canonical persuasion and motivation and loyalty approaches

for the UAE population is insufficient in general and in the case of smart services design in particular.

- Observably, the design of smart services could follow a uniform approach if we consider it as an e-commerce service. This means steps in the analysis and design stages, can be mainly generic with regards to the users requirements and the corresponding design, which meet them. However, once we consider persuasion and motivation, the uniform approaches would suffer from a critical need for localization and contextualization. For this reason, there is a need for a culture-specific solution that should also make the personalization process easier, i.e. by narrowing the space of potential solutions.
- Persuasive technology is itself a demonstration of various behaviour change and motivation theories. Hence, the study of such theories in a certain socio-cultural framework will also inform the design process.

Subsequently, this thesis will mainly focus on the motivation and persuasion within the UAE population and use that understanding for the augmentation of mainstream models in regards to persuasive techniques design and technology introduction. As a result, it will fill a significant gap for the smart service development since more human-focused e-commerce solution will be applied. However, the design of such persuasive solutions should not neglect some technical, managerial and process challenges and therefore, the thesis will first explore them in order to provide a holistic view of the problem and put in the picture more the positioning of the solution within its organizational environment.

2.8   SUMMARY

This chapter included terms, theories and information on smart services and their application. Factors such as the users' profiles and what factors persuade and make users comfortable in adopting and using smart services are analysed. This information is vital in order to understand how the smart services function and on what theories they are based upon.

These factors and terms, such as the users' profiles or their behaviour patterns, are important to understand in order to move on to the understanding and analysis of the smart services in the UAE context which is the objective of this study. Also this chapter offers the knowledge on smart services in order to recognise the prevention factors in this use as well as how to overcome the challenges.

3.   CHAPTER 3: USER PERCEPTION OF SMART GOVERNMENT: EXPLORATORY STUDY

The UAE government was concerned with the use of smart services across the country. This has also been confirmed by the United Nations smart services survey as the world ranking of UAE smart services systems had declined 4 positions in the last year (E-Government Survey, 2014).

In order to investigate the reasons behind this decline, an exploratory study was conducted regarding the users perception of the smart services offered by the government. Thus, the focus of this chapter is to explore the views of the UAE citizens in relation to the traditional channels being replaced by smart services. On the other hand, this study was carried at an early stage since it is believed to provide guidelines for the rest of the research, as well as a basis for the second part of the thesis, regarding the expert opinion study analysed in the next chapter.

Nevertheless, qualitative research has always been imperative in social sciences and management (O'Sullivan et al., 1995). Additionally, it has been argued that qualitative methodology tends to concentrate on a "smaller number of instances or examples aiming to achieve "depth" rather than 'breadth" (Blaxter et al., 1996). Therefore, a mixture of quantitative and qualitative data was collected from different user groups, representing different ages and gender. This was done through both close-ended and open-ended questions. Comments were also allowed in the survey to cater, even partially, for the qualitative aspect.

Additionally, the data was collected through a user survey, which was designed to serve the purpose of the research and the needed data, aiming to avoid any common researchers' errors when data is generally collected through survey (Umbach, 2005).

In fact, the survey includes various questions, which are designed carefully to examine a clear vision of the user's perception. The design is mainly based on questions with multiple choices and open-ended questions, in order to give the participant the opportunity to include all relevant responses and useful information from their point of view without restrictions or any limitations.

3.1   STUDY DESIGN

This part explains the major aspects about the user's survey, in terms of how it is designed, how the questions are selected and what areas are to be served, as well as how the participants involved in the data collection process are selected in a way to assure equal opportunities. Moreover, the user study figure below explains the main four elements (Figure 3-1) that illustrates all elements of the user study phases:

- Research questions
- Survey design
- Data collection
- Descriptive analysis
- Text analysis
- Reporting

FIGURE 3-1STUDY DESIGN

Naturally, this study is meant to gather an initial idea of the public attitude and usage of the smart services in the UAE. It stems from the observation made by the researcher while living and working in the country and witnessing the rise of smart services. The researcher observed that although the usage is relatively high, the number of smart services used was debatable. Logically, this initial study required statistics to show and demonstrate the landscape of smart phone usage and for this reason a survey method was chosen. In order to explain some of the answers, the survey has offered open-ended questions. Nonetheless, the researcher chose to do the survey in person to ensure that the quantitative answers are explained through those open-ended responses and also to ensure a balanced sample, e.g. ages, gender and location across the survey participants.

Additionally, a descriptive analysis of the survey questions was chosen with the aim to support the main reason for the survey, i.e. to assess the background of the usage. Moreover, no inferential analysis was conducted as the research did not have hypothesis other than the statements about high usage but only for few services, which can be demonstrated through the descriptive analysis. A content analysis of the open comments was conducted and it was done as a sample form of categorization of the issues and recommendations the participants provided through the open-ended question.

Furthermore, the survey was meant to provide an initial understanding of the current status of the smart service with the intention to use that as a starting point for a deeper discussion with

experts in the domain. In addition, asking typical users of reasons and issues may not be an effective way to get to the root of the problem as they are mainly concerned about their requirements and whether they are being met or not. Yet, they would not be typically concerned on the why and the actual background reasons for that. For such a reason, a survey would be a suitable tool for the audience as well.

3.2 RESEARCH QUESTIONS

The overall aim of this thesis is to investigate questions in the area of electronic government application in the United Arabic Emirates. More specifically this thesis is concerned with smart services practices in terms of challenges of applications and the smart services provided to the citizens in order to replace the traditional offline channels. Moreover, this study aims to explore the current status of the smart services offered to the public and also to identify the key areas of success and failure on behalf of the users and experts, using different data collection tools such as surveys and direct face-to-face interviews.

However, the survey is not intended to give an in depth analysis of the various reasons and sources of smart service's success and failure, but rather to identify the key areas of their weaknesses and strengths based on the three following reasons:

- When surveyed, users are generally able to state their requirements and feedback, but would not easily be willing to elaborate on the reasons. This would be even more pronounced especially for a software-intensive system where the lack of terminology might be a problem where the majority of participants might have various academic and cultural backgrounds.

- The domain of smart services is relatively recent and in particular the first initiative in the UAE was during the year 2012 (Al-Khouri, 2013). For that reason, even if users would be willing to give their views and experiences, it would still not be possible to offer in-depth-responses, given that all smart services are still recent and a common understanding is still being developed.

- Different stakeholder are aware of the reasons that smart services are successful or not and users are only one part of the all involved parties. For instance, users would be able to state reasons like the lack of confidence in dealing with the online requests as efficiently as in person, but unsurprisingly they would not be able to state which

departments are responsible for any of the challenges that they might be facing at different stages.

For the above reasons and in order to collect the information needed regarding the research questions, this chapter relies on survey-based data collection which is a tool enabling access to a large number of users, whom would not find participating in the user survey time consuming and cumbersome . At the same time, the survey shall enable breadth of data and give initial understanding of areas to further explore throughout the research. Additionally, the next chapters will offer an in-depth investigation of the set of initial insights obtained via this study.

3.3   THE SURVEY QUESTIONS

The survey questions are designed around seven central main areas of investigation. Comments are also used mainly in justifying common answers or specific answers a user might offer. As a result, the survey design enables both descriptive and content analysis of the collected data. Nonetheless, qualitative analysis is relatively significant to clarify and give justifications to the data collected (Stanley et al, 2004).

For example, the high percentage of users using smart services in general, which was a result of the descriptive analysis, did not necessarily mean that they are using all the available services, but rather few of them only, depending on the user's behaviour. This fact became comprehensible by looking at the comments added by the users, and it will be explained and analysed throughout the study.

Below are the questions of the survey in detail:

Question 1: Are you a UAE Citizen/Resident?

This question is meant to be a filtering question. Those who answered No were excluded, as we are interested in the use of services meant for citizens and long-term residents only, since having data for short-term visitors will not be relevant to the purpose of the study. The study is also about cultural factors, which could affect users' acceptance of the smart services, and our focus will be on UAE locals. We deliberately aimed for a majority of UAE locals in the survey to better serve the research core areas.

Question 2: Which device or technology do you use to access the Internet?

This question is asked in order to know the used access tool to the smart services. More specifically, a user accessing the Internet on the go from a smart device such as a mobile phone

or tablet might have different online behaviour in comparison to an individual accessing the Internet from a personal computer at home or at the office.

Question 3: Do you use Federal Government online services?

This question is needed in order to know if all Internet users are smart service clients or not. The collected answers shall help in the analysis, when studying the relation between being an Internet user in general and whether the same user is actually using the smart services or not.

Question 4: Which device do you prefer to access Federal Government online services?

This question is asked in order to know if Internet users have a preference in the device they use to access the government portal through or not. For example, it is significant to know whether users believe that it's easier for them to access smart services via a mobile phone or desktop, or any other device in particular. Additionally, it is vital to understand if this preference is contradictory to the most commonly used devices. In other words, users might believe that a certain device is more helpful when using an online smart services channel. This will also shed light on the motivation mechanisms of using different devices.

Question 5: How do you rate the usefulness of the Federal Government Online Services?

This question is very significant as it will help in identifying the perception of the offered services by the public at the present time and it shall give a global overview of how the smart services strategies are performing.

Question 6: Please list the Federal Government Online services that you have notably used?

This question is meant to investigate if there are specific services that are more used than others and it will also help to identify if there are services more user-friendly than others based on the users. It will also help our further analysis on how to replicate the success stories of these services and also to know the amount of services being used.

Question 7: In your opinion, what are the reasons, which would make the interests in the Federal Government Online Services limited?

This question is quite vital to the research, as it gives the participants a direct chance to state any reasons of service limitation from his/her point of view, which is directly relevant to the research problem. The collected answers are expected to help in identifying the current challenges, especially after collecting the data from the experts in the smart services field in

the UAE, and it shall help in creating links between different points of views in usage limitations causes.

On the other hand, the survey questions did not include many demographics questions, due to cultural reasons. The researcher collected the answers through paper-based questionnaire and had to approach participants in person as such questions are believed to be very personal. For example, a question about education level might have been perceived as culturally obstructive, since citizens tend to believe that this question is obtrusive when asked in person. However, it was taken into consideration while interviewing the sample to diversify the age groups, as well as having equal gender participations.

3.4   SAMPLING

It is very vital to make sure that the collected data is relevant to the research and realistic. However, in order to determine whether citizen's questionnaire does play an important role in conducting human resource processes, a total of 100 respondents were asked to participate. The researcher stopped the collection of data after reaching the targeted number.

Moreover, to achieve Federal Government online service suitability, certain inclusion criteria were imposed on the sample. The participants qualified for sample selection must be citizens or residents of the UAE. This qualification ensured that all the participants understand the nature of the researched topic and are familiar with the questionnaire areas of investigation, as well as the use of the collected data in improving the service. As a result, the survey items are easy for the participants to accomplish and increase the data reliability.

The respondents were selected from two different cities only, Dubai and Sharjah. This was decided in order to have equal participations from two major Emirati cities and not limit the answers to one location, aiming to assure that the survey avoids any possibility of unseen reasons enhancing or hindering the smart services solution in any specific location over the rest of the country. Additionally, straightforward random sampling was done for the sample selection. This sampling method is conducted to assure that each member of a population has an equal opportunity to become part of the sample (Richard et al, 2011).

3.5   DATA COLLECTION TOOL

The survey is paper-based and completed by the participants. The participants were approached by the researcher in a diversity of organizations in Dubai and Sharjah. Additionally, the survey

was not web based due to the fact that the web-based surveys are not always efficient in all industries and paper based surveys seem more appropriate (Corey & Welty, 2009). However, those who met the inclusion criteria as being citizens or residents of the two governorates were offered the option to either complete the survey or to be asked the questions verbally so that the researcher can write their answers down on a paper sheet and analyse them together with the other forms.

3.6　　　RESULTS AND DISCUSSION: DESCRIPTIVE ANALYSIS

Q.1 Are you UAE Citizen/Resident?

In terms of demographics, the majority of respondents are indeed UAE citizens, and in particular 86% are Emirati nationals, while the other 14% are foreign nationals residents in the country for different purposes These results were in alignment with the main focus of this thesis, since the research is mainly concerned with the services offered to the UAE citizens and therefore the focus shall be on this group. For instance, passport renewals are one of the smart services that citizens can choose online and was used as an example when illustrating the study and its purpose. This service is only available to the citizens whereas foreigners will not use it regardless of any other facts. As a result, it will not be possible to provide constructive feedback on such a service.

Q.2 Which types of devices do you use to access the Internet?

As a matter of fact, it is vital for the study to examine the most used devices to access the smart services, and therefore this question is essential for the research and the analysis. The device used also indicates certain usage styles and potential sources of problems.

The majority of respondents indicated that they access the Internet via Smart Phones on the go, representing 87% of the participant sample. This was followed by users preferring to use desktop computers with 74%, while laptops users are represented by 70%, and a further 44% is the percentage for users using tablet PCs to access the smart services, and the least percentage is for kiosks with only 22%. Therefore, smart phones are the most used device by users to access the government's portal for various reasons such as the ease of use, and the ability to use it everywhere and at any time. However, this fact flags an indicator to how significant the mobile network reliability and availability are as well as the involved costs as a part of the services offered by the government. Additionally, mobile networks are also a vital factor of the

success reasons for any strategic planning for the smart services within the UAE as a result of its popularity as a medium to the government portal by the majority of users.

On one hand, smart phones were deemed the most popular method to access government services, news and information on the Internet in general. While the Desktop remains popular among respondents representing 74%. On the other hand, tablets gather 44%, which indicates that respondents prefer to use smart phones when they are on the go, in addition to desktops when at they are at home. As a result, this high percentage demonstrates that the equipment needed to access smart services is largely available to users both technically and also as a set of required skills. This also demonstrates that the challenge of the technology availability smart services might face would be present only for a minority of the intended users. These results are summarized in Figure 3-2.
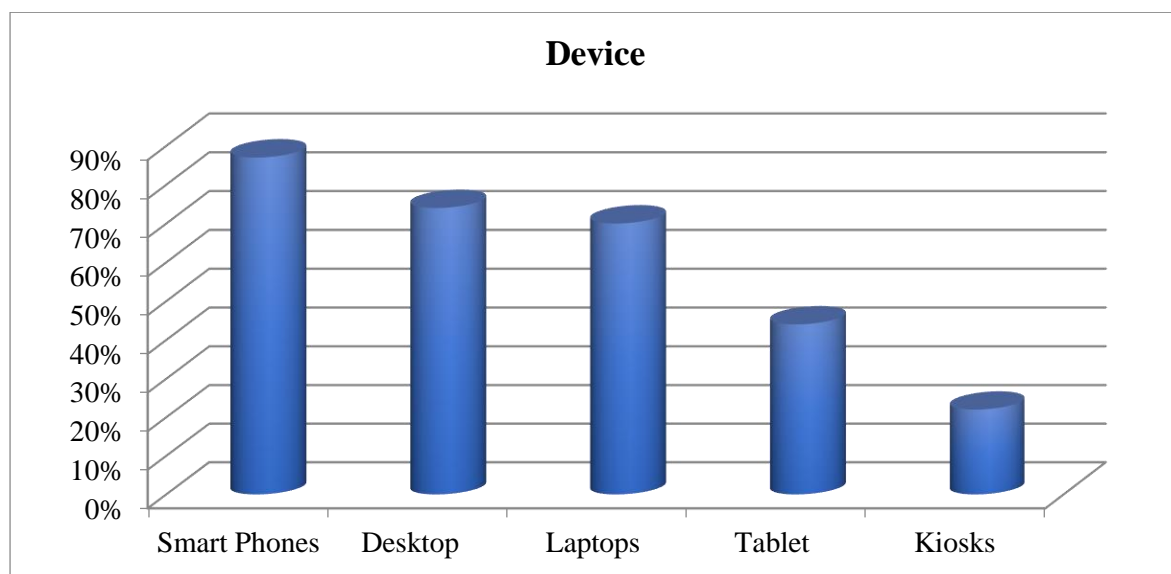
FIGURE 3-2 CITIZENS' PREFERRED DEVICES TO ACCESS THE INTERNET

Q.3 Do you use Federal Government Online Services?

This question is essential to establish a link between Internet users and smart services users. Nevertheless, 85% of the respondents indicated that they are internet users and they already used the Federal Government smart services before to accomplish at least one of the services available online through the official portal. On the other hand, 11% of the sample declared that they did not use any of the smart services before, however they are still Internet users, and they are familiar with the needed technology. The results are summarized in Figure 3-3. As a result they should have no problem with the knowledge required to access the smart services.
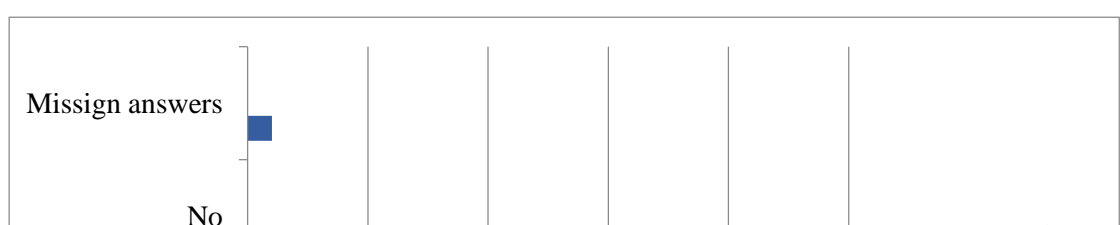
On the other hand, out of the 85% who already confirmed that they use the service 33% declared that they do that on a regular basis whenever they need to complete any transaction with the government regardless of the nature of the desired service. Furthermore 46% stated that they do use the portal but only selectively, i.e. for specific services only as per different situations and preferences, as they can use it only when they are in a remote area or have no time to visit the government offices for various reasons. Additionally, 21% stated that they use the services occasionally and under certain circumstances, e.g. when being abroad, or in a remote place where they can't visit any of the concerned government offices easily, while 17% had only used these services to a very limited extent with no repetitive behavior spotted. These results can be observed in Figure 3-4. Nevertheless, it is essential to mention the fact that smart services usage naturally varies from a country to another and in fact from a culture to another. However, in the case of the UAE it is expected to witness much larger discrepancies than usual, due to the cultural background of the UAE smart services' users. The users dramatically vary as a result of the diversity in the nationalities of people who work and live on a permanent basis in the country and as a result use the e-services. Hence, due to the variety of backgrounds joined with different behaviour patterns, then various usage preferences are to be expected. Nevertheless, even in culturally similar nations the usage might still vary depending on many different factors on either personal or national level as argued by Lemuria and Weerakkody (2008).
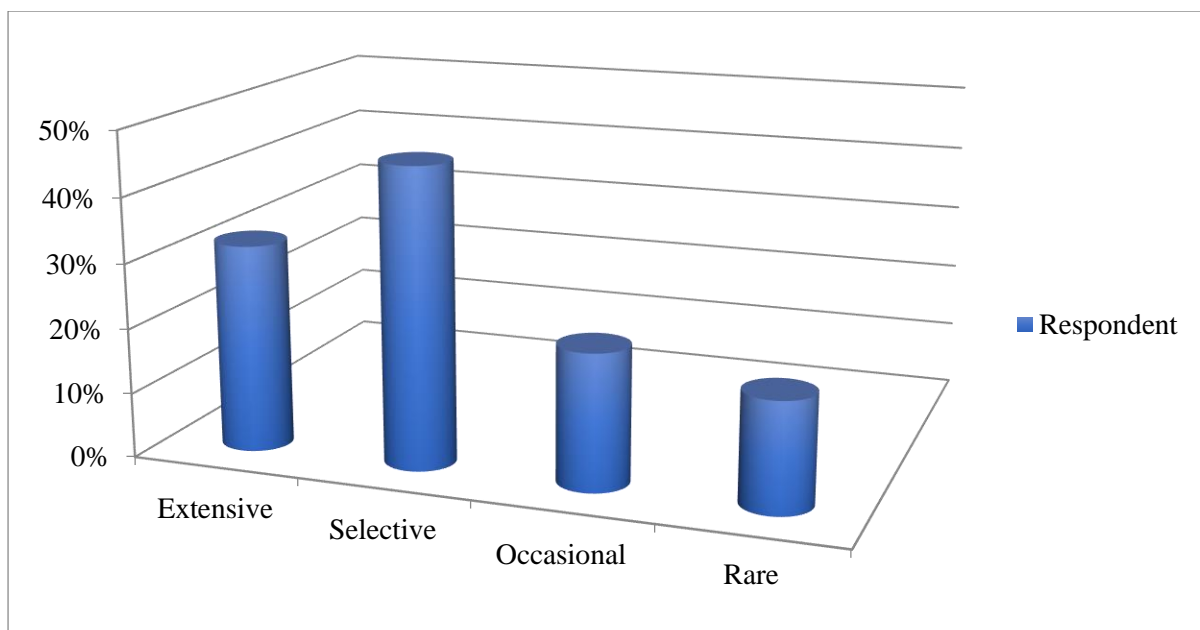
Nonetheless, the majority of participants declared that they prefer online services compared to other available methods used for the same purposes. Therefore, this result is significant to the promotion of online services, as it indicates a keen interest of the respondents to accomplish their services online. However, by analyzing the participants' written comments the fact that the high percentage of participants did not refer to all the smart services being highly used has been confirmed. The backend portal analysis shows that only a few services are regularly and highly used through the portal, while the rest of the services are seen as complex due to a variety of reasons specified by different users, which will be explained later in the research.

Q.4 Which one of these methods do you prefer to receive Federal Government Services?

This question aims to address the preferred channel for customers to attend to their governmental obligations, since there are other channels where users can interact with the government and complete their transactions.

The majority of respondents, namely 58%, choose the Internet as their preferred channel in dealing with the government. Moreover, they access the online channel by using their personal computers rather than smart phones, as their main access method to the Federal Government Services. On the other hand, 55% of the respondents indicated that they would use available smart phone applications to directly access the Federal Government Services instead of using their personal desktop or laptop computers at home.

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Nevertheless, 42% of the participants still prefer the face-to-face contact to obtain Federal Government Services by visiting the different government offices in various cities. Also 36% desire the Telephone to acquire government services by calling and talking directly to a government representative. Finally, 34% preferred to use an Agent to access the Federal Government Services and eliminate any direct interaction between the citizen and the government through any of the different available channels and that by hiring an agent to finalize the transaction on their behalf, which naturally incurred an extra cost. These results are observed in Figure 3-5. In fact, these results confirm the conclusion drawn from Question 3 with regard to the keen interest of the population of UAE to use smart service and online services in general, and explains that still other channels attract different user groups, and the variation between different channels is not really big, which indicates none of the channels is neither widely popular, nor unpopular.
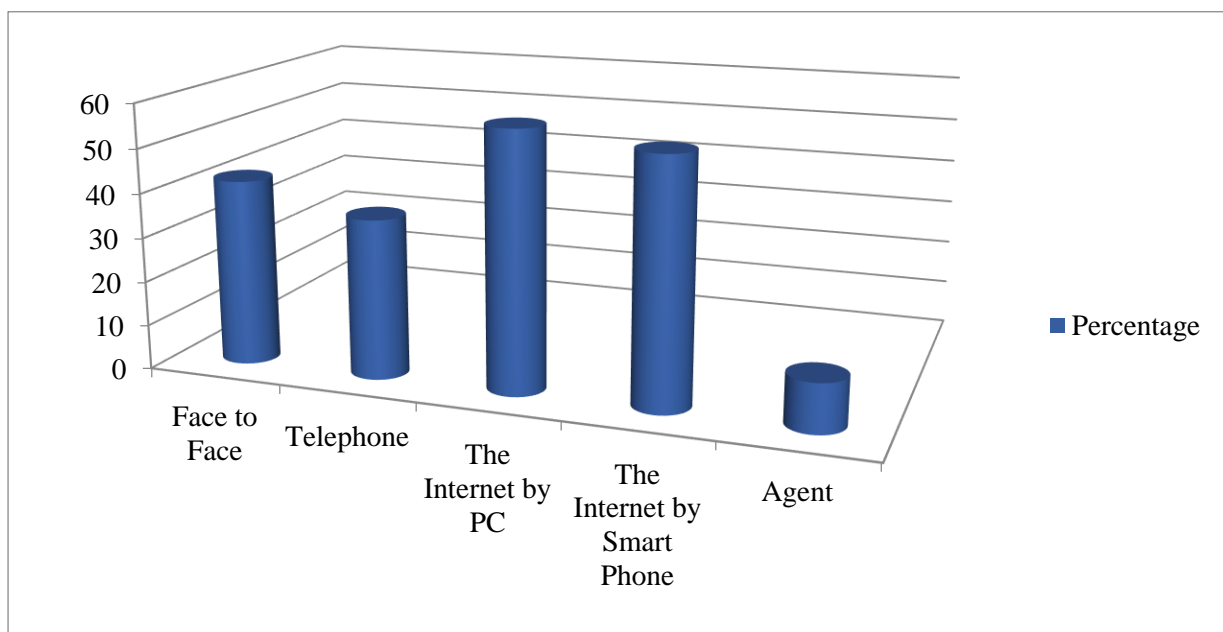
FIGURE 3-5 USED CHANNELS TO ACCESS THE GOVERNMENT SERVICES

Q.5 How do you rate the usefulness of the Federal Government Online Services?

It is important to know how citizens perceive the new channel of government services offered to the public and to investigate if they find it useful or not. The majority of respondents with 86% felt that the Federal Government Services accessed online are useful to them and perceive them as a good turning point in the relation between the government and the citizens. On the other hand, 14% of participants were unsure whether they would use this new model in general or not, thus indicating a limited benefit for them and uncertainty of its usefulness in general

(seen in Figure 3-6). However, none of the participants completely rejected the model. Therefore, the results again show that the potential of a wide adoption of this model is quite soaring and the majority of the people find it useful in a way or another. Our analysis of the qualitative feedback indicated that this high percentage is somewhat deceiving. The users are only using a very limited number of smart services. Thus, they are happy with the services they are using but unwilling to explore other services. Our next chapters will elaborate further on this point.

Usefulness by percentage

- Good
- Not sure
- Bad
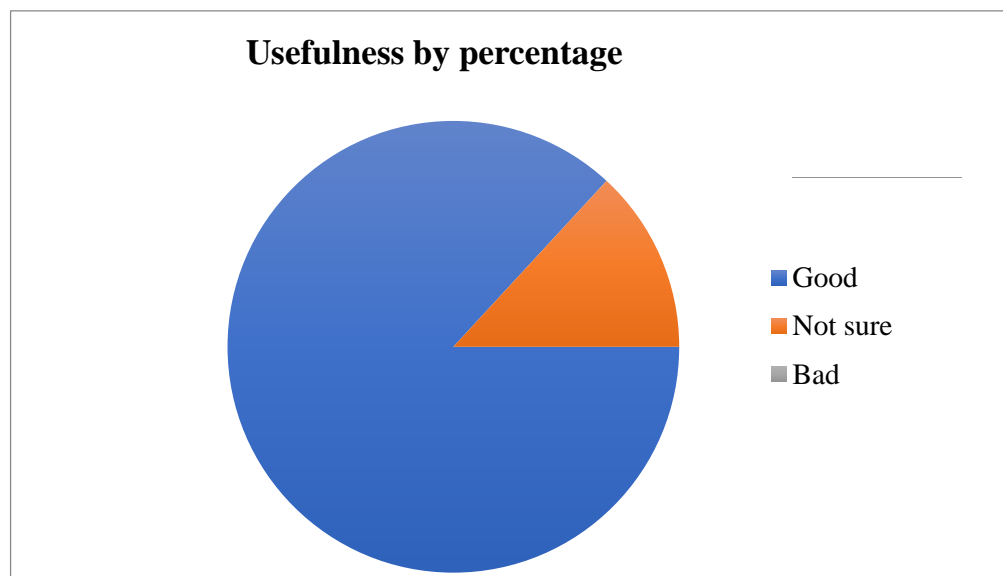
FIGURE 3-6 USERS' PERCEPTION OF THE SMART SERVICES USEFULNESS

Q6. Please list the Federal Government Online services that you have notably used?

In fact this question aims to differentiate between the most used services and the least used smart services, in order to investigate the online user behaviour and compare online to offline user behaviour. The comparison of the result to the present strategy shall accordingly help in identifying the current weaknesses and the strengths of the smart services.

The online services of the UAE National Identity Authority topped the list, as it is used by 65% of the participants. Additionally, the online services provided by the Ministry Of Interior came second with 60% of the participants naming at least one online service. Moreover, FEWA (Federal Electricity and Water Authority) came in the third position with 54%, while the Ministry of Health's online services are at the fourth rank with 51%. Nevertheless, the Ministry of Labour is fifth with 32% of participants using its services, followed by the Ministry of Education in the sixth place with 21%, and the last position is for the Sheikh Zayed Housing

Programme's online services with almost 10% of the users accessing it. These percentages can be seen in Figure 3-7.
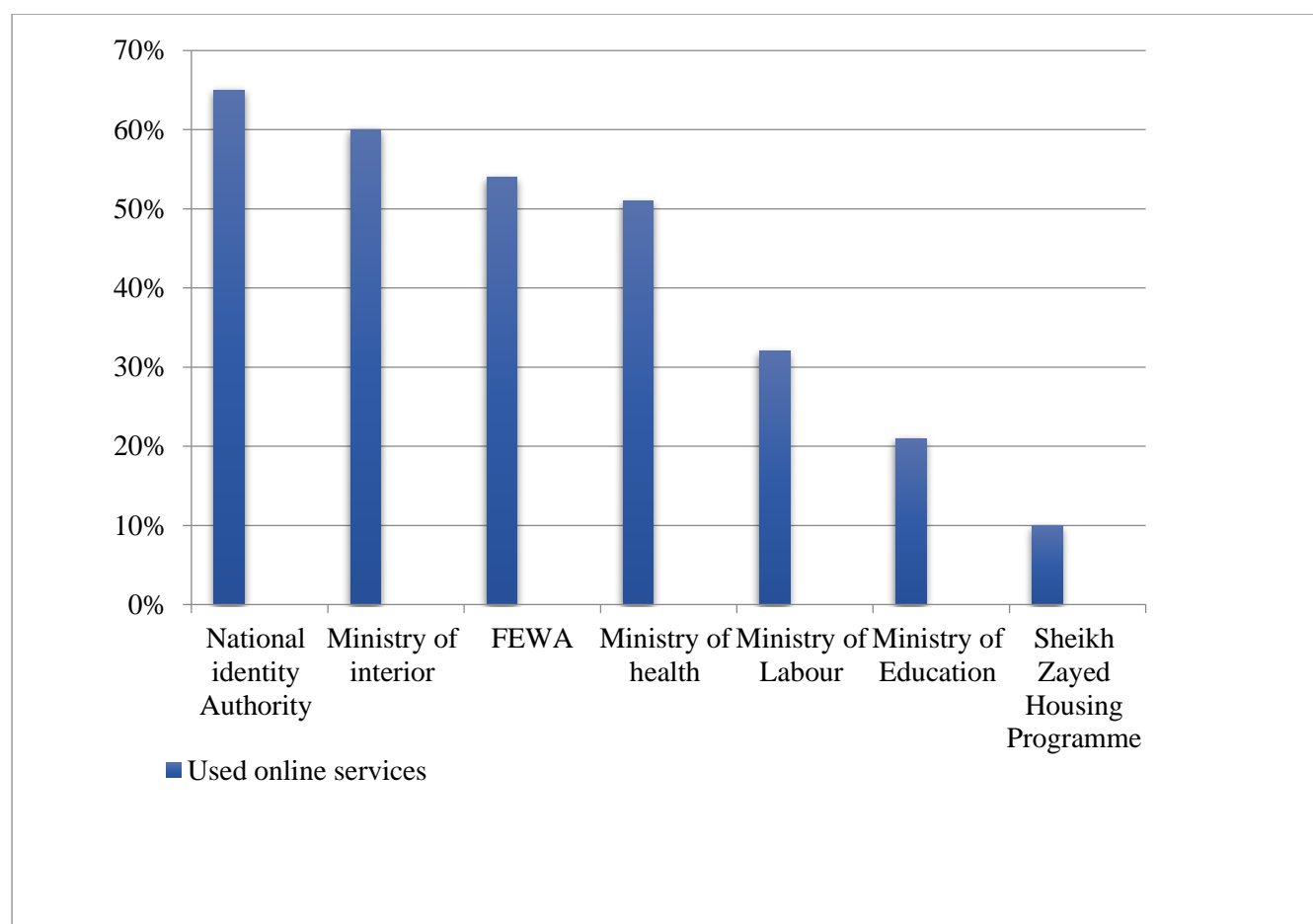
FIGURE 3-7 USED ONLINE SERVICES BY DEPARTMENT

Although the results are indicating a variety of services provided by different Ministries, this does not show a wide coverage of all the services. This can be observed from the analysis of the comments collected from the participants, which explains that only a limited number of services are being highly used in comparison to all the available services. Section 3.7 will elaborate on that in further detail.

Q.7 In your opinion, what are the reasons, which would make the interests in the Federal Government Online Services limited?

This question is vital to investigate the user's perception of the services and what makes the usage limited from their point of view. In other words, it is significant to highlight the negative aspects that limit the clients from using the online channels.

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In fact, Figure 8 explains that 71% of the respondents thought that the lack of enthusiasm for online services is due to the lack of understanding on how to use the services and the general benefit of the services, since it's a new concept to most of the citizens. Additionally, the lack of clarity and simplicity in the design and interfaces of the online services portal, as well as the explanation offered on how to use the services was in second with 45%. The third reason, gathering 40%, is the lack of understanding of the flow of the services and the involved procedures of accomplishing a service, regardless of the interfaces and design. Moreover, the feeling of lack of trust and safety came fourth with 21%. Namely, the participants felt that the online services are not safe for their money, as well as for their personal data. On the other hand, 6% felt that they needed much time before starting to use the services in order to learn and reach the stage where they can use the online services with no restriction and with confidence. Another group of participants representing 9% indicated that the fees involved, including the telecommunication company subscription fee, especially when downloading forms, and the bank involved fees when paying online, etc. is an obstacle for them to use the online services. Nevertheless, 71% of participants think that communication challenges are behind the lack of interest in online services in general. These results are summarized in Figure 3-8. Additionally, written feedback from respondents have pointed out the clarity issues as a another challenge for users, since participants believe that the forms used to acquire the services are in general difficult to complete and questions are not always clear to understand, which is believed to be time consuming. Therefore, all of these factors and comments together have lead the research to the conclusion that there is a big gap between the government's desire to provide an up to date, time and cost efficient online portal where the citizens can interact with the government.
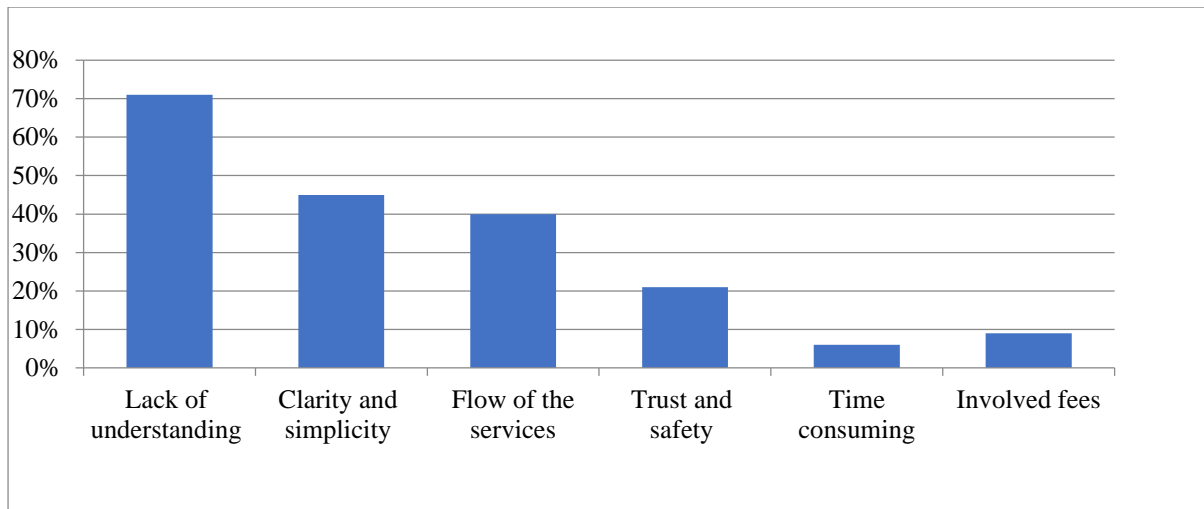
FIGURE 3-8 ONLINE SERVICES PORTAL LIMITATION FACTORS

3.7 RESULTS AND DISCUSSION: QUALITATIVE ANALYSIS

In this section we present the results of the qualitative analysis of the comments made by users who participated in the survey.

3.7.1 GENERAL OBSERVATION ON USERS' COMMENTS

The collected data shall be analysed in order to highlight the main findings either positively or negatively. Therefore, in this section, the comments given by the survey participants are analysed. This qualitative component is meant to clarify the participants' options and give more insights on citizens' perception of the current status of smart services in the UAE. However, the comments are analysed to extract mainly the major sources and the reasons for current problems and obstacles services and customers face, in order to achieve higher levels of user's satisfaction. Additionally, users' comments are naturally serving in the direction of suggestions and feedback on enhancing the service, since a general trend in the collected answers, combined with relatively high number of users who prefer online service, indicated the following:

- A keen interest to use the service in general when needed, and a general perception among participants showed the smart services as a useful tool to deal with the government in different aspects.

- Majority of participants attempted to use the smart services before, for at least once to use the offered services, which is in line with the fact that high percentage of participants who access the internet and most of their online activities are done on their smart phone

- Difficulties in using the services, despite the above two observations. There is a need for major enhancements on both technical and organization level in order to address the fact that users find it difficult to interact with the online portal and get through the procedures in a smooth way. The use of smart service was limited to only a handful of the most popular services while the rest was highly under-used.

Participants were able to write their own comments and offer any other feedback regarding the smart services. Moreover, by analysing the comments, it was noticeable that the different participants mentioned 127 different reasons and comments. Nevertheless, after eliminating redundancies and combining similar answers with common context, the collected comments were grouped into the following eight main categories and are analysed below (summarised in Figure 3-9):
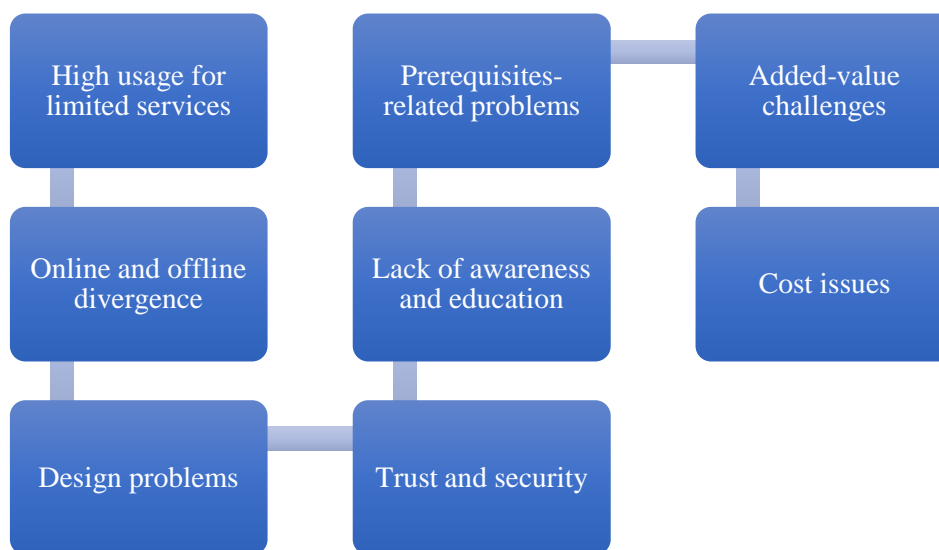
FIGURE 3-9 MAIN PARTICIPANTS' COMMENTS

3.7.2 HIGH USAGE, BUT ONLY FOR LIMITED SERVICES.

The comments mentioned by the participants indicated that most of them used the smart services before in line with the above descriptive statistics. However, the survey answers should not be taken as a sole measure of how the smart services are used in general, since the comments indicated that only a few number of services are being practically utilized by users.

However, a big number of other services failed in reaching an acceptable level of popularity among users, which confirms the quantitative findings about users using the smart services and that not all smart services are been utilised on an equal rate. It is of importance to state that the popular services share the common characteristics of simplicity and popularity; hence in this case difficulty in learning how to use these services is much more minimized. On the other hand, the popularity of more advanced and complex smart services is still low amongst users and therefore users tend to utilize them less to avoid the complexity.

3.7.3   DIVERGENCE BETWEEN IN PERSON AND ONLINE

Naturally, the online channels should be offered in accordance to the service cycle in the offline method. However, participants indicated that the use of online services did not imitate the completion of services in person. They added that one of the major reasons that this divergence is noticed is due to the higher overall benefit of the users, since a negotiation with the staff is indeed possible. For example, when a citizen visits a service office, an explanation regarding a certain fine is actually possible making it much more likeable to the citizens compared to a brief message on a smart phone.

On the other hand, the ability to negotiate plays a vital role, as it is part of the decision-making process when users attend in person, since the transaction is done with a person/member of staff and there is room for negotiation. Moreover, in most of the cases the in-person communication tends to be more fruitful not only from the perspective of getting more explanation when needed, but also in getting more benefits as a result of the direct negotiation such as:

- Discounts
- Instalment pay options
- Appeal submission
- Exemption from certain procedures
- Faster process in case of emergency
- Delegating someone for the document collection such as driver or secretary.

Nevertheless, participants indicated that this is mainly due to cultural reasons, which still shows that the in-person attendance is a sign of more interest and a general perception of a better value or valuable offered services compared to the online portal.

Furthermore, the difference between online and offline channels also exists in the service availability itself. Surprisingly, although the service is supposed to be always available whenever needed by users, the current infrastructure may result in a temporary unavailability due to various reasons such as:

- Network coverage
- Server errors
- Planned Maintenance
- Unplanned downtime
- Regular updates to hardware and/or software

Moreover, the in-person channels are actually limited to only certain hours per day, not all days of the week and not available during some of the public holidays. Nevertheless, they are still observed as more reliable since users would still find someone to deal with their request during the working hours and days and they are already aware of the working hours.

Nevertheless, another interesting observation mentioned by the participants, mainly originating from the expectations of users, is the fact that since the online services are available with no time or day restrictions compared to the in-person services, this may lead to lack of interest and attention.

Additionally, loss of interest could also occur if the online portal happens to be unavailable at a certain point without previous notice, which might happen due to:

- Technical errors
- Operation system problems
- Internet speed in some areas
- Server down time

Furthermore, participants mentioned that there is a general perception among users that online requests are dealt with low priority in comparison to the in-person ones. While in-person users would need to wait in the queue for relatively long time to get a final answer, or to raise a request, the online channel may not guarantee a speedy answer regardless of the obvious time benefit.

Finally, participants referred to the need for mediation, mentioning that this is a major factor which still drives people to use the offline channels rather than the smart services. Mediation is when a user tries to find a person in his friend's circle who is working for the government

and asks him for help in either finalizing the regular services or getting special discounts or reduced fines. Users argued that eliminating this type of mediation factor and prohibiting it shall push the people more towards the use of smart services. The above is of importance, since current users think twice before using the online services, as they believe that they might be paying more in comparison to what they can get by contacting a person in power that they already know.

3.7.4   DESIGN PROBLEMS

Service design plays an important role in the introduction and development of smart services, as well as in the user's perception of the smart services. Based on the participants' comments the following four issues (seen in Figure 3-10) were observed within the design aspect:
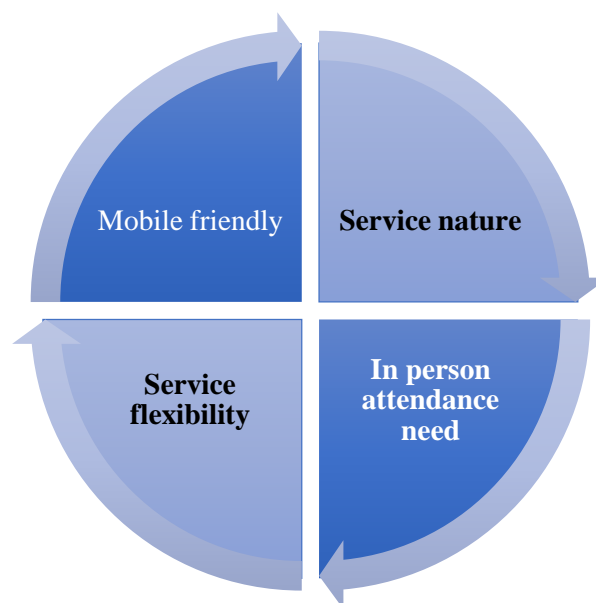
FIGURE 3-10 DESIGN ASPECT FROM THE USER'S PERSPECTIVE

1. **Service nature:** An interesting observation collected from the participant's comments is that not all services are genuinely implementable as smart services. In fact, services that require a relatively large amount of data to be filled by the requestor are examples of an implementation obstacle. Participants indicated that some of the online forms are complicated to be completed via smart devices and require much typing, which is not what a citizen would expect when trying to access the portal from a smart device. Additionally, participants mentioned that the online mandatory options in the forms could be an obstacle in using certain services, while the existence of a human operator in person could lead to tolerating that or fixing the missing information by querying the client directly.

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2. **In person:** As a matter of fact, some of the available online services still require an in person attendance at a certain stage during the different procedures. However, this compromises the entire rationale of smart services, which is that the applicants are asked to complete the forms online, in order to save time. However, they will still be required to attend in person to sign at a certain stage. Therefore, this fact reduces the desire for the online option, since the user will prefer to complete all duties via the offline channels instead of dividing them between online and offline wasting more time. This challenge can be tackled with the adoption of digital signature or more advanced techniques of authentication.

3. **Flexibility:** Another problem is the lack of flexibility and fault tolerance in the smart service's design. For instance, one of the users indicated the inability to edit the data once the form is submitted. However, this is an understandable fact because the continuous change will cause problems to the public institute side, especially if some decisions were already made based on the previous provided data by the user before initiating a desire to edit the form. Nonetheless, participants still believe that filling and/or submitting the application over the night, or at the times where it is obvious that no decisions are made, e.g. weekend, should offer some room to amend if needed. Also, intelligence interaction in the services should be introduced regarding when or not to allow editing.

4. **Mobile version:** The use of smart services via mobile phone requires the design to be simple and easy to navigate. However, some services are complex by nature and it remains a challenge on how to produce a mobile friendly version of the service. This is particularly true when the users need to type and enter data, which are critical and subject to typing errors at the same time. Additionally, users indicated that they find it truly time consuming and also stressful to use smart services in those cases and would prefer to complete their applications in person in order to avoid unfriendly mobile versions of the smart services, even if it will take longer time to accomplish the needed service.

3.7.5   TRUST AND SECURITY

It seems from the received comments that participants have already witnessed some cases where submitted online requests were lost especially in the early stages of smart services. However, this was mainly due to bugs in the system or human errors deriving from the staff side, and that was due to the newness of the services at that time. While this could be expected

and tolerated when adopting a new technology, it seems that users would need more assurance that these mistakes will not occur again and affect their use of the services. Nevertheless, such assurances need a change in the perception of the user, which would require time and will build up gradually in alignment with a good implementation of the smart services.

Additionally, there seems to be a considerable amount of doubt about the implications of using smart services. People tend to distrust mobile phones and the Internet in general when it comes to providing their data, since they don't have the option to control the level of privacy, which if implemented could encourage more usage of the smart services (Lage & Muthukkumarasamy, 2009). Moreover, participants indicated that this is due to the relatively lower security measure, which can be implemented in mobile phones. For example, one user mentioned that people usually install apps which request access to almost all the stored data on the phone and this discourages the use of mobile phones for accomplishing sensitive tasks, requiring for example the user identity data and financial information.

3.7.6   LACK OF AWARENESS AND EDUCATION

It seems that smart services need careful attention to change the management practice involved. Obviously, large sectors of the population, especially those who are sceptical of the implications due to the lack of awareness on the way these services work, are in need for excellent management practices in order to establish a good acceptance of the smart services offered by the government. Unsurprisingly, such awareness may not entirely eliminate the resistance to change as the newness of the technology would lead people to await the use for a considerable period of time from others. However good change management shall at least reduce the resistance and help the public accept the smart services offered. As a result a faster integration with new channels shall be created. On the other hand, the diverse backgrounds of smart services' users make the change management practice more and more essential and irreplaceable (Stojanovic et al., 2005). However, users' comments reflected a very strong concern regarding the needed knowledge, since the majority of them indicated that they don't know or they believe that they don't have the needed knowledge and they also claimed that the government is not making an effort to educate the people. As a result, this lack of knowledge is an obstacle to users towards the smart services.

3.7.7   PREREQUISITES-RELATED PROBLEMS

There are essential requirements that need to be available for the users, in order to be able to employ the smart services in the planned and desired way. However, these requirements are vital, since in the case of unavailability, users might not be able to access the portal itself. Additionally, the collected comments helped in dividing this challenge into two main factors as explained in Figure 3-11:
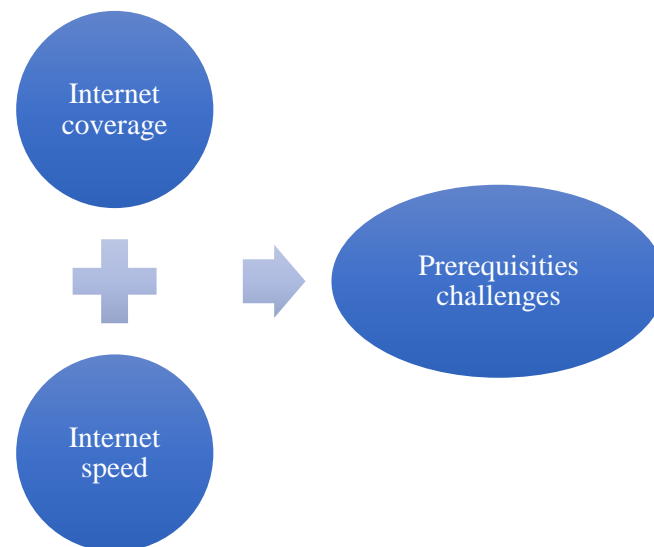
FIGURE 3-11 MAIN PREREQUISITES-RELATED PROBLEMS

As a matter of fact, a good Internet connection is available in the vast majority of the UAE. Nevertheless, the minor area, mostly the desert and the mountains with a low population density, remain a challenge since there is not as good coverage in these areas as in the main UAE. In particular, the smart services are meant to be accessible by the entire population and most importantly people living in remote areas that might not be able to access service areas and need the smart services to fulfil their obligations. Additionally, the smart services are designed as non-profit services and therefore the scale coverage should include all the country and not be limited to high populated areas.

On the other hand, the availability is not enough to enable the use of smart services, whereas the speed also matters. In fact, many of the smart services' applications require downloading and uploading large files and this introduces two problems:

- The first is the slow implementation and the long time required to finalize a transaction, e.g. when uploading a picture of an accident and various documents in order to apply for a passport or an identification card renewal.

- The second relates to the costs included when using the services via a mobile phone. Naturally, mobile phone service providers are charging relatively high rates when the size of the file is large. This is an obstacle for the use of smart services due to the fact that the documents and images need to be of high resolution resulting to costly charges. Therefore, it is challenging to design the services in a way that minimizes the amount of needed data exchange and at the same time keeps it accurate and sufficient.

Moreover, some of the users indicated simple but unattended reasons, which were not noted when designing these services. These reasons are mainly due to the assumption that everyone is equipped with the essential technology and acquire the needed knowledge to use the services. For instance, some of the users mentioned that they have witnessed people without credit cards and this makes the whole smart services concept irrelevant for them. The users also mentioned that not everyone would know the use of computing devices and that the policy of zero-visitors might be unfair for that group of users. As a result this will lead to the help of agents which will result to higher costs and dissatisfaction.

3.7.8   ADDED-VALUE

The added value of goods or services is something welcomed by most of the users. Survey participants indicated that they appreciate the additional information and sometimes the offers they receive when they attend the government authority offices in person. Users confirmed that this useful information includes not only the information obtained from the staff, but also from the other clients while waiting for their turn and having a group dialogue. As a result, this raises the questions of whether there is a need to make the smart services more social by allowing social networking facilities, which will consequently increase the information sharing not only between the government and citizens but between the citizens themselves, which is something to be strategically decided. Nevertheless, by finalizing each service transaction by a forum for discussions and sharing experiences amongst users, since this practice shall lead to a better imitation and probably enrichment of user's experiences in general.

On the other hand, as some users mentioned, the online portal could also be more interesting for users and the experience could be relatively better. Participants argued that the easy and fast online access to information could be exploited further. Additionally, a smart service rating option could be introduced as a value added service. Moreover, being able to search for how

other citizens from the same geographical area have rated the services could also be a very good value added service to the benefit of users. As a result, such added services shall give room for trust, collective rating and a feeling of community involvement. Nevertheless, some current commercial apps already have similar rating features to share the experience, but the government services seem to fear a potential underestimation of the value of their offered services. Furthermore, based on the participants' answers one would speculate room for such enhancement and further studies will still be needed to estimate its effectiveness and impact on the governmental strategic plans.

However, value added services in smart services could take many different formats resulting to varying benefits from one country to another and one culture to another. nevertheless, it is also argued that, one stop government portal is a successful added value, sine it assure that user will deal with only one website or representative entity even if the needed service involves many different government authorities in nature collaborating together (Maria 2003).

3.7.9 COST

The costs associated with the online services are not negligible as mentioned by many users. In fact, the incurred online costs include the telecommunication company fee in order to connect the user to the Internet from any of the client devices, and also the bank charges when the user is using the account in paying online. Although in practice this might still be cheaper in comparison to the involved costs of traditional in-person attendance, i.e. fuel or transportation and the time needed, but still these costs are unconsciously detached from the service in opposite to those in the case of online services. In other words, the offline costs might be more expensive but naturally indirect, while the online costs might be less and cheaper but still direct in nature, which may logically develop the feeling to the users that they are paying more for the same service online in comparison to offline channels. Nevertheless, users referred to the additional costs by mentioning two different aspects, which are both relevant to monetary issues, but they are different in nature:

- Cost associated with the online services in terms of Internet connection, and bank charges for the online transactions.

- Payment security namely concerns about the security of providing bank details online.

3.8 SUMMARY

In summary, in this chapter the user survey mechanism and results were introduced as a tool to collect information from the present smart service's users. Additionally, the need to have diversity in both gender and age when selecting participants for the interview was taken into consideration. Furthermore, not only diverse participants were selected, but also diverse cities. Namely two big cities were selected as targeted locations for data collection in order to reach users who are dealing with different government offices in offline medium, when they are comparing it to the online portal. Furthermore, the links between the survey questions and the questions of the research were identified and following the information collected, descriptive and qualitative analysis were introduced. This analysis was selected in order to have a solid outcome and to be able to link the results to the research. As a result, eight major challenges hindering the use of the smart services in the UAE were identified: High usage for limited services

- Online and offline divergence
- Design problems
- Trust and security
- Lack of awareness and education
- Prerequisites-related problems
- Added-value challenges
- Cost issues

Nevertheless, it was noticed that users have different behaviour and different preferences when it comes to interactions with the government through the available channels. Additionally, when the users were given the chance, they offered many important comments regarding the services. Unsurprisingly the majority of users offered similar comments regarding their perception of the smart government solutions offered to the public. Thus, the survey provided insight to the current situation of the smart services in the UAE.

4. EXPLORING STATUS AND CHALLENGING OF SMART GOVERNMENT IN UAE: EXPERT PERSPECTIVE

Smart government is a variation of e-government, which makes the government services accessible in form of smart services, via mobile devices and smart phones, which are connected to the Internet or other networks, in order to facilitate the user connection to the service providers.

Moreover, smart government has been in place in the UAE since 2012. However, the need to increase the success from users' perspective is still in the strategic agenda. A certain level of expertise on why the success is still limited has been achieved by the different stakeholders involved in the entire development process. On the other hand, this is still not articulated. This chapter will conduct an empirical research to gather and analyse experts' opinion and draw a complete picture on the obstacles as well as the possible solutions to increase users' acceptance of smart services in the UAE.

4.1 RESEARCH QUESTIONS

The research questions that will be answered through this exert opinion study are centred on the following six different aspects in Figure 4-1:
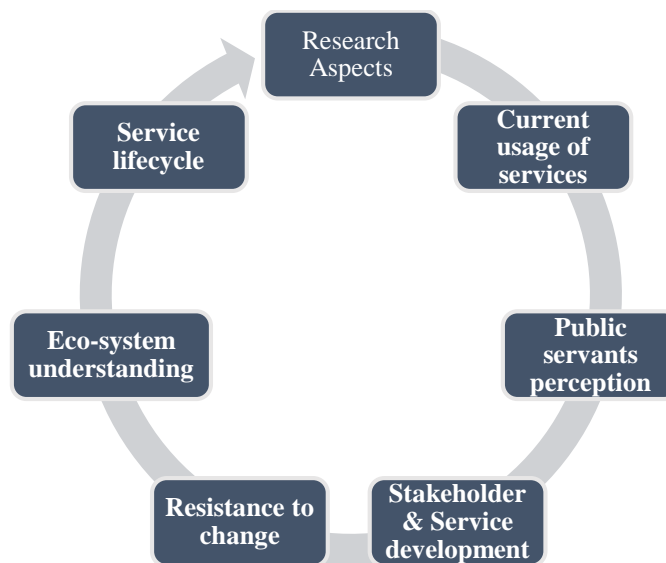
FIGURE 4-1 RESEARCH QUESTIONS DIFFERENT ASPECTS

Aspect 1. The first aspect relates to a general observation on how the public is currently using these smart services. This includes two different items:

- The current plans to encourage the usage and overcome the obstacles.
- The understanding from the experts of any success and failure stories, seeing that this will offer a broader view of the current status of progress and adoption of these services.

Aspect 2. The second aspect relates to the perception of the current government employees of these smart government services. This is imperative to analyse since it will enlighten whether there is a resistance to this change from managerial and staff perspectives or not.

We study their level of acceptance of this new generation of services and how this affected their regular work style positively and negatively. Furthermore, we study how their requirements are taken into consideration in the development of new services. Additionally, government employees will still take part in the operation of m-Government services at various stages of the business process and this will illustrate the significance to study their perception. On the other hand, it is needed to understand their latest interaction style with the customers in the presence of m-Government.

Aspect 3. The third area of investigation relates to the development process of smart government services. Particularly, the stakeholders involved in the service development and the introduction process are observed, as well as how they interact.

The initial observation is that key stakeholders are not given enough emphasis on the current development. Accordingly, it is important to elaborate this particular point with the experts. Moreover, this study will identify whether the learnt lessons suggest a new development style for future services. Additionally, the coordination and information sharing practice between the stakeholders involved in the process at the development stage is studied as wells as at the operation stage.

Aspect 4. The fourth aspect, which is a central pillar in the study, relates to the resistance to change from the public perspective and their tendency to still use the traditional in-person services rather than the mobile applications of the smart services.

Furthermore, this study will explore in-depth, from the experts' perspective, why this would happen from a range of different perspective including the economic and cultural perspectives.

Aspect 5. It relates to the eco-system in which the services are developed. As a matter of fact, this study investigates whether m-government services are analysed and designed in relation to the social and organizational contest in which they exist or not. This is vital to study for the reason that compliance to those aspects means that the services are integrated in a healthy style with their eco-system.

Aspect 6. The final aspect relates to the expected lifecycle of the smart services even after deployment. Naturally, smart services would require a continuous and lifelong support for a variety of reasons including:

- The daily and continuous uninterrupted use.
- Importance for economic and security reasons.
- The recentness of these services requires a continuous support to the public.

4.2 RESEARCH METHOD

In support to the research, an expert opinion study has been chosen to answer the question of this chapter. As noted earlier, the choice of survey was motivated by the level of abstraction needed for Chapter 3 and the nature of the participants, i.e. end users. They would be more concerned of what they see and require than the root of the problem and the background reasons. To get a deeper idea of the real challenges and issues, which may affect users experience using smart services, another research method shall be chosen. However, such a method shall be qualitative to allow insights and opinions rather than just statistical results. In addition, the participants to choose for such qualitative studies shall be able to provide data, which allows an analysis that ends up with insights. For this reason, the participants in this study were experts in their domain and can provide lessons learnt and practical examples as well as cases to analyse.

As a result of the nature of the problem of smart services adoption as a socio-technical one, the participants set needed to have a mixture of expertise in various domains. The added value of the research here is to bring those different viewpoints from experts in the various domains, e.g. marketing, legal and also management, as well as form a holistic picture of the current status and challenges in the field.

Accordingly, an interview method was chosen. And in particular a semi-structured interviews were chosen, as they are known to allow flexibility and accommodation of the various flows a discussion could take according to the expertise of the participants and their interest. On the other hand, as the study requires experts from different expertise and fields, the semi-structured interview was an ideal option to accommodate their diverse styles and peculiarities. The interview questions were used as an initial template and the research diversified the questions according to the answers and the interest as well as the experience of the participant.

Accordingly, content analysis was conducted after transcribing the interview data. The analysis was in a form of categorization of the issues and challenges. Getting the list of main categories to structure the findings around has followed an iterative reading and draft categorization of data. This is to avoid redundancy and big overlap. Furthermore, the expertise of the experts played a significant role in their emphasis on certain findings and as a result, the research took that into account when analysing their responses. For illustration, experts in the management domain would emphasize more the need to streamline the process and integrate the online with the physical systems. Experts in the economic side of the smart services would emphasize pricing and selling strategies. Nonetheless, the analysis tried to balance the views and to be objective in the sense of giving all of them a voice in the final say. For this reason, the research did use the count of the occurrence of a certain issue as this may be influenced by the sample selected and the strength of the expert view. Instead, the categorization took an approach where the issue is judged by its presence and importance rather than the emphasis made by the expert on it. The purpose of the analysis was not to prioritize or to weigh the issues and challenges but rather to specify them and hence the suitability of this approach.

4.3 INTERVIEW QUESTIONS:

In order to have the maximum advantages from the interview and to ensure that the interview is serving the defined aspects in a good manner, the following questions have been prepares to be asked during the interview with the experts.

The questions are categorized in three different areas (seen in Figure 4-2):

- Questions in respect to the customers interaction and involvement.
- Questions in respect to the government authorities and employees.
- Questions in respect to the smart services design.
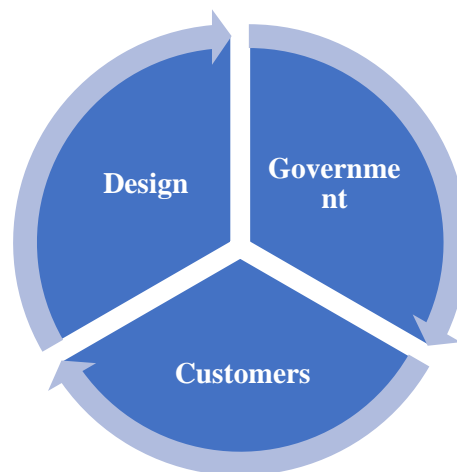
FIGURE 4-2 INTERVIEW QUESTIONS CATEGORIES

4.3.1 CUSTOMER RELATED QUESTIONS

1- What do you think of the citizens' perception and usage of the smart services in your department?

- **In case of a positive answer:** What are the plans and strategies you used which led to this success and what else can you recommend to do in that regard?
- **In case of a negative answer:** Do you have plans and strategies in mind to encourage customers to use the smart services?

2- Observing the current situation and how the public is now using the smart services, how would you suggest that these services are developed in the future to make the usability and adoption of this technology better?

3- Some people would still prefer to continue following the traditional way and go to the customer service centres. What would you think are the reasons for that? What are the benefits of that approach in comparison to smart services? Are there any cultural reasons encouraging this behaviour?

4- After making the smart service available to public, what do you think we would still need to do in order to maintain it and make it sustainable? What is the current status of complementary aspects like marketing, raising public awareness; technical support and what could be done to improve that?

4.3.2   GOVERNMENT RELATED QUESTIONS

1- How did the employees involved in the traditional service delivery perceive smart services and their usage by the public? Regardless of the answer, we will continue this question by asking: Would the popularity of these services affect their performance and interaction with customers?

2- Smart service could require a linkage between multiple parties. This requires that these parties coordinate and harmonize with each other during the design of smart services and as well as during the operational stage. How do you evaluate the current status of such coordination and what do you think can be improved in that regard in order to deliver better customer experiences?

3- Since the smart services required direct link between different authorities to produce the final result to the end user, is there an electronic link between your administrations with other departments involved in the provision of service in order to facilitate access to e-services by the public?

4.3.3   SERVICE DESIGN RELATED QUESTIONS

1- How were the smart services designed? To continue this question we will ask also: Who were the parties involved in the development process and what would you think should be involved in the future?

2- When designing the smart service, the design should be aligned to the business objectives, e.g. compliance with regulations and norms as well as strategic agenda and goals. What are those business and organizational aspects that should have been taken into account when designing smart services?

3- How do you evaluate the current status of the development in that regard?

4- Is there a space to get that alignment improved and how?

4.4   EXPERT SELECTION AND INTRODUCTION

The experts are selected to cover the six aspects mentioned above and provide relevant useful information. They are also chosen in purpose from different departments and organizations with various backgrounds to certify a holistic view of the problem from different perspectives.

This is advised since the problem is naturally multidisciplinary and multiple parties are involved in the developmental and operational process. All the eight experts were invited via email, followed-up with a phone call to explain further the context of the study and to arrange for the interview appointment. The experts' profiles are summarised in Figure 4-3.

FIGURE 4-3 EXPERTS OCCUPATIONS

Expert number one (E1):

Currently he is a senior manager in Sharjah Police authority. He was chosen due to the fact that Sharjah police is heavily involved in providing smart services, such as the renewal of car registration and driving licences.

The clients served by his department include both, individuals and companies. He has a total of 35 years work experience for the Ministry If Interior. His role did not cover the development process of smart services and was mainly on the operation side and direct interaction with the public, either individuals or companies. Moreover, his task includes many different aspects such as:

- Raising awareness of the service.
- Interacting with the press and media.
- Keeping a close relation to the strategic decision makers in the Ministry Of Interior for the current status and the future of the service.

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Expert number two (E2):

He is the head of the car and driving licenses management service department, including the mobile version of the offered services. He has 14 years of experience in his role. He was chosen for two main reasons:

- His broad expertise in the business process of the covered service.
- His expertise in the business process covers a wide range of aspects including the interactions between the different parties and how the service should be designed.

For the above reasons, the expert was able to provide a detailed explanation of the lifecycle of the smart services.

Expert number three (E3):

He is a major general in Dubai Police authority. He is the general adjutant of the quality department. His 38 years of expertise in this role, in addition to his expertise in the quality of the service, all together promoted him as a vital participant for the purpose of this study.

The quality of smart services is still a new area and we would still need to identify what metrics are used to measure and judge this relatively new service. This expert is also the President of various committees in the Ministry Of Interior, which results in a multidisciplinary background and can give us a broader view of the research problem of this thesis.

Expert number four (E4):

He is the senior manager of the inter-organization communication in Dubai public prosecution. He has 15 years of expertise in this domain and he was chosen since one of his main tasks is to liaise between the different public sector entities and coordinate their involvement to provide integrated smart services to the public.

As a matter of fact, some obstacles appear when different parties work together. Accordingly, his perspective should allow us to look at the eco-system of the services and find out areas of future improvement.

He works closely with Dubai police and the Ministry Of Interior (all providing a wide range of service to the public).

Expert number five (E5):

As a director of the customer service department in Dubai public prosecution, he was included as expert number 5. He has a total of 12 years' experience in this role.

Nevertheless, we believe he is a main contributor to our study for many reasons such as:

- The direct observation he has to the users' acceptance of the new technology of smart services.
- He manages the acquisition and interpretation of clients' feedback.

- He uses the feedback to give recommendations for the next release of the service.
- He works closely with the service developers to provide them with the requirements of the public.
- He is able to provide examples of the smart services including the timetabling of the tribunal sessions, reminders, cancellations and modifying the location and date. This involves different parties, including lawyers and citizens.

Expert number six (E6):

He works as a senior manager in the Telecommunications Regulatory Authority (TRA) of the UAE. His role involves the enactment of the smart government strategies and encouraging the public behavioural change towards the use of these new era services. He has a 10 years' experience working for TRA and this fact is very significant to our study since:

- TRA is entitled to decide on the costs of the services control the telecommunication providers in the UAE, the way they offer smart services, market them and price them.
- TRA is responsible for the training of federal staff in smart services.
- TRA is heavily engaged with the public in the explanation of these services and sustaining them.

Expert number seven (E7):

He works as a manager in the IT department of the Ministry of Economy in UAE since 10 years. Previously, he worked in the Road and Transport Authority in Dubai for around 10 years.

One of his tasks is the management of business and IT strategies inside the Ministry of Economy. He was one of the founders of the earliest smart service systems in the UAE. Additionally, he managed and conducted plenty of user's studies in form of focus groups with the users' representatives, to get their point of view on the existing and future services. Besides that and as being a part of the Ministry of Economy, he works closely with other ministries and authorities including the TRA and the Ministry Of Interior.

Expert number eight (E8):

The last chosen expert is the general director of Sharjah police of the Ministry Of Interior. He is in this role for 10 years and he worked in Sharjah police for a total of 38 years.

His current role includes many tasks, but essentially the supervision of the entire business process of police including the services provided to the public. He is one of the main stakeholders outlining the strategic agendas for Sharjah police and works closely with the federal government on the strategies for the UAE police and security. Furthermore, one of the questioning areas relates to the security aspect of the smart services, how it is monitored and handled by the current process, and how the clients perceive the security aspect. Since he manages the teams studying and limiting the role of the involved agencies, he is in a position to help us investigate the security aspect of the research.

4.5 INTERVIEW SET-UP

All interviews were conducted in person. The elapsed time for different interviews varies, however the average time spent of an interview was 50 minutes. A total of 350 minutes of the interview audio were collected and transcribed.

The interview took place at the offices of the interviewees as per their request and our preference in order to give them the opportunity to have a handy and comfortable access to all supporting documents when needed. Naturally we sent consent forms to all the interviewees, good time in advance via email, in order to allow them sufficient time to understand the scope of the interview. Additionally, when the interviews started, all the interviewees were explained again about the data protection and consent form policy.

The interview protocol was reviewed and approved by the ethics panel of Bournemouth University, and obviously, the Interviewees were asked for permission to audio record and transcribe the interview.

4.6 INTERVIEW ANALYSIS

In order to conduct good analysis, all interviews were transcribed word by word. A preliminary content analysis was performed for each interview aside.

As a result, nine common themes were yielded. Accordingly, a second round of the analysis was performed to allow us to get further details in relation to each of these nine themes. In case of doubts, the researcher contacted again the interviewees to clarify and explain better any unclear points. Nevertheless, a consultation of the literature and the publically available information from the various public organizations of the interviewees was conducted when needed, to facilitate a richer picture of the implication of the aspects raised during the interviews.

4.7 FINDINGS

As a result to the interview and the conducted analysis, the following eight themes (Figure 4-4) were yielded:
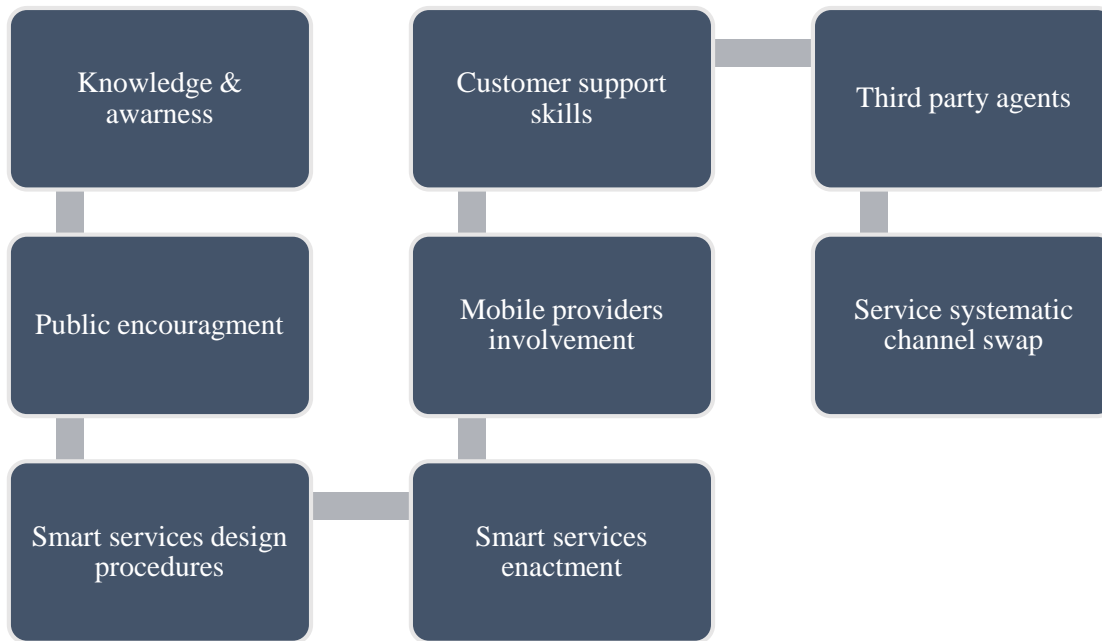
FIGURE 4-4 INTERVIEW FINDINGS

1. **Public awareness and education:** This theme is related to the procedures and strategies followed in order to analyse and improve the knowledge about the smart service and its utilization. This includes joint work between multiple stakeholders, e.g. the service provider, the telecommunication authority, the different media channels, and the education sectors.

2. **Motivating users:** This theme relates to the procedure being followed to encourage the public to use smart services available. This encouragement could be in informational form, e.g. by showing the benefits of the services, and it could also be tangible, e.g. by offering certain discounts.

3. **Service design:** This theme is about the smart services design. It mainly relates to the stages through which the services are proposed, analysed, designed, deployed, maintained, evaluated, and developed over the time when needed.

4. **Adoption and enactment policy:** This theme involves the strategic decision on whether and how to enact the services and in which sectors. Furthermore, it relates to the alignment between these services and the broader organizational systems.

5. **Telecommunication companies' role:** All the mobile version smart services are offered through the telecommunication companies operating in the UAE. As a result, the customers will be in direct business interaction with these companies which are naturally key stakeholders in the decision making, e.g. how the service would be presented and the pricing decisions.

6. **Staff development and training:** It relates to the professionalism and the set of skills of the customer support departments across the different involved mobile operators. However, this involves the business and the technical skills as well as the availability and efficiency of staff.

7. **Business agents and brokers:** Currently, the smart services are available to the citizens and companies through brokers and agencies. However, this shall hinder the needed and targeted transition to the smart services in general. Therefore, this theme studies the problems and limitations caused by this phenomenon.

8. **Change management strategy:** This theme relates to the systematic change from the traditional services channels moving to the smart services solutions from both perspectives:

   ▪ The users' point of view.
   ▪ Staff dealing with the public either directly or indirectly.

Nevertheless, in order to provide a clear explanation and analysis of every single theme out of the above eight, the following paragraphs discuss the collected results in relation to each of these themes. Additionally, a convention quotes from what experts have said are also presented in italic font between quotation marks as well as indication to the number of the participant will be also quoted.

4.7.1   PUBLIC AWARENESS AND EDUCATION

It appears from the experts collected feedback that services are being introduced without enough preparation and strategy to engage the public and create awareness among citizens as well as education. While awareness is an issue with most of the new technologies as emphasized by Thomas (2007), experts confirmed that there is a big gap that requires bridging between what skills are required by the services and what skills and perceptions the public currently has.

This concerns not only the ability to utilize the services, but also the awareness of the entire lifecycle of the benefits, side-effects, risks, etc. of all smart service applications. However, due to the significance of this issue, and since all experts emphasized it, a detailed analysis of the current situation and the possible solutions has been conducted, and as per the feedback analysis, ten different factors are involved in the public awareness in the current situation, seen in Figure 4-5.
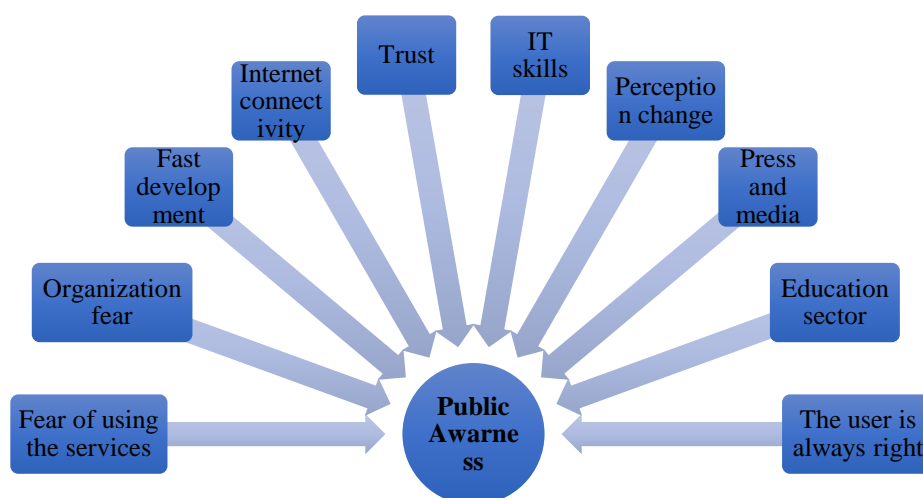
FIGURE 4-5 PUBLIC AWARENESS FACTORS

4.7.1.1   USERS FEAR OF USING THE SERVICES

There is not enough confidence from the users' side in utilizing the e-services in general and the mobile services in particular. This is mainly due to the lack of awareness of the way data are being collected, utilized and how decisions are made upon these data. This issue is particularly genuine when users are sending sensitive personal data and also making online payment.

On the other hand, transparency in the service, i.e. the ability of the user to get the services achieved without being involved in the business process and the technical details, is recommended in general, however, it does not seem this is the case with the introduced smart services at least at the moment. Moreover, it seems that people would accept these services to be highly transparent when a common understanding of the way the services function is achieved (Lapointe & Rivard, 2005). On the other hand, experts agreed that this would need time in the first place while raising awareness and educating users.

4.7.1.2   ORGANIZATIONS FEAR THAT USERS ARE NOT USING SERVICES

Some involved organizations are still not certain that the services they offer could be computerized due to a variety of reasons. One of the reasons is that the services are too complex in nature and/or require intense interaction from employees and customer services efforts. This reason drives them to believe that the automation is hard to be achieved, especially for users who are unlikely to have the required sufficient IT skills and/or willing to learn.

Nevertheless, this is even more factual for the services which are occasionally used, e.g. renewing a passport. This is important due to the fact that the lengthy learning process of how smart services achieve that is not worth the effort since it is not used regularly. Organizations are also uncertain that there will be a direct return on investment if the smart services implementation started. All in all, it does appear that the fear of organization that services are not being used, or not leading to costs reduction, and improve users experience is still there and affecting the smart services applications in general.

4.7.1.3   FAST MOVE TO SMART SERVICES AS A TECHNOLOGY

The pace of implementing the technology is by far quicker than the speed of the current public awareness development and the government efforts to move to smart services' applications is quite rapid, also argued by Trimi and Sheng (2008). However, this could introduce resistance to use these services although smart applications benefits could be clear in certain cases such as:

- Reduced processing time
- Doing services on the move
- Reduced transportation costs

Additionally, the speed of the move is also in terms of no alignment between the traditional methods of doing the services and the mobile services. For example, in certain services there is still a divergence

between how the services are established in person and how the same service is established online, for instance:

- Costs
- Required documents
- Process
- Availability

However, this could be due to the automation, e.g., when checking documents online, but in some cases the users might think these are significantly different in the basic levels.

4.7.1.4 THE USE OF SMART PHONES AND BEING CONNECTED TO INTERNET

Experts mentioned that the infrastructure from the users' side is in most of the cases sufficient. This means that the public has already established the knowledge background of smart devices, which should make the extension of this awareness of smart services relatively easier. However, given that that government services are meant for the entire population, even the small percentages of people who are not provided with that infrastructure should be served, and issues such as: coverage of mobile network, the speed and the customer services are challenges for providing the desired level of smart services.

4.7.1.5 TRUST BY AWARENESS

Experts mentioned that the users trust is not only achieved by how reliable and available the services are, but also by the amount of awareness they have regarding the way the services are functioning and the parties involved in the entire process, as well as what would happen if something goes wrong.

Some experts argued that the government would need to have dedicated e-services to explain the e-service paradigm itself. This should be developed in addition to the traditional ways of communication with the public including the ordinary customer services channels, the media and press, as well as schools.

The awareness includes:

- The approach to use the services
- The associated risks
- How the service provider is equipped
- Compensation in case of any occurring fault

Moreover, it was also mentioned that the awareness could also relate to the broad society benefits when using online services in terms of reducing costs, traffic and unnecessary efforts, as well as environmental friendly work processes by eliminating a lot of paper work.

4.7.1.6 AWARENESS OF CLIENTS WITH LITTLE IT-SKILLS

It was agreed by experts that users with limited knowledge of IT skills are unlikely to be made easily aware and informed by this new paradigm. This makes it necessary to have dedicated training programs, which take the initiative, and administer it to the users' site instead of waiting for users to come and seek for advice. It also introduces the need to make the traditional channels of achieving the same service available for some periods in order to avoid cases where users are unable to get their needs fulfilled. This might occur because the users might not have enough IT skills seeking help from an agent to process the requests on their behalf, which is not typically what the user and even the provider would like to happen, and might negatively impact the whole idea of the smart services.

4.7.1.7   PERCEPTION CHANGE

Experts mentioned that users typically feel more confident when they deal with the governmental services in person rather than online. Accordingly, if awareness that is similar or with an enhanced level of quality can be achieved when the same service is done online, this would make the change of the current perception easier. However, a change in perception is not easily achievable by outlining typical lists of instructions of how to use the smart services, since it requires a proven history and success stories of using the service. As a result, this maximizes the significance to have a thorough analysis and design of the services before putting them all in use.

4.7.1.8   COOPERATION WITH THE PRESS AND THE MEDIA

The experts have emphasized that the alignment between the services providers in general and the public sector entities in particular is significant and the national media engagement seems to be a key factor. Additionally, users would maximize their awareness and trust when these services are explained, discussed, and criticized in an open manner through the media they trust.

4.7.1.9   COOPERATION WITH THE EDUCATION SECTOR

Experts highlighted that schools, universities, continuous professional development programs and other education sector institutes would also need to take part in consolidating the public awareness and change of the current perception. Furthermore, the involvement of the education sector will also give a better idea of the future needs of such services. Nevertheless, educating the staff in the schools, libraries, and public offices on how to help customers to use the smart services is also essential and needed too. As a result, government offices can also direct people who are seeking help to other public offices to communicate with well trained staff (Bertot et al., 2006).

4.7.1.10   "THE USER IS ALWAYS RIGHT" CULTURE

Expert mentioned that the lack of awareness should not be seen as a problem of the clients, rather it should be seen as a challenge to the management. This is in line with the famous principle in marketing and business "clients are always right", and that was also confirmed by Mulder and Yaar (2006) as they emphasized the significance of utilizing and applying the concept "the user is always right" to deliver

successful services over the Internet. However, this view should be adopted by the service providers rather than blaming the clients for their lack of awareness. Furthermore, spreading this culture across the concerned relevant departments and entities within the service planner, and provider online, as well as offline is an essential part of a successful user experience in the use of smart services.

4.7.2   MOTIVATING USERS

As a matter of fact education and awareness are preliminary; however, experts indicated that motivating users is additionally significant and required to make the change towards frequent use of new the technology in general. Furthermore, the use of mobile phones to acquire services and finish transactions is relatively new and it is still not seen as a mainstream technology, although there is awareness about the potential benefits. Motivating users has different formats and the various experts for different reasons including have advised it:

- The exploration of the service
- The retention of users
- User experience and quality of service enhancement.

Nevertheless, the experts' answers analysis leaded to the following eighteen areas of motivation lack (Figure 4-6) and also areas of potential solutions, with regards to the current motivation behaviour status from the providers and recommended solutions.

Traditional channels preference	Cheaper fee	Assistance to citizen	
Negiotiation power	Speed as a motivation	Quality of service	
Customer care reliability	Documentation still required	Eliminate complimentary services	Effecient online processes
Lack of online options	Cost effeciency	Quick responce	Information security
Extra services / online only	Ease of use	Encouragment strategies	Eliminate bargaining

FIGURE 4-6 MOTIVATING USERS' AREAS OF CONSIDERATION

4.7.2.1 IN-PERSON IS STILL MORE MOTIVATING

Naturally, citizens prefer to visit the authority offices to get a transaction done. As Tolbert and Mossberger (2006) argued, governments around the world experienced lack of trust from citizens in the efficiency they provided in delivering regular services over the last decades and mentioned that smart services increase citizen trust by the available online channels. Experts agreed that clients still prefer the transactions being done in person rather than online and they stated many reasons for that behaviour which will be mentioned in detail below. However, this tendency of the public was not anticipated when the services were first designed and developed. Additionally, solutions to this phenomenon are being investigated a posterior.

E8 mentioned, *"Despite the availability of the electronic service in some Police departments, yet, there is still a great deal of fear that members of the public are not interested enough in such services".* This opinion confirms that the public is still in favour of personal attendance over the electronic dealing and they fear the switch to the new channels.

E1 argued, *"Public attendance to the electronic services is still low and is not as it was hoped for. For example, the public still prefers to attend the traffic department, even though electronic services are present via this department".* Accordingly, this shows that in order for people to find these services

attractive, the design department and the change management strategist will need to analyse the data between in person channels and electronically available solutions from a motivational point of view.

4.7.2.2   NEGOTIATION IN-PERSON IS A MOTIVATION

Another not less vital aspect regarding the public motivation to use smart services in general is the non-existence of the possibility to negotiate with human employees about the transaction. Public users believe that they will give up the possibility of negotiating the fines and submit appeals when dealing with computers rather than humans.

E1 mentioned *"Although all traffic departments are connected to deliver services electronically throughout the country yet, according to the local laws of each Emirate, officials can waive some traffic offences depending on their instant judgments, so that a person may not pay a fine or be charge. In addition some other departments may offer to individuals to pay their fines by instalments"*. Consequently, individuals would rather attend in person to profit from such negotiations with officials in the hope of waiving off fines or paying in scheduled instalments.

4.7.2.3   CALL CENTRES ARE STILL SEEN AS NOT EFFICIENT AND DISCOURAGE PEOPLE

Even though call centres allow for a conversation with human representatives, still the public tends to avoid them. This confirms that the benefits a person would achieve from talking to an operator in person are still higher and preferable. This is mainly for cultural reasons, which value more the in-person communication, since it is still seen as an indicator of being more concerned and interested in the subject. In addition, better arguments might be achieved in person rather than over the phone.

E5 mentioned that the authorities attempt to reduce the number of personal attendances by creating call centres to help the public find answers or even to pursue their applications. Despite this initiative, there is still no indication of the desired achievement and consequently there is a significant crowdedness in all departments.

4.7.2.4   OPTIONS AVAILABLE IN PERSON ARE OFTEN MORE

In addition to the psychological and cultural involvement of the in-person communication, it does seem that this approach of communication indeed offers genuinely more options to the public. For example, in some traffic departments the customers will have the opportunity to pay by instalments when they attend to the service centre in person and agree on a customized payment plan with a staff member. However, this option is not supported when the service is completed remotely or for the electricity and water public services.

E7 argued about the public personal experiences at the department of water and electricity city council, as he mentioned, *"I would prefer to attend in person despite the online availability of the electronic services. This is simply because it may be possible to reduce the monetary amount shown on the*

electricity bill, following a brief negotiation and appeal with officials only at the department of water and electricity offices directly". As a result, it can be observed that when smart services are not updated in a timely fashion the in person option offers enough reasons to the public to keep using their services.

4.7.2.5 TRADITIONAL DOCUMENTS ARE STILL REQUIRED AND DISCOURAGE USERS

When citizens use the mobile devices, they would expect a maximum support in the completion process of the service such as:

- Help in completing the forms
- Data extraction from various sources

However, while these extras are the minimum requirement, some services are still designed with a comfortable PC user in mind, and do not take into consideration the possibility that some users might be computer illiterate.

E7 mentioned that *"some services require the user to upload forms and complete complex documents".* Basically, the services requiring such amounts and types of operations are not would discourage users from continuing the smart application usage. Furthermore, many users would think that if the process partially or in full, requires extra learning and doing effort, it would be more cost-effective to visit the offices in person or even consult an agent to complete the transaction.

4.7.2.6 COST-BENEFITS RATIO IS NOT ENCOURAGING IN SOME CASES

The pricing of mobile services is a complex process as it includes the service seeker, the Regulatory Telecommunication Authority, the mobile providers, and the Ministry of Economy. As a matter of fact, price is a key motivator for users to adopt certain behaviour. Unfortunately, this is currently overlooked and mobile services' clients are not feeling advantaged from that pricing perspective in comparison to the involved cost in the in-person services.

E7 mentioned that *"the internet connection and the SMS costs should be waived off when using these services, which shall reduce costs anyway, for example the transport costs, the human re01t5source costs, etc. are also factors reducing the costs".* Moreover, the complexity of the decision process comes mainly from the number of involved stakeholders in the pricing. However, there are also indirect community benefits from using the smart services including the reduction of overall costs, traffic, and environmental aspects as well, etc. These are seen at the society level but not necessary from an individual service seeker perspective. Thus, the pricing may be obvious to those indirect and collective benefit aspects.

In the solution space, the analysis indicated the following recommendations to overcome the current limitation of the users' lack of motivation aspect:

4.7.2.7 EASE OF SERVICE AS ITSELF AS A MOTIVATOR

In general, people would like functional and uncomplicated interfaces to complete their online interactions. This need is maximized in the early stages of a new technology in order to inspire people to use it, since the complexity of a new technology might not attract users. However, experts mentioned that some of the provided services are simply complex by nature, and would not be a good fit to mobile users regardless of the used technology. On the other hand, other less complex services could be established online, only partially remotely via mobile devices, where the rest is done in person.

E6 elaborated on this by saying that *"In the initial process of the change to the smart government, it has appeared that many most different types of smart services only contained information applications. Besides, some of such services were difficult to understand. As an authority, which is responsible for this change as well as organising communications among different entities, we hope as much as possible to attempt to deliver information to all of the departments".* However, this is provided that the smart service is simple, easy to understand and with no complications and in return this may encourage the public to accept to deal with the new channels.

4.7.2.8 OFFERING UNIQUE ADVANTAGES FOR SMART SERVICES' USERS

Experts suggested that a central factor to encourage users to use the mobile services is to let them have unique advantages not typically available via other forms of service providing such through kiosk, agents, and in person. For instance, experts recommended that a reduction of the fees could be introduced for those accessing and completing the service online.

E7 mentioned that offering a free website to those organizations adopting smart services is considered an option. However, this should not suggest that this is an overly adopted strategy. For instance, the design of the services and the ease of use, as well as the public awareness are still irreplaceable aspects, and primitive to any technique, which motivate users to use the smart solutions more.

4.7.2.9 SPEED AND PRIORITY

One of the possible motivation factors for smart services users could be speed. In other words the service could be speeded and a special queue could be designed for users who have filled in the online forms and just need to visit the offices to complete the procedure. For instance, a user will need to visit the office when they sign the new passport if they already applied for it online. This also relates to the priority provided by the authority staff to all requests established online. However, the people's general perception is that requests made online are likely to be given less priority since there is no in-person handling, and since this may not be automatically the case but this is still a discouraging factor.

E8 added that in order to attract individuals to apply electronically there is a need to create a new unique system for those electronic users. He added that this should be done when they receive their official documents for the requested service. As a result a particular representative for only electronic users

should be made available at every institution, which shall help to avoid waiting long at regular departments. Consequently, this will give users peace of mind and the feeling that they had completed the clearance of their applications electronically. However, this means additional infrastructure and extra personnel should be allocated to achieve such quality standards.

4.7.2.10   CHEAPER THAN TRADITIONAL SERVICE

The use of smart services once implemented well has many advantages in comparison to the traditional in person services, including but not limited to cost efficiency as argued by Ho (2002). Additionally, experts recommended that the overall costs should be less in the case of online services. For example, the costs of the printed copies, the time spent when staff is meeting people, the transport costs are less, and for economic reasons all these together relate to individuals as well as the national economy.

(E1) has proposed, *"The electronic services are equally in line with duties imposed on personal attendance. The difference is that services, which are done electronically, are easier and do not need much effort or time. However, if duties imposed on electronic services are reduced, then, this will lead to the encouragement of the public to begin to use electronic services since it will not only save them time and effort but also cost".*

4.7.2.11   ASSISTANCE TO SAVE EFFORTS

Smart services should be aided by both automatic and organizational support to encourage citizens' use. However, while this is obviously a motivator for clients, it is not always cost free. Furthermore, a balance between the amounts of effort the employees should devote to assist clients, on one hand, and the autonomy of the service and its reliance on the clients, on the other hand, should be achieved. In other words, exempting clients from the extra effort should not lead by any means to enormous effort on the employee's side.

(E8) has referred to the above point by stating the fact that *"it is the duty of all the officials to serve the public and help them in the clearance of all of their applications. Particular attention should be paid to those who do not possess enough experience to use electronic services. Officials therefore should assist the public rather than directing them to the application Clearance Bureaus".* This suggests that the smart service could be designed in different forms such:

- Completely automated format
- Semi-automated format

However, the different formats should be available to accommodate all sorts of users and their different skills set as well as their various preferences.

4.7.2.12   HOLISTICALLY SEEN QUALITY OF SERVICE

The qualities of mobile services are not limited to only the used software and its design. Halaris et al. (2007) argued that the mobile services' quality is also seen as a holistic property including many non-functional requirements such as the 24/7 availability, the need to avoid design which disappoint users, e.g. waiting till the last step to issue error messages. In addition to that, experts indicated that many of the current services implementations overwhelm the clients with possibly unneeded information rather than the actual service. Accordingly, this leads to clients who are less satisfied with the whole process, since they feel it contains a lot of redundant and irrelevant details.

(E5) has mentioned that regretfully a number of institutions have offered to provide smart services rather unwisely, without making much effort to study or analyse the framework that is mostly appropriate to the needs of the public. On the other hand, he added that no analysis was made:

- To the environment in which work can be done
- The ability of officials to perform the job
- The electronic infrastructure of the institution

Consequently, this has led to some electronic services to be cancelled after launch. As a result, this action reflected negatively on the users' perception of such services. In addition, the growing distrust among users in relation to the quality of the electronic services will increase and authorities will then require a further effort to gain their trust again. As a result personal attendance trend has grown to be more favoured. Moreover, many institutions offer information applications rather than the actual services and such errors can with no doubt lead to confusion as well as suspicion in the electronic services idea in general.

4.7.2.13 *MINIMIZED IN-PERSON COMPLEMENTARY PROCEDURE*

Mobile services are usually supported by an in person counterpart. However, the exaggerated use of these supplementary in-person procedures seems to function in contradiction to the principle of automation and remote accomplishment of services, since it would be better if people completed the whole procedure in person. Nevertheless, in-person attendance is necessary in certain services, e.g. to take the original signature or fingerprints, however, it should always be kept to the minimum and for cases which could not be yet electronically replaced.

(E2) has indicated that there are many electronic services which require the users to still attend in person even though all the procedures have been completed electronically. He added that this is probably due to the fact that the completed document is so imperative that only hand collection is accepted or needs signatures.

Moreover, smart services should be then designed as socio-technical systems, i.e. systems involving both technology and organizations interacting. Additionally, in order to overcome such obstacles, it is vital for those in charge of the new strategy to reduce the in-person interaction without overloading staff

to work on behalf of users, and to complete what they have missed when they acquired the service online. If an electronic signature application is approved, this might enhance the use of smart services, since the users visit the bureaus to sign these documents. Thus, the electronic signature shall enhance the user experience and e-government adoption (Horst et al., 2007).

4.7.2.14 QUICK RESPONSE TO CLIENTS' ENQUIRIES

Historically, clients experienced slow responses when they had to deal with the customer care departments in all different formats such as email or phone call about the e-government services. Additionally, this left a negative observation amongst clients. Experts mentioned that this has changed recently, but time is still required for people to establish trust again in the government services. Therefore, experts confirmed that motivating people by inspiring their trust on this aspect is one of the key elements.

(E4) has referred to an incident in which one of the institutions had encountered in the past, in relation to a client enquiring about services. Naturally, the institute used to receive a large number of emails, however answering to these emails was rather slow due to the workload pressure. Meanwhile, some policies have been changed before sending the answer to the requestor. Nevertheless, the public prosecution policy was altered to suggest that all emails received receive the needed attention in relation to the electronic services. Furthermore, a two-day response cycle has been introduced to answer all emails received from users about the service. It appears that such a positive accomplishment has increased people's trust in the service in general. Even though, this is considered a step in the right direction, there is still more to be done, as much more people still prefer attending in-person and possibly there is still a lack of trust in the services offered.

4.7.2.15 REVISION OF THE STRATEGIES ADOPTED FOR ENCOURAGEMENT.

Gilbert et al. (2004) mentioned that governments need to work hard on different aspects in order to initiate trust and they argued that in today's m-government models most of the users are encouraged if trust strategies implemented by the governments are developed over the time to match evolving needs. As a matter of fact, the unchanged encouragement strategy would work only for a limited period of time. Thus, sticking to one strategy would lead, in the best case, to limited time success. Accordingly, a revision of the strategy should be done frequently and take into account the current trends in user behaviour and market development.

(E3) mentioned, *"All institutions need to plan strategies that are continually encouraging and developing over time. This should be done periodically so as to match the public's needs. Since such an application with no doubt regularly attracts more users"*. Similarly, it is not useful to adopt just a constant policy, but rather to update and develop it ".

4.7.2.16 LIMITING AND PROHIBITING BARGAINING

Experts mentioned that to increase people's interest in smart services in general, could be by re-designing the in-person version of the same service. Mainly, this is to avoid any discrepancy and especially those differences that are leading to people preferring in-person channels, such as the ability to negotiate and get more benefits and discounts, which is only available offline.

Most experts including (E7) have highlighted the fact that "It is rather essential that all institutions are able to offer electronic services to all clients and also to combine all procedures related to the electronic use and the in-person attendance. There is still some widely spread behaviour used by some officials to give discounts, reduce fines, or postpone payments. In comparison to the electronic services, such privileges are almost non-existent when using the electronic services".

4.7.2.17   SECURITY GUARANTEED

Kumar et al. (2008) argued that providing the ordinary government services over the Internet is challenged by security concerns, especially when governments decided to offer the services over mobile networks. Experts mentioned that there is a general perception that mobile devices are easily vulnerable and this discourages people from using them. However, the use of smart services in most cases requires personal information and financial details. As a result, this discourages people from using these services unless strict security protocols are enacted and communicated to the public. Experts mentioned that complementary and precautionary mechanisms should be offered to users including those users who got very limited IT knowledge.

According to (E3) *"legislators in the UAE must introduce laws and procedures to safeguard users from electronic traps when using government electronic services. Furthermore, all departments need to put in place strict rules when dealing with payment processes"*. As a consequence, this will raise confidence and strengthen trust in the banking system amongst users. Additionally, the banking information will be secure and not be accessible by lawless thieves, increasing trust in smart services.

4.7.2.18   QUICK AND FLUENT ONLINE PROCESS

The smart services are expected to have a fault-tolerance, i.e. be able to understand common mistakes and auto correct them when needed, as long as this does not to lead to factual mistakes and to a loss for both the clients and the provider.

On the other hand, when people complete forms online, especially when using mobile services, the expectation of fault-tolerance and auto-completion, as well as click-based process is quite high. As a result, the design of the services should have access to the users' profile. In addition, this introduces the need for integration between the diverse organizations involved so that a holistic database for the user is accessible when the users' need to fill in a specific form for various services. However, this obviously needs protocols and arrangements at both technical and organizational levels.

4.7.3 THE DESIGN AND DESIGN PROCESS OF THE SERVICES

With regards to the design of the smart services and the way these services are developed and offered to the public, experts have referred to eight significant factors. Naturally, the analysis and design of the services are considered a critical stage in order to understand the requirements and expectations of the public from the service; however this can either encourage the users to use the electronic services on a regular basis or otherwise keep them away. Moreover, it undoubtedly depends on the content of the interfaces and what actions users are required to accomplish when the service is designed. Additionally, Traunmuller and Lenk (2002) argued that cross-organizational workflows in form of hierarchical approach would facilitate offering smart services in a uniform way, which is something that should be taken into consideration in the design process. The following is what the experts have mentioned in relation to this aspect (Figure 4-7):

Ease of use	Explanation quality
Lentgh of process	Illiterate users options
Service taxonomy	Security consideration
Service analysis	Public engagement
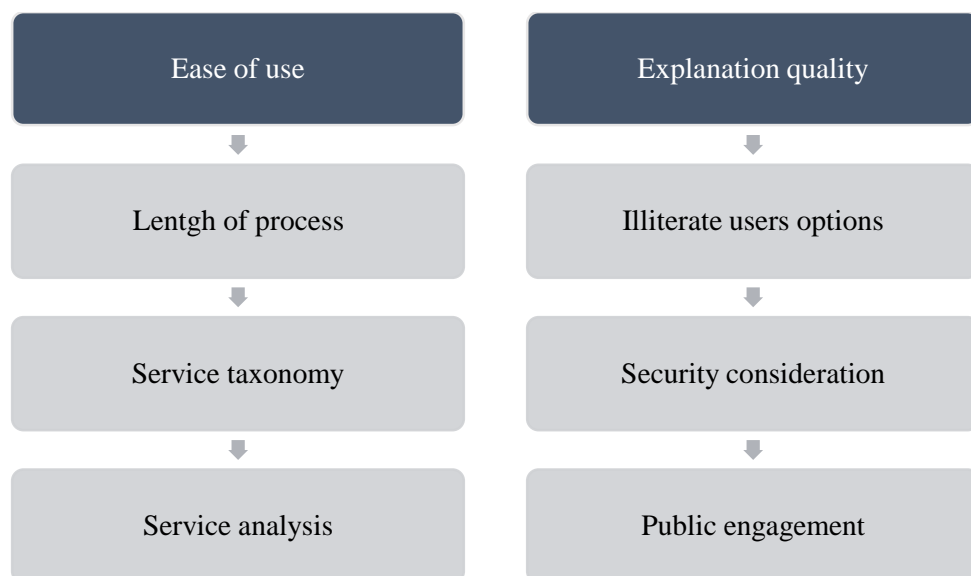
FIGURE 4-7 SMART SERVICES DESIGN FACTORS

4.7.3.1 DESIGN WITH THE EASE OF USE AS A CORE REQUIREMENT

Currently, one of the perceptions on behalf of the users is that it is hard to complete transactions online. A reason for this is that authorities still do not have established methods on how to design these services in order to run on mobile devices and also for the UAE users in specific.

However, experts mentioned that the users are currently facing an enormous difficulty when they are trying to obtain and make use of the introduced electronic services. Experts argued that perhaps the most fundamental issue is the understanding of what is required, the number of steps to be followed, the lack of clarity in every step separately, and the incompletion of the process or transaction as a whole.

On the other hand, this may be due to a fault in the system not necessarily technical, but possibly at the level of user expectations of what they would like to experience in the service at the interface level, and also the process underlying it.

Examples of faults are:

- Unclear communication about the steps to follow to accomplish a transaction
- The difference between the steps to follow online and those followed in person
- The parties involved and the regulations, which govern the whole service.

Indeed this is what some experts confirmed to be one of the reasons during the interview. (E7) mentioned *"a large number of clients and the users of the service centres agreed that, despite their many attempts, they are still facing difficulties in their electronic trials"*.

Nevertheless, the issues were diagnosed at first in two aspects:

- The understanding of what are the requirements to accomplish the service
- Understanding of the communication language, which was not clear to them

However, that confirms that the used terminologies are either technology oriented, or very specialized and not user-friendly. Additionally, the various steps that were needed per online service lead to lack of concentration and established a desire to just terminate the process and visit a service centre in person, believing that the centre staff would allow the customers to be supervised by a person when filling the forms and submitting requests. As a result, the customer satisfaction from the smart services websites is quite low, and they tend to leave the website quickly and consequently lack in loyalty (Rahardjo et al., 2007).

(E3) highlighted *"the capabilities of the users must be taken into consideration when designing the service and upon offering it to the public"*. In this instance, there are a number of scientific approaches that can be used to measure the capabilities of the users. As a matter of fact, among all approaches, the most essential are the focus groups and thinking aloud exercises. This will let users identify their problems and then understand and tackle the difficulties by attempts to avoid them in the future.

4.7.3.2   *THE LENGTHY PROCESS AND KEEPING USERS ENGAGED*

Some experts, in particular in the department of users support, have indicated that most clients lose interest in completing the procedures online even if the included steps are easy to follow. However some users might not fully understand some steps that are not clear enough which might discourage them.

As a result, even one term, which is not well understood by users, will encourage them to terminate the process online easily and visit the service centre in order to get the online uncertainty handled when they meet a staff in person. Moreover, the lengthy process will not be realised when it is completed

under the supervision of a staff member rather than online. Consequently, clients prefer to visit the offices to meet the responsible officials for their application, which leads to the ineffectiveness of the electronic service.

(E5) mentioned *"most of the complaints received from the public regarding the steps being too many as well as long"*. To avoid such problems, it is crucial to minimise the current required steps in the online procedures, so as to make it unproblematic for the users. However, it is not always possible to eliminate steps. Accordingly, the design should motivate and encourage the users to stay online by making use of some user-friendly design techniques such:

- Progress bar or timeline to show the remaining steps
- Break down the process into stages and allow saving of the application so it can be completed some other time.

Nevertheless, this aspect needs further investigation and there is uncertainty what the users in UAE would find motivating in completing lengthy processes online.

4.7.3.3   SERVICE CLASSIFICATION AND TAXONOMY

Experts have mentioned that the design of the electronic service must take into consideration the nature of the public who will be using the service and their search behaviour, to understand the set of services offered. Moreover, this can be done through a completion of a survey analysis about the society as well as the institution offering the service, since not all services will get equal attention from all users, and certain services are only of interest to certain groups of users (age related groups, nationality, time of the year, etc.). Nevertheless, the service classification and the design of the search bar, which shall facilitate finding the appropriate service easily and in speedy manner, should be the main requirement in the design evaluation and consideration of smart services.

Besides, the availability of all the statistical information at the different institutions about the user behaviour is necessary to enable such taxonomy. In order to accomplish that there is also a need to learn about the services that are mostly used and required by the public. For instance, the service of renewing residency permits for foreigners is different from the renewal service regarding citizen's passport. Therefore, this could be ambiguous for users who might easily mistake accessing a wrong page or installing an unneeded application. To elaborate more, there is a huge demand for the electronic residency permit service, since the population formation in the UAE includes many foreigners, as according to the latest statistics, the number of foreign nationals is by far more than the actual population of the UAE. Moreover, this also means that the services should be designed to a larger scale and be accessible in different languages, as well as to take into account the diverse levels of the users' familiarity with the smart services.

This was expressed by (E3) who believed, *"every service institution has to offer electronic services. Additionally, to produce a detailed study as well as analysis of all the available services and the public who are interested in such services. This is in relation to the individuals' nationality, their level of education and the spoken language, upon the completion of this survey and the results obtained, services which are appropriate and serve a large group of people will be highlighted".* Accordingly, this will facilitate the services classification and the decision making on which service to design and which users groups require a thorough analysis of the potential users and their requirements. Also it would offer an insight on how they would locate a service when they need it, e.g. what terms they use and how to facilitate their search for a service.

4.7.3.4 SIMPLE, INFORMATIVE AND INSTANT EXPLANATION

This should be offered for each smart service and for every involved step when needed. This is considered as an essential factor that works towards educating and teaching the public on how to make use of these services. As a consequence, this will facilitate the process to attract the public to the electronic services and encourage their engagement. This will work to reduce overcrowding at service centres and will market such electronic services, which are considered new to a certain extent to the UAE society. On the other hand, all service institutions, including ministries, need to work towards providing or making a simple explanation idea available at the point where services are in the design phase, in this way the public will be electronically educated, so as to experience the services, and learn how to follow the procedures.

Moreover, this point was highlighted by (E8) during the interview. He explained that *"the Home Office has adopted the simple explanation system and that it offers the illustration to the public with the aim of spreading awareness, as well as teaching the public how to follow simple procedures. As a result, large numbers of the public shall be encouraged to benefit from smart services and in return avoid any personal presence".* However, the provided explanation seems to be at the early stages and there is still much to do. For example, a sort of creativity in offering the needed explanation at the right time for a certain user is also highly needed, to avoid offering excessive irrelevant explanations, which might bring the unwanted results if not well planned.

4.7.3.5 THE ELDERLY AND THOSE WHO ARE ELECTRONICALLY ILLITERATE

Ministries and public service departments are facing some real challenges when the service beneficial segment involves elderly or electronically illiterate groups of people. Naturally, it seems complex to persuade and satisfy the needs of such group members of the society. The reason for this appears to be the lack of any awareness, which limits their capabilities in using any application electronically.

In addition, this is not just a UAE problem; on the contrary it is a worldwide issue, which confirms that all service departments need to take this into consideration. Moreover, any personal presence (people completing the services in person through customer centres) should always be an available option. Also,

the zero-visitor policy should not be overly strict, in order to avoid cases where such groups will seek agents to complete their applications, possibly for extra charges. Accordingly, officials should offer assistance to help complete senior and/or illiterate people applications, which indicate that a little is required to be done here in the design of the service. Additionally, the design should consider the usefulness and ease of use of services, since these are main factors driving senior people attitude to smart services (Phang et al., 2006). To summarize, the design of the services should be able to identify these users groups and flag the issue to the institute whether it is needed or not, and where to address requests in person. The strict regulations of using smart services would oblige them to seek assistance outside of them and to rely on others, possibly agents, to help them complete their application. However, this involves the payment of a fee, which is obviously a burden, and against the aim of e-services, which is to make the transactions done more easily.

This point was picked up by (E3) who mentioned that *"public service departments are there to help the public including the citizens and non-citizens without any discrimination based on how skilled they are in using IT"*. Thus it is suggested that arriving in person should continue and the smart services design should not push certain members of the public to seek the help from third parties and pay extra fees just because they are not familiar with electronic procedures.

4.7.3.6 DESIGN FOR SECURITY

Security is always a vital aspect of any online transaction and the public as well as the experts confirmed that the security issue is a factor that neither attracts nor discourages the public when using the electronic applications. Nevertheless, security is a main requirement in the design of smart services, which is still not highly trusted by the public in particular when using them. In fairness, this is partially due to the lack of awareness by users regarding what makes a connection secure and what the user should take into account to liaise with the service providers and their security measures.

Additionally, the service departments as well as the ministries should appoint security specialists in order to design highly secured services. In that regard, a text message should be sent to inform the users when a payment has to be done or when an application has been submitted for them. As a result, this will enhance the trust among the users of the electronic services. On the other hand, the protection of the information also involves the user, which has a social facet as well. For example, it is the user's responsibility to ensure that no unauthorised person should be given view access or change any content on his or her behalf. However, it appears that some users neglect the risks and would expose their critical information to business agents when needing help and also to other colleagues, undermining what would that involve from a legal perspective.

In this instance, (E1) has mentioned *"the majority of users who chose to attend the department in person have no trust in the electronic services, this point has been more emphasised since some banking clients have fallen victims to security issues when shopping online"*. Additionally, Lambrinoudakis et al.

(2003) argued that e-government security could be easily enhanced with all today available technologies in the online service market, especially with the increased reliability of communication channels as well as Internet infrastructure.

In summary, the security design of the smart services should involve:

- A secure design of the smart services
- Provided counter measures to customers
- Increased awareness of the responsibility when using the services, e.g. keeping the credentials private.

4.7.3.7   EVOLVABLE SERVICE DESIGN

Experts indicated that due to the newness of the smart services paradigm, there is a need for a continuous analysis of the involved strengths and weaknesses, success and failure testimonials, in order to work on negative aspects avoidance, strength factors and enhancements. Accordingly, the smart services designers and strategists are required to constantly analyse and monitor the performance and the public acceptance trend along the way. Moreover, they need to identify the strengths and weaknesses for each service separately, in order to learn as much as possible about any existing obstacles. On the other hand, there is also a need for the service designers to work towards resolving any negative issues as quick as possible. In that respect two experts highlighted the issue:

- According to (E3) *"in order to secure the quality of the electronic service, it is vital to continuously analyse so that we can identify at early stages the factors causing vulnerabilities".* He argued that this can be done by asking the users for their experiences and also dealing with the institutions involved to get statistical data on the use and customers' feedback".
- (E7) has indicated *"there is a need for trained personnel at every institution, whom are able to offer electronic services similarly".* He believes that such step will facilitate the process and lead to a study investigating and analysing any negative aspects. It will also help in overcoming any existing difficulties that could be avoided in the future. Finally, it could aid the identification of simple techniques which are suitable to the needs of the public.

4.7.3.8   SERVICE DESIGNERS' ENGAGEMENT WITH THE PUBLIC

The majority of the experts stressed the point that there is a need for those who are in the position of producing the smart services to be familiar with the basic characteristics which include, but are not limited to, a comprehensive knowledge of the society's diverse cultural backgrounds. As a matter of fact, there are more than 160 different nationalities living in the UAE, each of which has a unique culture, which is making it extremely difficult to introduce a common style that is suitable to every different background.

Moreover, experts referred to that by confirming that a unique design would unlikely be usable in a similar way from all of them. Thus, designers should engage with the public to first identify users groups and provide multiple designs, which can be available for that diversity rather than sticking to uniform designs. On the other hand, the electronic services in the UAE are meant to serve all residents and citizens from different a culture, which naturally maximizes the need for deeper understanding of different preferences on the design, since it is vital to take cultural background into consideration when introducing smart services (Khalil, 2011).

Another important point is the language. The languages are also diverse and different people might prefer a different local language. For instance, if local terminologies used in the UAE are tailored to the context of the business and translated, that would not mean much unless the user is familiar with the business concept for which a term stands. Therefore, it is essential for those designing the services to take into consideration such issues, so that the procedures are sufficiently clear for the different users. (E6) has mentioned that, *"at every workshop, particular emphasis has to be paid by those designing the services. It is stipulated that they are familiar with different cultures in the society and also to make sure that the procedures are clear and easy to use and to understand by all users and speak to them in their terms"*.

4.7.4   ADOPTION AND ENACTMENT POLICY

Experts indicated that the true deployment and adoption of electronic services in general should follow a well-planned strategy. This includes the decision process of certain institutes to adopt undeniable service, as well as the decision of the complementary development, such as introducing new rules and new legislation to serve for new cases that were not tackled before. However, it seems that the current status of the progress in these aspects is still at the foundation stage. Nevertheless, the experts' arguments are mainly about three vital issues within the enactments procedures, highlighted in Figure 4-8, which are:
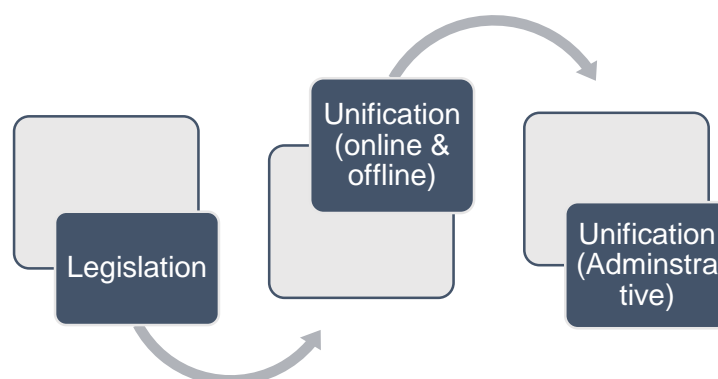
FIGURE 4-8 ADOPTION AND ENACTMENT POLICY ELEMENTS

4.7.4.1   LEGISLATION

As a matter of fact, moving towards technical applications and smart government introduction, can neither be established nor play an efficient role without a respectable preparation at the legislation level by the state. Additionally, setting up a law that governs its establishment and also the responsibility of involved stakeholders in the development and execution of smart services can pursue that.

However, the responsibility and action of each party need to be outlined perfectly in order to offer room for a clear judgement in case of any dispute. Moreover, to reach this clarity and transparency, as well as robustness in the governance of the process, there is a need for a legislative initiative that is able to remove ambiguities and lack of laws and regulations. For that reason, this will lead to a use of technical advances which safeguards smart electronic applications against any forgery and misuse. However, together with legal and regulatory adjustments, that shall result in a successful smart services' application (Schware & Deane, 2003).

On the other hand, experts mentioned during the interview, that in order to switch to smart services, it is essential that laws and legislation are enacted to support the service sustainability as well as making the smart government work. In addition, all ministries and service departments are vitally required to systematize their internal administration procedures in order to work alongside the already established government policies with regards to the move to smart government.

In this instance, (E3) has mentioned that, *"as a matter of high urgency if one area in regulations in the UAE needed change, then this should point at the enactment of laws and legislations that best serve the e-services".* One critical example is the client signatures, since there is a question whether they will be recognised by the courts or not in case of applications that have been signed electronically. Therefore, it is necessary to modify laws and legislation so that the services begin to follow common strategy as well as to avoid possible critical incidents when a case is linked to the judiciary system. To add up, (E8) has also referred to this point by saying, "There should be law supported rules".

4.7.4.2   UNIFYING THE SERVICE PROCEDURES (ONLINE AND IN PERSON)

Obviously, there are some challenges involved with the smart services introduction, among them, is the fact that the majority of public still prefer to attend in person rather than using the electronically available channels. However, many reasons are supporting this behaviour including the fact that attending in person allows the applicant the opportunity to discuss the matter with the responsible officials. Such a discussion might result in a reduction in the expected sum of money associated with a typical penalty or even the postponement of such penalty as an example. On the contrary, if smart services are used, the applicant has one choice only and no further privileges, dissimilar to the case when attending personally.

(E7) mentioned that he personally had experienced such difficulty in one of his dealings with a service department. He stated that, *"upon receiving an invoice for a service that has been received, an action*

was done by actually going to the department to speak to an official. The visit resulted in achieving a reduction in the total amount of money that was supposed to be paid as per the initial invoice". Therefore, there is no doubt that the public will prefer to attend in person as far as this visit might result in a financial savings.

In conclusion, there should be a sort of uniformity within the business process whether it is online or in person. As a result, the options available and the rules applied would be identical. Noticeably, there could be some differences in the service delivery and the available facilities to enrich the experience, still this should not congregate the core of the service from the business and procedural perspectives.

4.7.4.3   UNIFICATION OF ADMINISTRATIVE PROCEDURES

It seems that the followed procedures are not always uniform in all service departments at the ministry, which is contradictory to the smart services when applied by the ministry, to have identical procedures across all the ministry administration units. Besides, this application should be covered nationally and not in limited centres and different counties. For instance, the Abu Dhabi police force stipulates that the renewal of vehicle licences must be done electronically, on the other hand, in the case of Sharjah Police force, it is not compulsory, but rather optional, despite the fact that they come under the same ministry.

(E2) has referred to this contradiction strongly, and mentioned *"Abu Dhabi police has completed 500 applications electronically in just one day. Since a decision has been made to make it compulsory for companies to complete their traffic matter services electronically without the need to attend the traffic department in person by a company representative".* Although, it does not mean that individual users or entities would deliberately prefer this method once given another option.

However, in the case of Sharjah Police, the department only managed to accomplish 40 applications in two months, and this is clearly due to the non-existence of any administrative decision to oblige at least companies to pursuit their needed services electronically. As a consequence, the traffic administration services are crowded with applicants and the smart services applications are less used in Sharjah. Moreover, such divergence in the adoption of smart services and the way the process is followed present a negative impression to the public. This negative impression indicates a lack of cooperation between authorities and an absence of nation-wide adoption of this new paradigm and various interpretations on how it should be enacted.

4.7.5   ELECTRONIC APPLICATION CLEARANCE BUREAU

In general, the application of smart services requires the service users to be actually familiar with the use of smart electronic equipment, which allows them to receive the service properly. However, it is

possible that a user has not the necessary smart equipment knowledge to use the services. Therefore, it will be better to use application clearance Bureaus to finalize their applications.

However, in such a case the user can be required to pay a clearance fee to the Bureau as well as paying the ordinary service fees to the service department. Additionally, not only extra financial obligation will occur, but also the applicant personal details will be exposed to the Bureau. As a consequence, it is noticed that many service departments refuse to let applicants into the offices, since they are applying the policy of zero-visitors, which seems to be unrealistic and causing people difficulties.

As a matter of fact, once the application of this policy was implemented, almost all service departments have switched to the electronic use. Consequently, a large number of people have been forced to use application clearance Bureaus and deal with any unwelcomed experience, in order to get their duties completed.

(E7) has put forward this idea when he said, *"the public has no choice, but to accept change and move in the direction of using electronic service"*. He supports this view by referring to the fact that the public can use clearance Bureaus, in case of inability to use smart solutions.

From another contradicting perspective, some experts ask clearance Bureaus to help in the completion of applications on behalf of users, on the basis that the services departments' duty is to help the public entirely. In addition, the official's role is to help clients since they are receiving salaries. Based on such facts, the policy of zero visitors is rejected from their point of view.

(E8) has also stated *"I do not support the idea of setting up clearance Bureaus for the simple reason that this will force applicants to pay a fee for the service they should receive within a public sector. Besides, the unauthorised gathering of information about applicants might be used in some illegal dealing"*. Accordingly, such observations furnish evidence that there are no up to date laws and legislations that unite all administrative procedures in all of the departments. In support of this, a number of service centres still exist that adopt the zero visitor policy and such departments put pressure on clients to use application clearance Bureaus (agents or brokers). On the other hand, some departments reject this policy for financial or security reasons, which flags incoherency in a vital part of the service cycle, which consequently will decrease the users' trustworthiness in smart services and hinder the public acceptance. This, however, is a major adoption factor of smart services (Lemuria & Bélanger, 2005).

Since the majority of experts are senior managers in various institutes, the interviews also tried to investigate the possible solutions from their perspective, in respect to the identified problems. The following five recommendations have emerged (Figure 4-9):

| Legislation compatibility | Senior management engagement | International expertise |
| Standardization | Available in-person option | |
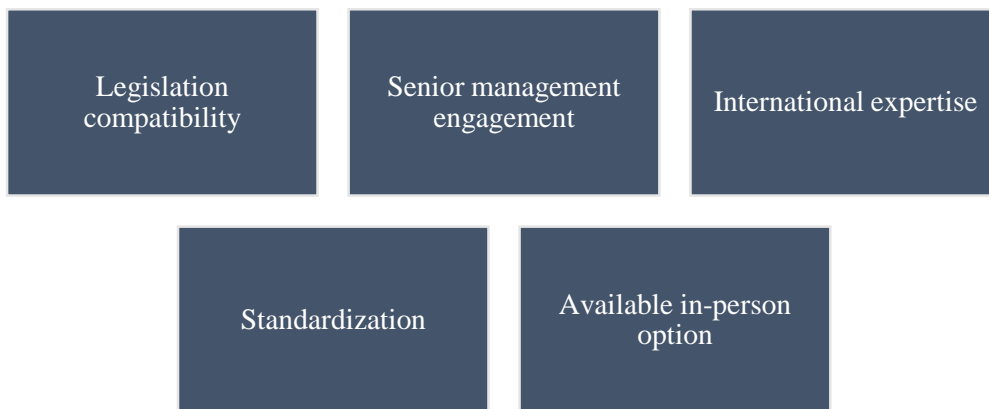
FIGURE 4-9 POSSIBLE SOLUTIONS BY EXPERTS

4.7.5.1 ENACTING LEGISLATIONS

Experts recommended enacting and developing legislations that are compatible to serve the smart services. This can be done through a specialized act in the particular facets that these services introduce, including digital signature and data protection. Also, regulations should be yielded and all involved parties should adhere. Experts argued that such an act will lead to trust in using smart services and will protect smart applications against forgery or misuse.

4.7.5.2 SENIOR MANAGEMENT ENSURING ALIGNMENT

Experts emphasized a need for commitment at the senior management level in authorities to support and adopt the on-going smart services administration projects, through providing a close supervision for the application of them. Consecutively, this will reduce the gap between the planned smart services procedures and the actual adopted process and enacted in the organization itself, since the senior management is a reference point in ensuring that alignment is achieved.

4.7.5.3 SHARING EXPERIENCE AND CUSTOMIZATION

Some experts have expressed opinions to the necessity of organising priorities, following studies and experiments in this field. They also indicated the need to benefit from the expertise of other countries in the application of smart services and apply previously tested techniques. Also, those in the lead adopted the system after practice and long-term studies with the public. However, the nature of the UAE users and the services provided make it necessary to further analyse the peculiarities carefully and apply suitable experiences.

4.7.5.4 PROTOCOLS AND STANDARDS

Experts indicated the need for standardization of the services and compliance to the agreed international standards. This was noted after the emergence of so many smart services which lack common grounds

on the diverse facets including aspects such as: what users are required to do, fault tolerance degree, alignment with the in-person processes, etc.

On the other hand, some experts mentioned that it is vital to create a compatible environment among local and regional organisations in respect to international agreements, treaties and norms that are adopted in the electronic applications worldwide.

4.7.5.5 *KEEP THE IN-PERSON ALTERNATIVE*

Experts mentioned that it is neither realistic not practical to use smart services and eliminate any in-person interaction. The smart services should be seen just as another available choice to the applicants, so individuals may benefit from them by saving time, effort and speed, by making the involved experience as pleasant as possible. They argued that, this facilitates the experience for the people who are electronically illiterate.

4.7.6 TELECOMMUNICATION COMPANIES' ROLE

It is considered that the infrastructure is the decisive factor in entering the smart electronic administration. Based on this fact, it is highly essential to invest in the users' ability to connect, besides the telecommunications infrastructure ability to provide a safe network to link all the departments. In addition, it is vital for the success of this new style of services to make available all hi-tech communication tools and information systems applications as well as applying modern administration systems. These rely on such programmes to achieve a complete integration between the different parts and activities of one system. Accordingly, smart services require a smart administration from the telecommunication side in different formats such as:

- Recognizing the customer location
- Advanced IT skills
- Security countermeasure they would need
- Pricing strategy to apply

Moreover, these companies should liaise to provide a mechanism for the electronic pay system. Mechanisms must be able to ensure that transactions are conducted in a speedy approach, that fees are correctly paid and that the customer is well informed about all involved transactions. On the other hand, it is obvious that the body that organises the communication and the telecommunication companies in the state would play a direct and significant role in the switch process to the smart services as well as its continuity and sustainability.

Another not less important aspect is the provision of a robust and stable Internet access for all users and in all areas of the state. Naturally, if authorities invest in smart services and expect people to use them, the Internet access in general and possibly even free connection for the purpose of completing the

transactions, should be made available for every citizen and resident. In particular, remote areas such as the geographical areas close to the UAE borders would strongly need such services at the moment. This should be seen as a baseline for the adoption of smart services in the nation. In return, a larger number of the public will be motivated to use smart services, which are offered by the UAE.

The rest of this section elaborates on the details of this observation from the experts' perspectives for the four areas of arguments (Figure 4-10) mentioned by the experts:

Infrastructure Availability

Internet subscription process

Tariff review

Telecommunications Regulatory Authority
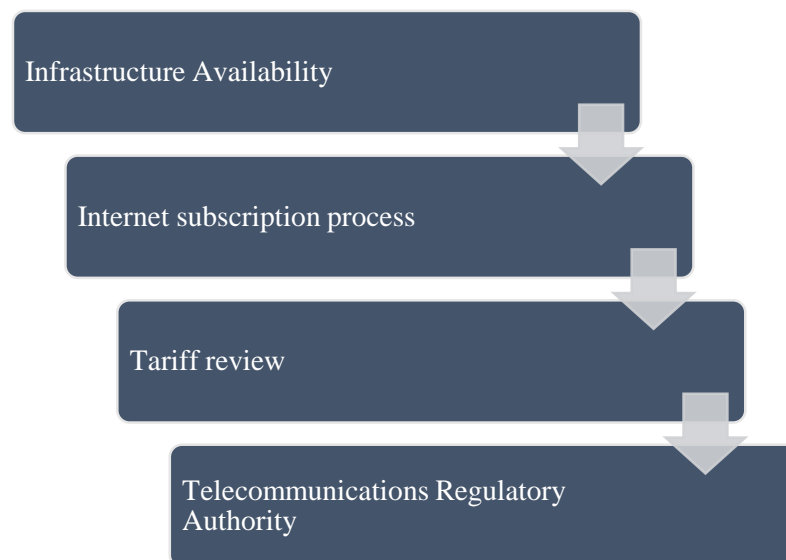
FIGURE 4-10 TELECOMMUNICATION COMPANIES' ROLE MAIN ELEMENTS

4.7.6.1 WIDE INFRASTRUCTURE AVAILABILITY

Experts recommended to make available 3G, 4G, and Wi-Fi network systems and with little and probably no fees for the purpose of the use of smart services. As a result, a national network could be introduced where people can access for free. This will help the users complete services online, since it has been observed that in some cases, people opt out of using smart services due to the fees required for the internet access. As a matter of fact, the UAE is one of the rapidly growing countries in leading and adopting the smart services solutions and the currently available infrastructure would need a relatively little amount of optimization to be made available.

Consequently, this will support the UAE strategy to move towards the smart government (the M-government). However, to achieve success in this field, communication providers are required to continuously strengthen their networks performance nationally and work on 100% coverage strategy in order to cover areas, which have not been covered yet. Since, currently the network is strong in main towns and cities but when approaching some populated areas that are either remote or in the desert area, the signal is either weak or unavailable.

Nevertheless, smart services matter to the whole of the population and the decision of coverage should not only be seen from the pure economic investment perspective but also as a social responsibility to offer equal access to the entire nation.

(E3) mentioned that *"the Telecommunications Regulatory Authority (T.R.A) and other communication companies, such as Etisalat and du, bear the responsibility of providing the right environment to move in the direction of smart environment"* and he raised the question "whether every part of the UAE has 3G or 4G coverage or not". Nevertheless, it seems like a great challenge for communication companies, which might provide the service in some areas but not others. For example, high-speed mobile Internet connections are available in Abu Dhabi and Dubai but almost none exist in the mountains and the desert areas which are populated with people who will need these services.

Similarly, it is found that the Internet connectivity is not available in many homes belonging to citizens as well as residents. As a result, the use of smart services would be affected strongly by all the negative mobile coverage aspects, such as the reliability of the provided service by mobile operators (Desta et al, 2009).

4.7.6.2   LENGTHY SUBSCRIPTION PROCESS TO INTERNET ACCESS

Besides the connection availability, the difficulty of getting Internet and being subscribed is another barrier. As a matter of fact, getting a connection might take several months or even a year and such obstacles could result in a sizeable part of the society not receiving the electronic services that are geared for the application provided by the state.

(E1) stated that currently *"communication companies take far too long to connect homes to the Internet; this is despite the massive effort exerted by the state to benefit from the electronic services"*. Therefore, even when users are willing to use the service, and even when the infrastructure at the technical level is available, the monetary, time, and effort costs are still hindering their experience and result in preferring the in-person accomplishment of the same services.

4.7.6.3   PRICE TARIFF REVIEW

The fees imposed on the public by communication companies are decided with little consideration of the strategic need for encouraging and motivating users to adopt these electronic services. In fact, there are two companies that operate in the UAE, Etisalat and du. The tariff is being decided following a business model which mainly relies on the cost-benefit analysis which neglects the essentiality of adopting smart services in the long-term and all the involved positive side effects such as:

- Reducing waiting times and traffic
- Making services more automated and transparent

Moreover, the reason for having relatively low tariffs in other countries that are advanced in the use of technology might be due to the competition among the companies. However, the high tariff in the UAE

has resulted in a negative impact on the public, leading to the fact that people are no longer interested to use the Internet except for limited purposes. This is all because, users can no longer afford high priced bills.

(E8) has highlighted this problem and said *"Since the state is moving in the direction of making the smart government applicable, the role of communication companies should be more positive, that is, in a way of reducing high priced bills imposed on consumers and users of smart phones".* Additionally, (E1) has supported such view and *added "communication companies are charging the public extremely high fees. This is certainly an obstacle that a large section of the society faces. As a result, they are not benefiting from the smart electronic services".*

4.7.6.4   *THE ROLE OF TELECOMMUNICATIONS REGULATORY AUTHORITY (TRA)*

TRA is responsible for organising the work of the communication companies within the country. However, despite the negative perception of citizens as well as residents regarding service prices, the process to investigate and find a solution has been very slow. In certain cases, the prices even continue to increase, which demonstrates weaknesses in the decision-making and market analysis as well as inability to control prices imposed by communication companies. It is useful to emphasize again that smart services have positive side effects on the entire society and should not be treated solely as a source of income from the communication company. However, the government should push this fact into the regulations in order to secure positive cooperation from mobile providers.

(E3) mentioned that *"the TRA should recognise its role and increase its influence on price control, in addition, the TRA is there to help organise the process of moving towards the smart government".* Nevertheless, any reduction in prices, will no doubt lead to the attraction of more people to start using their smart phones, as a result, benefiting from the electronic services offered by the state through the smart phones.

On the other hand, the interviewed senior managers were asked in the semi-structured interviews to provide solutions when they mentioned certain problems related to the role of telecommunication companies and TRA. The following seven captures the main points they came up with:

- Establish a communication network, which allows a comprehensive communication covering all areas of the UAE.
- Create a competition in the tariff by letting other competing companies enter the market instead of being limited to just two telecommunication companies; consequently, this will lead to a drop in prices.
- Build a positive competition among companies to enhance the quality and not only reduce the prices. This will in return benefit individuals in the society.
- Control the cost or fees imposed by the communication companies regardless of the existence of a competition. The TRA is the department that is responsible for this process.

- Strengthen the Internet connection in all formats, wired as well as wireless, to cover all areas in the country without exception. Such an action will ensure that services are not limited to certain areas and will ensure that all inhabitants are getting equal chances.
- Speeding up the process of getting Internet connections, so people will not lose interest over time.
- Studying the needs of mobile phone companies with the aim to attempt to fulfil them.

4.7.7   STAFF DEVELOPMENT AND TRAINING

During the interview with the various experts, the majority of them focused on two vital points (Figure 4-11) in relation to the training and development efforts, required to enhance the smart services and deliver good experience to the public.
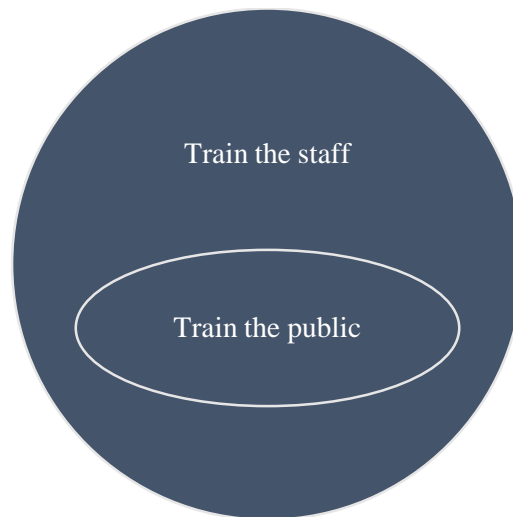
FIGURE 4-11 TRAINING AND DEVELOPMENT ASPECTS

4.7.7.1   PLANS TO EDUCATE THE PERSONNEL

Naturally, the smart electronic administration success depends on many aspects; particular emphasis should be placed on those offering smart services and in direct contact with the public. In fact, continuous development of the workforce skills and keeping them up to date well in advance are critical steps to ensure a successful change. The training programme should be offered not only to a limited number of staff assuming that this will suffice, but it should aim to be offered to a large number of workers. Therefore, the change requires creating human support capable of dealing with technological development and its needs (Gipps, 1999).

(E6) mentioned *"the TRA and other parties involved in the change should train the government department officials in the country on how to move correctly from the traditional government to the smart government"*. He continued, *"At the end of 2013 a training programme had been started and is*

still progressing. However, the continuation process will become the responsibility of government institutions thereafter".

As a matter of fact, if staff do not accept the change it will be highly unlikely they will support clients in accepting it, therefore, as a part of the training it should be made clear what benefits the trainee will get to motivate their positive attitude to accept the change and reduce resistance themselves.

(E4) has pointed that *"Smart services will reduce the pressure on all officials. While this does not mean that the state will make so without their services, as it is happening in some countries. The state is continuing to qualify and train human support in compatibility with the new government vision. Those who might be affected will be offered other tasks in line with this change".*

Nevertheless, administrative organisations should care to safeguard the training needs for all the staff. Moreover, they should develop their innovative and technical capabilities as well as confirming the culture of change within the enterprise. In that regard, experts emphasized the need for spreading general awareness among officials and, in some cases, redesigning the whole procedure in order to fit naturally to the smart services. Therefore, it is the duty of all departments to initiate a plan for educating all the staff and teaching them all the necessary techniques.

4.7.7.2   PLAN TO EDUCATE THE PUBLIC

In addition to motivating the public with the availability and reduced costs and complexity of the services, there is still a need to educate the public on this new concept in order to assure positive experience whenever they decide to use the services.

(E3) argued the urgency to educate people and said, *"At the Ministry of Interior and before heading towards smart services, a plan was in place to educate the public. This was because the Ministry of Interior is considered to be the first among other ministries to be in direct contact with the public".* He added, *"Such plans should be under the direct supervision of a specialised team, since it seems that the process of education takes six months and then the process of educating others will be analysed".* Accordingly, it is obvious that a need of an early start with spreading the general awareness before a change is introduced is essential to the success of the smart services.

4.7.8   CHANGE MANAGEMENT STRATEGY

Naturally, building an E-Vision and a strategy for managing the change from traditional to smart services will help to create a futuristic image and action plan on moving forwards and achieve the goals. Nevertheless, this vision should be concerned with improvement of all aspects of human resources and all the methodical routes leading to the presentation of all its products. However, an important point to be addressed is the integration of the smart services into the social environment. In other words, to change the expected resistance that people usually have towards new technologies.

Experts emphasized that it is significant to take into consideration the creation of clear strategies to overcome all obstacles standing in the way of change (Indihar Stemberger & Jaklic, 2007). On the other hand, experts have indicated that the process of changing administration and strategy will with no doubt face many obstacles, which should be avoided. Following the above, the experts have identified five different areas where change management matters (Figure 4-12):

Managing the change leadership

People perception and change

Change strategy before enacting

Change management side effects

Change management customization
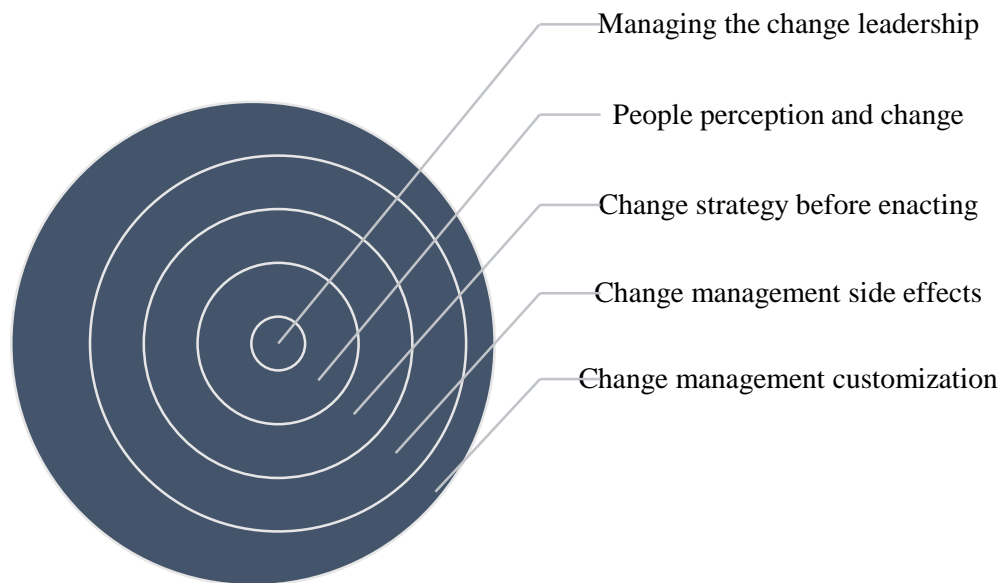
FIGURE 4-12 CHANGE MANAGEMENT AREAS OF FOCUS

4.7.8.1 LEADERSHIP IN MANAGING THE CHANGE

Special emphasis should be placed on the senior administrative leadership in order to formulate a managed change towards the application of the smart electronic services. Nevertheless, the leadership plays an important role that determines success. Additionally, the individual satisfaction of those responsible of the application of the smart electronic administration is a requirement which will be influenced by the decisions taken by strategic management personnel, and not only the operational workforce, e.g. the pricing, the regulations, the application of zero-visitors policy, etc.

4.7.8.2 INFORMED MANAGEMENT OF CHANGES

The understanding of the concept of the smart electronic vision and its role requires user perception analysis. This understanding will lead to the planning and deployment of the smart services in a natural way that is aligned with people's ability to make the move. On the other hand, the social factors including the large number of various cultures in the UAE and the enormous differences in IT skills amongst users groups, makes that understanding vital.

Nevertheless, relying entirely on the existing management of change policies and practices would not be a decent option given the newness of the concept of smart services in the UAE market and the under-researched nature of the UEA social environment. Additionally, experts highlighted the need for user's

studies not only at the development stage but also as a continuous practice alongside the operation of electronic services. Since this will help introduce the new changes and probably offer updates in a way that users would accept them.

4.7.8.3   BEING PREPARED FOR THE CHANGE BEFORE ENACTING IT

Similarly, experts emphasized on the need to be prepared with an organisational infrastructure that is flexible enough to serve the smart services and their requirements, as well as being able to adopt to users feedback when a change is to be enacted. Since, delivering a faulty service at the beginning would be a fatal mistake as it will lead to a decrease in the trust of the users and introduce difficulties in regaining the trust of users. Additionally, the government should take into consideration that the smart services would change the way people interact with the government and evaluate how to get their transactions done, therefore, it is vital for the government to have the right change management policy in place (Papantoniou et al., 2001).

4.7.8.4   CHANGE THAT DOES NOT LEAD TO MISALIGNMENT

Experts mentioned that the side effects of the changes are often hard to predict, and if happened it would result in misalignment within the organization itself and also with others. For example, a change in the tariff policy in the telecommunication company should be done in a homogenous way to those principles of the TRA in offering the service to all citizens and residents equally. However, the change of moving towards smart services should take into consideration such possibilities of misalignment.

(E3) stated *"all service departments in the country should introduce a consistent and integrated strategic plan to move towards the smart application. This can be done through the preparation of a study that is concerned with the working environment, including the senior administration of every institution to supervise it."* On the other hand, the expert advocated that this should include all levels of management *"the top leadership, the middle and the executive departments of the institution".*

4.7.8.5   CUSTOMIZATION TO EACH CASE

The management of change should take into account the particular nature of the involved parties, their status of being equipped with the necessary tools for that change including the human resources the cultures of adapting to changes and how speedy this is expected to be.

In this respect, (E3) emphasized by saying *"there is a need to study the spirit of the environment of the institutions and those working in the service delivery, as a part of the strategic plan of enacting the change".*

4.8   SUMMARY

This chapter included the findings from the second study of this thesis, focusing on the views of the experts in smart services regarding their application in the UAE context.

The questions were categorized in three different areas (seen in Figure 4.2), namely regarding the customers interaction and involvement, the government authorities and employees and the smart services design. The interviews were conducted in person and lasted around 50 minutes.

The responses provided by the experts focused on eight basic themes: i) public awareness and education, ii) motivating users, iii) service design iv) adoption and enactment policy, v) telecommunication companies' role, vi) staff development and training, vii) business agents and brokers, and viii) change management strategy. These opinions were analysed qualitatively and all the proposed solutions regarding the smart services were noted above and discussed.

5. CHAPTER 5: CULTURE-AWARE MOTIVATION IN UAE

This chapter will explore the suitability and efficiency of several motivational techniques with regards to the UAE example. Also it will investigate how these models can be employed in the design of smart services. This chapter is based on the acclaimed motivation and persuasion model of Cialdini (Cialdini, 2009). The aim of the study is to observe how the UAE nationals perceive this model and its effect. This will then be used to reform and ameliorate the design of smart services by adding the missing motivational factors making it more persuasive (Fogg, 2003). Nevertheless, motivation and persuasion are affected by both cultural and social factors and hence the decision to investigate the diverse community of UAE locals.

As a matter of fact, the choice of Cialdini's six principle of influence was encouraged by their representative nature. The principles were also used in various domains, which are highly related in nature to smart services. This includes but not limited to marketing and loyalty as well as public behaviour. For example, the use of social proof to encourage users to take public transport. On the other and, the representative natures of Cialdini's principles cover the various persuasive techniques such as tunnelling, conditioning, self-monitoring and surveillance. Hence, while the interviews and the study are centred on Ciladini's principles, yet the findings will be applicable to a wide range of persuasive techniques. For illustration, a leader board could relate to scarcity and also to social proof. As a result, the findings about scarcity and social proof can be propagated to leader board as a persuasive technique.

5.1 RESEARCH METHOD

In order to achieve the aim of this chapter, a mixed method approach has been followed (Creswell 2014). For the first phase, we conducted a series of one to one interviews with a number of experts in relevant domains to the objective of this thesis in order to understand how the UAE nationals react to and perceive the current persuasive techniques. The experts' domains and expertise include different areas where motivation is needed such as:

- Marketing
- Customer services
- Banking services promotion
- Telecom services promotion

In the second phase, it was essential to verify the collected findings through a quantitative study, which involved users from the UAE who completed a survey. Thus, the design took the sequential exploratory shape (Figure 5-1):
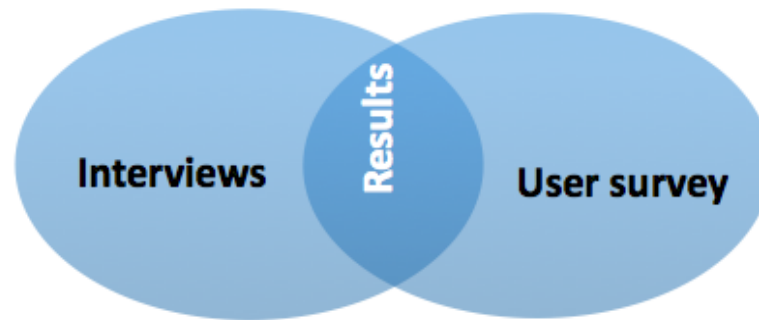
In actuality, a mixed method approach was chosen to answer the question of this chapter. Nevertheless, this chapter is essential for the thesis as it addresses the core issue of it, i.e. the motivation and its impact on the UAE socio-cultural framework. Hence, the researcher aimed to put together different data sources and maximize participation. However, as it is expensive to do that in classical methods separately, the choice of mixed methods puts together the strengths of both quantitative and qualitative approaches and enables the triangulation of these sources. In other words, it is an optimized research method that enables the exploitation of various research methods, data sources and analysis style.

Additionally, the method take an exploratory sequential style and start with qualitative phase through a set of interviews with domain experts who will help the identification of recommendations and issues in relation to the persuasion and motivation facilitated by information technology when applied to smart services in the UAE. The results of the analysis will then be transformed to a survey where the questions to ordinary residents would confirm the expert's views or add to them from the public perspective. The reason to do that is mainly due to the nature of the questions that has an intense human factor. In other words, expert opinion would not need confirmation and enhancements if the subject matter were of an objective nature, e.g. about technology or certain products. However, in this study the subject is motivation and would be necessary to double-check the statements made by experts through the public consultation. In addition, the questions to the experts were about the feasibility of motivation if applied through technology, and therefore this implies some degree of speculation, as the paradigm is futuristic. This is yet another reason to investigate furthers the smart services users' opinion.

Unsurprisingly, the data collected through the qualitative phase, the experts' interviews, were content analysed according to the six principles of influence of Cialdini. Moreover, the content analysis was calibrated after a few iteration of categorization. The categorization aimed to

reduce both overlap, i.e. having categories about similar or largely similar essence, and also fine-grained details, i.e. going to unmanageable enumeration of issues and recommendations which make it hard for the practitioner to adopt and comprehend. The research went through few iteration reading the data and categorizing as well as consultation with peer researchers, PhD students in the same research group, with the aim of reaching a level of grouping of the categories in such a way that the overlap is reduced, and the level of granularity is understandable and reasonably manageable without a proliferation of categories. In actuality, the use of Cialdini's principles helped that aim directly, as they are distinctive from each other to a large extent.

In actuality, the analysis of the survey data was again meant to distinguish areas where the public agree and disagree with the statement made by the experts. A comment section appended each of the questions, so that the users could state their views. Yet, the analysis of the survey questions was a descriptive analysis as the purpose was just to assess the degree of agreements. On the other hand, the analysis of the comments was needed mainly when the participants disagreed with the statements. Additionally, the researcher did a content analysis of these comments that was based on two dimensions.

▪ First, the analysis was concerned whether the disagreement is substantial and relates to the statements in essence or not.

▪ Second, an analysis to testify whether the disagreement was only contextual, i.e. applies in certain cases and situations.

Nevertheless, the analysis in both cases followed yet again a categorization technique while the contexts categories were grouped and the cases were also categorized and explained. In fact, in such a kind of study, there is no absolute right and wrong answer, accordingly, the researcher chose to report the views and link them to smart services and persuasive technology but without interpreting them or trying to add personal views. Moreover, the vast majority of disagreements were about the context rather than the statement itself. Hence, most of the findings were refinements and contextualization of the experts' statements.

5.1.1   QUALITATIVE PHASE: EXPERTS INTERVIEWS

This section will explain the settings, the analysis and the findings of the first phase of the study which is the qualitative phase and which involved interviewing experts. The purpose of this

phase is to explore how the UAE locals would react to different persuasive mechanisms in case of the introduction and implementation of new styles in the future smart services.

This study has two main research questions

1. **Question 1:** How would the UAE nationals react and perceive motivational elements to increase the use of an offered service?
2. **Question 2:** What are the contextual factors that affect the acceptability of those elements?

Additionally, the findings based on the above two research questions will help the researcher to extract a set of suitable practice solutions and designs in order to embed persuasion techniques in the design of smart services.

The interview questions focused on the six elements of Cialdini's motivation and persuasion model (Cialdini, 2009). Additionally, this study was conducted in order to increase the use of smart services in UAE with special focus on those related to e-government and mobile government services. The solution we are developing is based on augmenting the services with a motivational layer not only so they can become more usable but also more persuasive to the users. Furthermore, some of these persuasive techniques would also be implemented using social networking techniques. This includes sharing online ratings and experiences with friends after using a desired service in the form of:

- Comparing and sharing with other peers in a certain community similar interests on the coverage of services.
- Following the tweets of public figures about a service.
- Following the tweets of public authorities, online opinions about a service, as well as special promotions.

On the other hand, the cultural background of users has an influence on their acceptance of persuasive techniques and especially those implemented within social networking environment. Therefore, the interview is designed to investigate:

- The potential success of such persuasive techniques
- The concerns related to the several possible techniques
- The ways to keep sustainable success for UAE users

▪ Identification of possible desired techniques to be used

The Interview will investigate the design of such techniques following Cialdini's six principles as detailed in Figure 5-2. Examples of the interview questions and their links to the six principles of the Cialdini's model are analysed in further detail below::
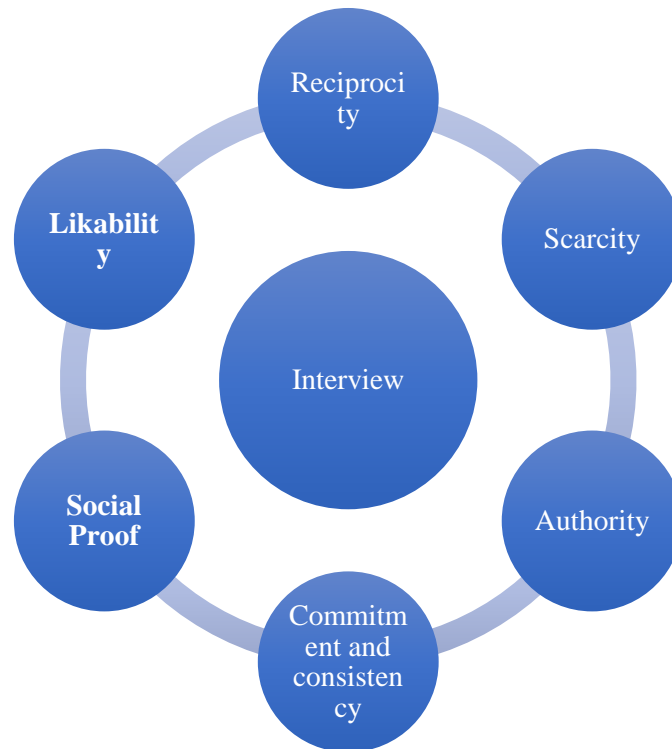
FIGURE 5-2 INTERVIEW AREAS OF INTEREST

- **Reciprocity**: For example "to have a free sample by registering your interest and handing over your contact details, just give us your email."

- **Scarcity**: For example "Only 3 seats left. Call again if line is busy". This will persuade the user to try to avoid losing a chance of a good offer.

- **Authority**: For example "the product is used in my hospital for years and I am happy with it. Dr Whalen, PhD, CEO". Users will trust the review of others, especially if they are recognised as a person of importance (Aghamdi & Beloff, 2016), about certain service or product and will be encouraged to try the experience.

- **Commitment and consistency**: For example "you sent us an email and indicated your interest in our product; would you like to tell us more about your latest experience with it?" That is, when people commit to a certain choice, they tend to be consistent and which is on its own motivating.

- **Social Proof**: For example "100,000 bought this book in the last month". "95% of the visitors of this hotel reused towels at least once during their stay". So, users will

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perceive the service as widely acceptable and will be motivated to try the offered service.

- **Likability**: For example "This sales man dresses and looks like me, I would listen to what he says" or "This sales staff member look attractive and dresses well, I will listen to what they say". As a result of being served by an experienced staff member, users will tend to trust more the communicated information.

The following interview questions were asked:

1. Please explain to us a bit about your career and area of expertise. In particular, we would like to know your job title and duties, your years of experience in the field, your knowledge on UAE's people attitude and perception to persuasive techniques (e.g. loyalty cards, signing up and getting 3 months free, first 100 customers will get free warrantee, etc.).

2. What do you think people of the UAE value more when it comes to receiving marketing messages in terms of the most efficient channel to be used, with potential outcome (electronic, in person, printed, etc.). What would be the essential elements that they would like to see and those they would not?

3. With regards to **Reciprocity**, what are your thoughts of the technique? When do you think it would work and with which kind of users and product/service would it be best served by such a method? What are the concerns we need to be aware of when applying that technique? Could you classify users into types for their attitude towards such a technique?

4. With regards to **Scarcity**, what are your thoughts of the technique? When do you think it would work and with which kind of users and product/service? What are the concerns we need to be aware of when applying it? Could you classify users into types for their attitude towards such a technique?

5. With regards to **Authority**, what are your thoughts of the technique? When do you think it would work and with which kind of users and product/service? What are the concerns we need to be aware of when applying it? Could you classify users into types for their attitude towards such a technique?

6. With regards to **Commitment and Consistency**, what are your thoughts of the technique? When do you think it would work and with which kind of users and

product/service? What are the concerns we need to be aware of when applying it? Could you classify users into types for their attitude towards such a technique?

7. With regards to **Social Proof**, what are your thoughts of the technique? When do you think it would work and with which kind of users and product/service? What are the concerns we need to be aware of when applying it? Could you classify users into types for their attitude towards such a technique?

8. With regards to **Likability**, what are your thoughts of the technique? When do you think it would work and with which kind of users and product/service? What are the concerns we need to be aware of when applying it? Could you classify users into types for their attitude towards such a technique?

9. Is there anything you would like to add on the nature of the citizens of the in respect to the cultural aspect when it comes to influence and persuasion techniques?

10. Would you accept that we come back to you if we need further explanation?

5.1.1.3   *INTERVIEW SET-UP AND PROCEDURE*

Four of the interviews took place via video conferencing after sending all the information and consent form documents in advance. Three of the interviews were conducted in person. In general, all consent forms were sent to the participants a good time in advance via email, in order to offer them time to understand the scope of the interview.. Before the beginning of the interview, data protection, anonymity and privacy were discussed again with all the participants and they were asked for their permission to audio record and transcribe the interview for the purpose of the research. The interview protocol was reviewed and approved by the ethics panel of Bournemouth University

The elapsed time for different interviews varies, however the average time that an interview lasted was 45 minutes, with a minimum of 31 min and a maximum of 50 min. A total of 315 minutes of audio t were collected and transcribed.

5.1.1.4   *INTERVIEW ANALYSIS*

The four interviews that were conducted via video conferencing were audio recorded and transcribed word-by-word after the interview. The researcher took notes of the three other interviews that were conducted in person to accommodate the preferences of the interviewees. A preliminary content analysis was performed for each interview to assess the sufficiency of collected data and to estimate whether further interviews were needed. Subsequently, a detailed

analysis was conducted to answer the three research questions of the study. Additionally, in case of doubts, the researcher contacted once more the interviewees to collect any further clarifications on any unclear points of their answers. Finally, the researcher went back to the literature and also to the available documents in the varied organisations of the interviewees in order to thoroughly understand the origins of the opinions of the participants.

5.1.1.5 EXPERTS SELECTION AND PROFILES

The selection of experts took into account the diversity of domains and their length of expertise as well as their familiarity in interactions with UAE nationals. The domains included:

- Banking
- Telecommunication
- Ministry of Interior
- Tourism, Marketing
- Customer Service

The experts supervised campaigns and participated actively in promoting various services to the UAE citizens. They also managed teams in direct connection with UAE nationals for a long time. Their experience varied between 7 to 30 years. The backgrounds of the experts will be further analysed below in order to be able to interpret their answers later in the study.

Expert 1: This participant is currently the head of a project which is responsible for growing businesses. She has been in the banking sector since 2002, with almost 13 years of extensive experience in retail banking sales, customer service and banking. Furthermore, during her previous role as head of the service team, she worked on revamping and enabling as well as following up the loan services that were requested by users online, which helped in significantly enhancing customer experience in her company. In addition she is currently working on a project studying the behaviour and beliefs of the UAE nationals in banking services. Consequently, her expertise is still in progress and her expert knowledge is up to date.

Expert 2: A foreign national who has been working in the UAE for the last three decades and he mostly handles customer relation management. He has a senior managerial role and he works on resolving customer issues related to various telecommunication services. Furthermore, he has been interacting heavily with customers in diverse disciplines and various specialties for the last three decades mostly on customer management. Presently, he is leading a team, which is collecting all the feedback of customers' attitude and behaviour while handling customer issues. Thus, he has intensive experience on attitudes and behavioural patterns in the UAE including those related to motivational mechanisms towards different services.

Expert 3: He has been working with one of the biggest banks in the UAE for nine and a half years and he is directing the research department, while supervising all kinds of customer satisfaction services, as well as different types of customer research, such as liquidity research. Additionally, he is also leading the testing research as well as the new campaigns exploratory research. The team is also responsible for generating marketing insights. Nevertheless, his work is related to customer experience, i.e. customer experience research that is related to anonymous shopping and customer satisfaction services. Additionally, he also conducts marketing related research such as brand equity research and market segmentation.

Expert 4: The fourth expert participant is a police officer in the Home Office and an important part of his work requires being in direct interaction and relation with the public including UAE nationals. Moreover, he is also a researcher and is currently investigating the design of smart services offered by the government focusing on the security aspect. Currently, his research and work requires being in direct interaction with the public for both, collecting data and validating results especially from the perspective of security, clarity, availability and understanding of smart services. As a result, he has experience in the motivation that is needed in the UAE, from being a UAE citizen himself and working in direct contact with the smart service design and its acceptance by the public. The fact that he led a team that analysed data with regards to information systems in the state including collecting and analysing the feedback of the public, together with his seven year experience in this domain made him a perfect candidate for this research.

Expert 5: This participant works as a project manager for Dubai Municipality. This expert has many years of experience in different roles. He started his professional career in 2001, namely 15 years of experience in his field. Within this period he encountered many different issues in relation to strategic planning and also direct interaction with the Emirati people, as well as foreigners dealing with the Municipality in Dubai. As a result, the experience of this participant will enrich the research areas and will offer ideas in many different topics in favour to the current research.

Expert 6: A female marketing manager is the sixth expert who was interviewed. She is working for a very luxurious hotel in the UAE and naturally she is dealing on a daily basis with citizens of the UAE who are concerned with luxury and top quality services. On the other hand, she is working in this job for 5 years, making it a very rich experience and directly linked to the area of the current research, in terms of the services provided. Nevertheless, she also has experience

in the sales field. This fact will also offer an insight in the methods used to persuade the UAE citizens with the use of different services and how to motivate and encourage the public while maintaining high customer satisfaction.

Expert 7: Expert number seven has 18 years of experience in the service industry. At first, she worked for six years in the customer care department in one of the biggest banks in the UAE, followed by a year as a bank director, which gave her the chance to understand and deal with all different aspects involved in service delivery. Nevertheless, she moved to work for Dubai public prosecution six years ago where she is dealing on a daily basis with service delivery matters and customer satisfaction. Additionally, she is currently a member of a team, which is responsible for improving the overall service in the Dubai public prosecution. Therefore, the rich experience of the above expert is very helpful to the area of the current research.

Expert 8: Expert number eight is highly inked to the current research. He started his career in the tourism industry, as a staff member of the tourism department in the Home Office. Currently, he is still working for the Home Office but in the department of immigration customer care, which is dealing with both foreigners and UAE national. As a matter of fact, this expert started his career with the Home Office in 2003, namely 13 years of experience. This expert is fully aware of smart services offered in the UAE and is highly motivated to help and provide his own experience and knowledge to this research and help in the potential development of the smart services.

Expert 9: Together with the previous experts, an interview customer care director at one of the mobile phone operators in the UAE accepted to be interviewed. The reason we have chosen this person is their relevancy and involvement in the smart services area. Expert number nine enjoys 20 years of experience locally and internationally. He started his career in the customer care department in one of the mobile phone operators and he developed his career until he was appointed as the head of the department after almost 9 years of work. Consequently, he moved to another mobile operator and he was appointed director of customer care. In fact, expert number nine has both experience in international and local companies, making his opinion valuable for this study. The expert is fully aware in the smart services solutions offered in the UAE and is informed about the challenges that the users face, in terms of mobile phone network involvement such as coverage, accessibility and cost of service.

Expert 10: The last expert we interviewed is working as a customer care representative in one of the mobile operators in the UAE. In fact, we wanted to interview him in order to have a

different point of view compared to the senior managers. He is dealing with customers directly on a daily basis either over the phone, or face to face not as a manager. However, he is totally aware of the services offered and well trained in all of them. The idea behind this choice was clearly to collect the opinions of people who are in direct connection with the customers on a daily basis. Indeed he was able to provide a great insight in the attitude of users towards smart services. As part of his job, he is handling customer complaints every day and is able to spot what areas are problematic and what areas are acclaimed by the users.

5.1.2   RESEARCH METHOD: QUANTITATIVE PHASE

In order to confirm and enhance the findings obtained from the experts in the first phase of this study, a second study involving users was conducted. Experts provided various views on how each of Cialdini's principles could be perceived and implemented in relation to smart services and society in the UAE. The user's view would still be needed to confirm that and also to provide insight into their perspectives. The study design for the experts' study was qualitative and interviews were used. The user's study is designed using a quantitative style and is based on a survey that is itself built on the findings of the expert interviews. Hence, a mixed method approach is used.

5.1.2.1   SURVEY DESIGN

The survey questions were based on the findings of the expert interview analysis. The findings in relation to each of the six principles of Cialdini were translated into a question. The questions asked users to indicate their level of agreement with the statement on a 5 point Likert scale. The questions of the survey were not direct quotes from the findings of the interviews but rather were written in a way that would be more understandable to a public audience. In other words, the questions were based on some daily life events that they may encounter as part of the marketing or promotion of smart services and other services. These examples are other forms of the findings of the interview. To allow further insight from the users and enable them to add their comments on the questions themselves (e.g. if they found the question confusing), a space for additional comments was provided after each question. Demographic questions about their age, education, current occupation, and online media use were asked at the beginning.

5.1.2.2   DATA COLLECTION

The survey was available in both Arabic and English languages. The participants were approached in person because of the lengthy nature of the questionnaire and the need to give

background information about the research and its purpose. In addition, the researcher recognises the level of complexity in some of the questions and, hence, in-person completion of the questionnaire in the presence of the researcher was adopted. The researcher walked each participant through the questions one by one in order to make sure they understood it and this also allowed them to ask questions. The participants were approached in a number of organisations in Abu Dhabi, Dubai and Sharjah and they were all local citizens. This is because the research is focused on the UAE socio-cultural framework in particular. A total of 30 participants completed the survey. The questionnaire can be found in Appendix I.

It is worth pointing out that the nature of this survey and the way it was conducted make it closer to a structured interview. Hence, the relatively low number of participants (30) can be justified. The researcher provided one-to-one support to each participant when completing the survey. The survey is quite lengthy and this was good practice to ensure that the questions were well understood and also completed appropriately.

Some of the findings of the expert interviews were debatable where the experts indicated the need for context awareness. To allow for two different opinions to be clearly expressed, these kinds of findings were divided into two opposite statements and hence questions; e.g. verifying experience in relation to the reciprocity principle was asked in two different ways: "*I am not interested in special offers and deals that do not offer me a direct financial benefit or savings, even if the provider offers interesting and exciting benefits;*" and "*I am happy to engage with service/goods providers who offer meaningful deals, even if it does not involve a direct financial benefit*". For such division we would expect close division in agreement and disagreement, thereby supporting the need to contextualise the finding and also to be aware of different preferences. For such questions it is expected to have different views and hence some more refinements to be thought. Users' comments were analysed for such questions.

In addition, some other findings were difficult to assign to only one question and they were divided into sub-statements where each of these sub-statements correlated to one survey question. For example, for the findings in relation to the management of change in commitment and consistency, two questions were asked: "*Where I have committed to a service, I expect consistency from the service provider, in exchange for my loyalty*" and "*If consistency is not provided, I shall no longer feel that I owe the service provider any loyalty – and may cease to use the service*".

The demographics of the participants are shown in Figures 5-3, 5-4, 5-5 and 5-6.
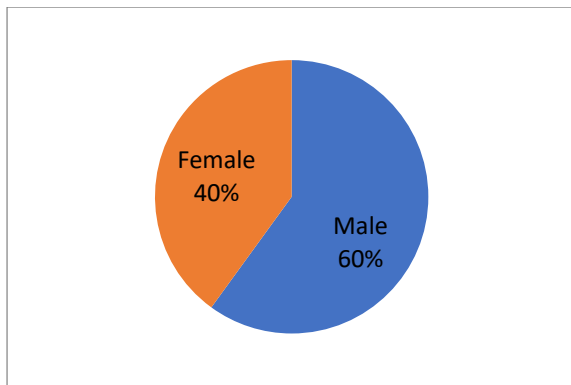
FIGURE 5-3 RESPONDENTS DEMOGRAPHICS: GENDER
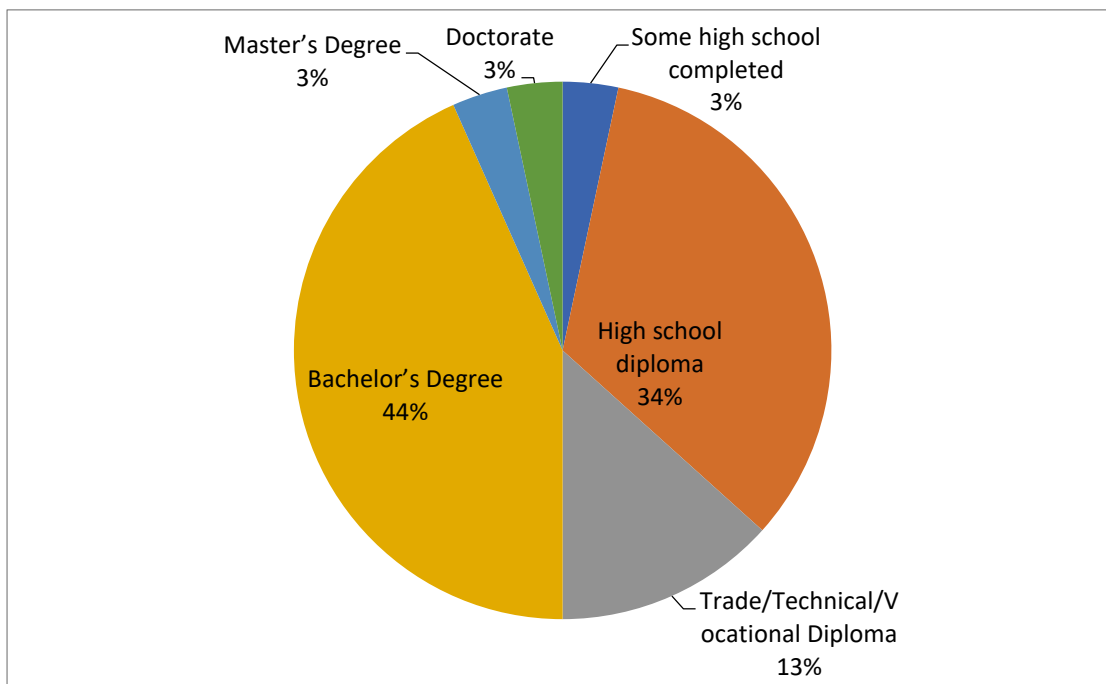
FIGURE 5-4 RESPONDENTS DEMOGRAPHICS: EDUCATION
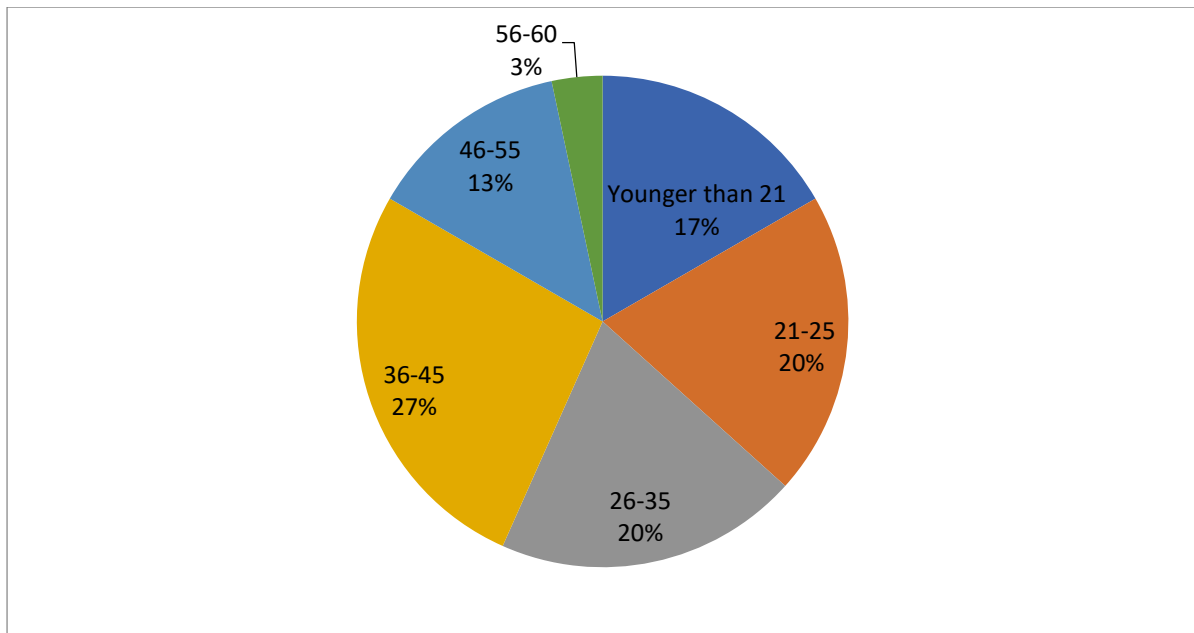
FIGURE 5-5 RESPONDENTS DEMOGRAPHICS - AGE
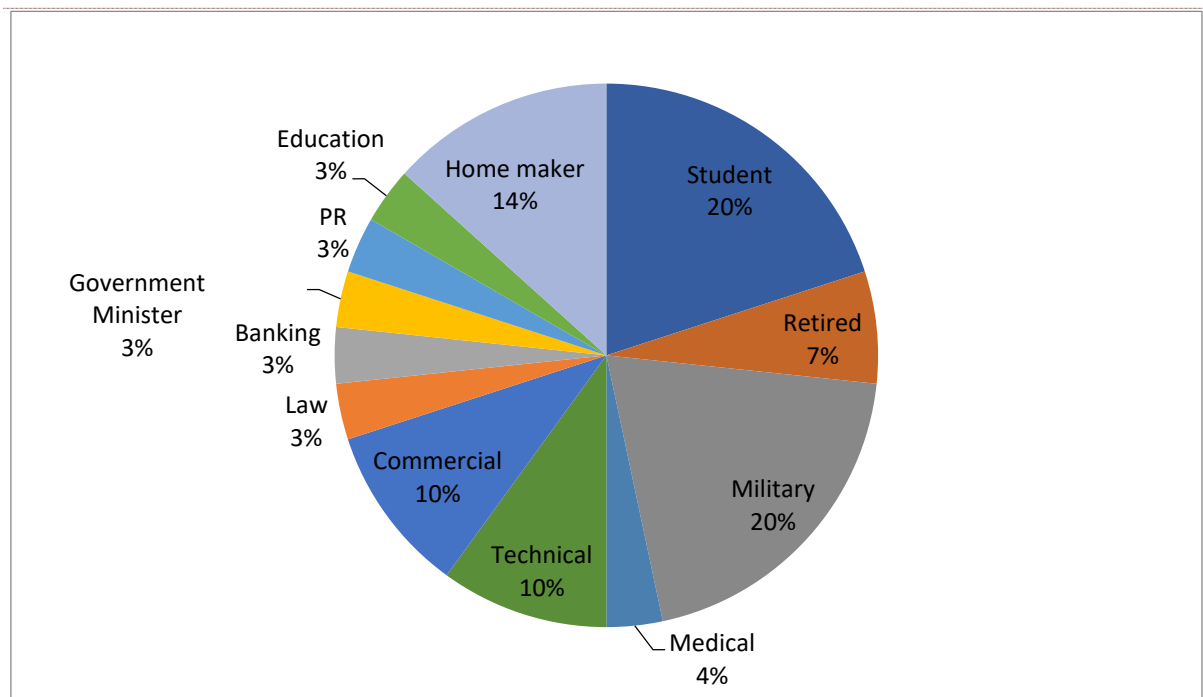
FIGURE 5-6 RESPONDENT DEMOGRAPHICS - OCCUPATION

5.2 RESEARCH FINDINGS: EXPERT INTERVIEWS

In the following part a detailed description of the findings will be presented. This will be centred on the six principles of the motivation techniques proposed by Cialdini (Cialdini, 2009). In the analysis, the goal is to form an integrated framework for motivation and

persuasion for the UAE citizens in accordance to the smart services offered to the public by the government.

5.2.1 GENERAL ATTITUDE

This part of the interview findings is mainly concerned with the general aspects of the users, the used motivation techniques and its different effect of different user groups. Additionally, within this part, the generations' differences, the gender and the education backgrounds are discussed, as well as communication tools and persuasion techniques. Furthermore, the accessibility to all users is discussed along with its effect on different users, while motivation is analysed from different aspects such:

- False motivation
- Contradictory motivation
- Eye catching motivation
- Refreshing motivation
- Exaggerating motivation

Nevertheless, this part is also concerned with the pricing issues and its effects on the UAE nationals, as well as trust in the relationship with the government. Also rewarding techniques are analysed which are recognised as a value from the UAE nationals and a motivating trigger to use the services. The following is an explanation of the involved 14 elements (see Figure 5-7) of the general attitude based on the interview findings:
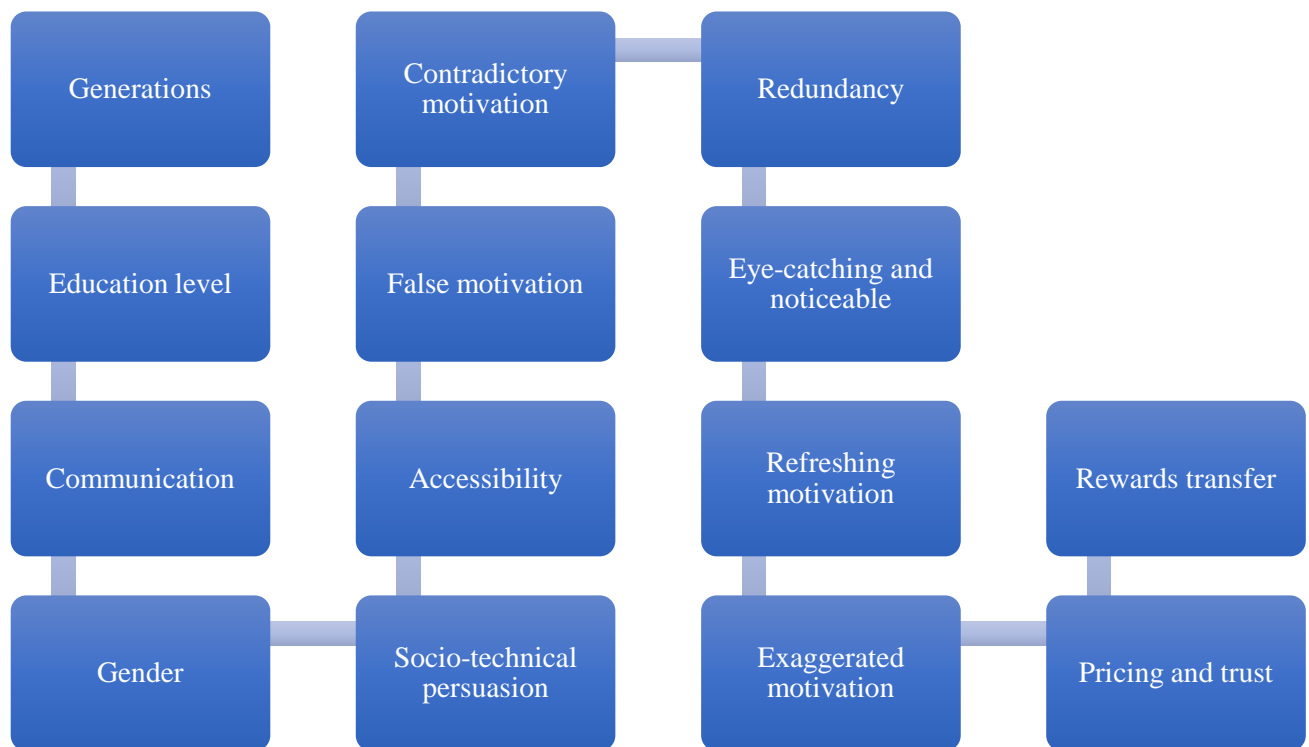
FIGURE 5-7 GENERAL OBSERVATIONS OF THE INTERVIEWS FINDINGS

- **Generations**: It seems that different generations would value rewards in a different approach (De Run & Ting, 2014). One expert says that most customers will think about the rewards and communications channels differently. While the elderly users may find the social recognition, e.g. being influenced over social media, not valuable, the youth may find it exciting. "There are big differences between our generations, our parent's generation in terms of mode of communication, I would say, the education level and the lifestyle. So it is very important in the first place to know which generation we are targeting"

- **Educational level**: The education level of a person would influence how they value things as well. For example, telling how "the use of smart services would help the economy and accelerate the business processes" may not be obvious to all, and it could be even seen as discouraging for some of the users with different backgrounds.

- **Communication**: In person, online and in person communication styles seem to have a different effect. This also inter-relates to the age and other personal traits. This could relate to trust reasons that are various from user to another, but also for the need to see how service works and the reward in a tangible style.

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- **Gender**: Recent research highlighted that there is a strong link between gender, motivation approaches and expected reactions (Judith et al., 2006). Communication also inter-relates with the gender of the user and the targeted segments, and there are cultural preferences and nuances that a persuasive mechanism whether online or in-person should take into consideration. Additionally, an expert argued about the gender by stating: "not only should it consider deciding the way of communication, but also the rewarding strategy". For example, females in the UAE would be slightly less willing regarding social media recognition compared to males. This has to do with the culture of valuing privacy and avoiding public profiles.

- **Socio-technical persuasion:** Motivation campaigns, e.g. through activities co-located within major festivals and events are still effective for the UAE people. Sometimes, the problem of any marketing efforts is to attract people to the campaigns itself. One expert mentioned that if a celebrity is endorsing the campaign or an influencer public figure is involved in the activities, these results in high attendance. Moreover, at the campaign site, persuasive techniques could be used, such as free samples, which is a part of the reciprocity technique for example. However, it does seem that the UAE nationals would appreciate an in-person communication as a first step before accepting and trusting online offers. This is especially true for offers made by commercial and unknown organizations. In the case of government service, the level of trust would minimize that need but would not replace it.

- **Accessibility**: Like smart services, using persuasive technology might not be accessible to all citizens. This could be due to technical reasons, like lack of Internet accessibility. However, the inability to use advanced features of smart phones and struggling to understand persuasive techniques might lead to the rejection of all the smart services together based on the users' intention. One of the experts focus on this aspect by saying: "they would not be more attracted to the services, because they don't know how to use the available services efficiently". Thus accessibility is both technical and cognitive.

- **False motivation**: The increase in the usage of smart services might not be due to the increased motivation level of users. Nevertheless, the smart services introduce a new type of brokers who will do that on behalf of the customers remotely, since the peer pressure and social influence seems to be a possibility here. Those who are not confident in using technology systems, as well as fearing to lose something valuable if they do not use smart services, may drive them to "get someone else to do it on their

behalf, however, it is not necessary that they will adopt it. Not all of them know the technology." Thus, a design of motivation should not exaggerate showing the benefits of the use of smart services to the point where they put pressure on the users. As a result, the design should avoid false motivation in order to help in planning and achieving strategies efficiently.

- **Contradictory motivation**: While the motivation for a specific segment of the society, mostly the youth, can be done online using various contemporary persuasive technology, for other older generations, the traditional technique of "a picture of a famous person in the road, similar to the traditional ads we see in the roads or in the entrance of an organization" would be more effective in motivating and triggering a certain behaviour. While this is natural and could be expected, there should be focus on the type of users that are to be taken into consideration. For example, smart services might be somehow compromised for the younger users if traditional means are used to motivate them. As a result, a general motivational technique should be applied to appeal to all users regardless of their ages.

- **Redundancy:** A recent trend is that people avoid reading or paying attention to motivational material. The feeling that there will always be an option is especially true in UAE where the number of service providers, of all kinds, is enormous and "people would not find time to read all publicity material including that online".

- **Eye-catching and noticeable:** This stems from the previous point. The challenge in getting a persuasive technique to work exists in making it "eye-catching and being noticeable" in the first place.

- **Refreshing motivation:** The lifetime of persuasive techniques might be limited. Users may lose interest after a while and the design should have an update plan. One of the experts said: "We have to refresh people minds and behaviour by revisiting, updating and remaking certain techniques, so that we ensure that the people won't forget the message". This applies for offers and services for an "unlimited period of time" where people may not even realize that these services are still being provided.

- **Exaggerated motivation:** These motivational techniques might seem that they overly try to attract people to use a service whereas in reality this is for their own benefit. Especially with the rapid increase of services and offers of smart services in the UAE, users should be informed about their benefits and utility. The borderline between

commercial persuasiveness and non-profit motivation is often unclear and a smart design should consider this grey area.

- **Pricing is secondary to trust and maintaining relationship:** It seems that pricing, given the relatively high incomes of the UAE nationals, is not a main issue unless the offer is significantly costly, which would not be the case for smart services. One expert mentioned that: "for them pricing is not the most important factor. It's basically the years of relationship that they have with the bank that is more important". However, if the discount or the financial offer is coming from a trusted service provider with whom they have already built a link, then they may view that provider in a positive manner as a sign of respect.

- **Rewards transfer:** Few experts indicated that instead of directing the reward, especially a monetary one, to the user themselves, they might prefer that it goes to charities represented for example by non-profit organizations. In fact, this offers the users the chance to provide social support and yield further appreciation to the services and provider. An example could be that 10% of the subscription fees go to charities. The choice of these charities should take into account the social and cultural values and the background of the UAE nationals. For example, a charity for the elderly could be highly valued in general, while citizens due to certain social norms may not appreciate in the same way a charity for addictions.

5.2.2   RECIPROCITY PRINCIPLE

Reciprocity relates to a positive good, which is the expected behaviour when receiving something at first from the provider. In other words, this means the motivation is caused by a return of certain action or behaviour change, as a reaction to a previous behaviour. In this part, we will discuss all the highlighted aspects relevant to such motivation techniques, which were discussed with the different experts. As a matter of fact, there are 12 main challenges when using Reciprocity as a method of motivating the Emirati citizens. Figure 5-8 clarifies the 12 aspects which are analysed in detail below:
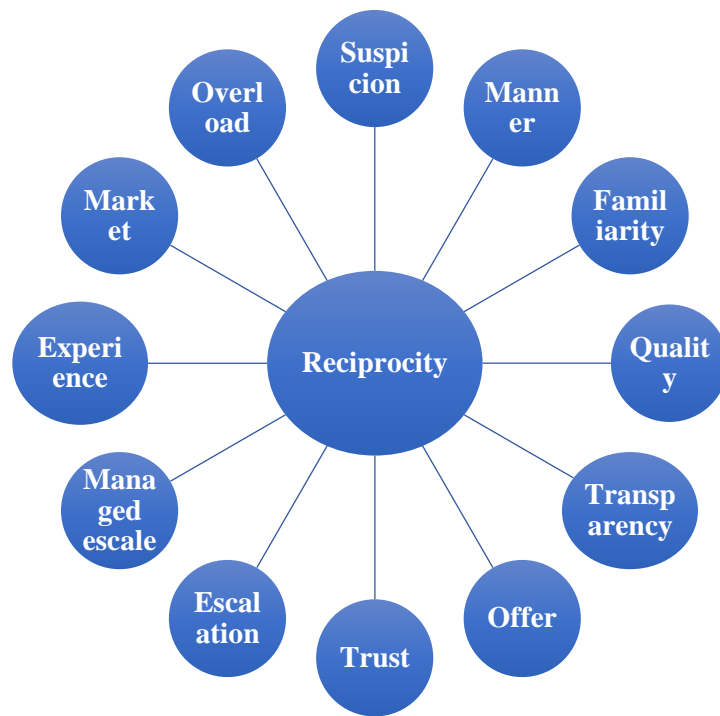
FIGURE 5-8 RECIPROCITY ELEMENTS FROM THE INTERVIEWS

- **Suspicion:** "Mostly customers will look at such offers with suspicion because it is flooded; the market is flooded with so many of them". One of the experts referred to this part by stating: "Yes, the first concern is, like I said earlier, what the customers will have, customers will look at it with a little suspicion if too many offers are given to them. So you have to know how you present it." Therefore, it seems that the customers' first impression might not be appreciating the available offers, but they could intend to deal with it with suspicion as it might seem too good to be true. However the provider needs to be careful and to take into consideration such a fact when providing similar offers to the end user.

- **Lack of manner:** Lack of manner can be explained with the following statement: "When you tell some locals that you will get this discount if you do this and that". One expert argued that: "I suppose it will be seen as lack of manner. It may be seen as bargaining and the UAE nationals do not generally like being in such a situation". For that reason, the provider needs to address the offers wisely in order to avoid any negative and unexpected reaction from users, as UAE citizens seem to dislike bargaining or getting better services as a result of certain offers or negotiation efforts.

- **Familiarity and reciprocity:** It was argued by an expert that: "When you get something very popular, here you mentioned about loyalty cards, it's very popular. So

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this reciprocity is definitely going to work, otherwise people will have to think of the offer itself and this is time consuming which may discourage the users". In other words, the mental cost of understanding the intention of the offer should be minimal in order to avoid the users being alarmed.

- **Quality first:** Locals would like to build trust and receive quality services as essential steps while processing a reciprocity offer. Reciprocity is subconsciously associated with doubts and an offer should be preceded by ensuring the quality of service otherwise it will not be considered. Also if lack of quality or trust is noticed while a user processes an offer then the user will intend to neglect the offer. This negative intention might also result in the providers' bad reputation if this is discussed between users.

- **The transparency and predictability of the offer:** Reciprocity also relates to what people value as a return. "For example, I was listening to a radio advertisement just now and someone was saying that he got 100,000 points and was wondering what he will get. The reporter or the sales man answered that the caller will get a beautiful plastic frame with their company logo". Clearly the caller was very upset as this even doubles the ads and tries to maximize benefit with publicizing the logo of the company, which is something not very valued by the end user. Accordingly, this is not going to help anyone, in a positive way. Moreover, the quality of offers itself is going to result in negative impact. Thus the transparency of the offer is of high ethical value to the UAE nationals. Finally, the UAE government which provides the smart services should consider transparency in every single phase, as the smart services solution is actually seen as strong factor in increasing transparency and trust between citizens and the government in general. (Colesca, 2009).

- **The quality of the offer:** "Come to my restaurant 10 times and then we'll give you one free meal. This could work but what kind of meal are you going to give? So this has to be precise when you're dealing with a high income population". The UAE nationals' way of living and the wide availability of offers make it necessary that a reciprocity offer specifies precisely the offer and especially for quality attributes, e.g. brand, reputation, etc. In other words, you cannot expect high income users to appreciate something in return as an offer (e.g., free meal), if this return does not match their regular spending or even more. As a result, the users value the offer and adopt a positive perception regarding the provider and the effort toward their satisfaction.

- **Trust in the offer maker:** Reciprocity is a commitment and often not regulated by rules and laws unless the offer is offered on a big scale. For that reason, the customer would initially need to trust the provider in accepting the commitment. Additionally, this trust influences the choice of the provider in the first place. Thus, inspiring trust, demonstrating quality of the product should occur before the reciprocity offer. In general, the UAE nationals value trust and quality and this behaviour has been developed over the last 30 years along the vast economic development (Shihab, 2001). One expert mentioned, "Trust and privacy are prior to the actual value of the offer as they form a basis for any following stage". UAE nationals' value trust and they tend to build long term relations with trusted providers and do not change easily unless the quality decreases significantly". Accordingly, the provider should use all the possible techniques and solutions in order to avoid losing the trust of the public in the offered services.

- **Escalating the offer:** The loyalty of the customers means that their expectations of the reward is developing over time and will become higher; however this has to be pre-planned carefully. As one of the experts said: "Now if you're going to offer a free meal after five visits, and the provider repetitively offers very low quality meals, this will possibly have negative implications." Therefore, the provider needs to make sure that the offer is developing over time, in order to maintain the preference and trust of the customers.

- **Managed scale:** Following the previous point, cultivating expectations is also a concern and might be perceived negatively. During one of the interviews, one expert said: "Yes, the first concern is like I said earlier, whatever the customers have been offered and if too many offers are provided, they will treat them with a little suspicion at first, so you have to know how you present it." Therefore, the idea is not just offering a reward but to make sure it meets the clients' expectations.

- **Exciting and new experience as a reciprocal reward:** As it seems, for the UAE citizens, the monetary reward, especially when it is small, is not a main issue and most of the citizens might not even pay the necessary attention. However, when the reward includes a new experience it may attract and encourage involvement. Therefore, the creativity linked to the reward and how it facilitates them to live a new experience, no matter whether they can afford it easily or not, is the key point in the rewarding aspect. Additionally, the learning process offered to the users seems of interest and not the

discount or the voucher itself. An expert added to this point by saying: "It could be some lessons related to swimming for example, this could be any other experiences like, sky diving and all these things. So I think anything, any kind of discount which is providing them some kind of learning, new learning or new experience will be attractive among the UAE nationals". Nevertheless, it is vital to always keep in mind that motivating users might take different formats, as it could be monetary and non-monetary approaches for some groups of the general population. (Antikainen & Vaataja, 2010).

- **Reciprocity and open market:** It does seem that the design of a good reciprocity offer is a challenging task due to the high volume of offers the UAE citizens are currently receiving. One expert mentioned that: "He does not think reciprocity is going to work properly with the UAE citizens because the market is open". An offer should be unique and perhaps personalized to convince a user to process it". Therefore, this might not seem as the best motivation technique for the UAE; however it could be applied with a great level of creativity and personalization.

- **Reciprocity and information overload:** Recently, reciprocity seems to be the most used world technique. One of the experts argued that: "This causes citizens to be overwhelmed with many offers every day". As a result, it is possible to face a sort of information overload. The good thing about smart services is that they can sense the user context, e.g. current location and activity online; hence they customize an offer so it fits the current situation of the user and makes them more intriguing.

5.2.3   SCARCITY PRINCIPLE

Scarcity motivates people by placing a limitation on a specific offer and as a result creating the need to accept it in a speedy manner before someone else does. It could take different forms and be based on performance rather than time. For example, only top performers or users of a service will get the discounted price. It could be even lottery based, such as 2% of the customers will receive an offer randomly. Additionally, it is argued that the degree of influence of the scarcity concept could vary from consumer to another, depending on many factors such as the monetary and quality values and how it is perceived by the targeted users (Suri et al., 2007).

Nevertheless, in this part the scarcity challenges mentioned by the experts during the interviews will be explained. Additionally, six major aspects regarding scarcity are observed (Figure 5-9) and are highly vital if the government decides to utilize these techniques.

FIGURE 5-9 SCARCITY MAIN CHALLENGES

- **Competition and insult:** If scarcity is presented in a certain style it may lead to a negative reaction by the UAE nationals. Nevertheless, putting them in a competition to get an offer might result in rejecting the product itself, as this may seem like treating customers as competitors against each other. One expert stated that: "in my experience, this will not be such a successful technique in the Emirates marketplace because customers have clear choices in choosing similar products or services. If you're applying this technique, you have to be very careful on how to not offend customers".

- **Scarcity in social recognition:** It seems that social impact is one of the most powerful motivational techniques and it relates to scarcity in the sense that only a few people would be socially recognized for their contribution, e.g. in using a service in a rightful style and encouraging others to do the same. An expert argued by saying: "For example, the users who succeed to invite more than ten other users to use the service will be sent a gift and will appear in the leader board of the service providers as influential". Therefore, the influence might be wide and could include the majority of users, however there is a small percentage of benefits.

- **Scarcity and uniqueness:** The items which are scarce need to be unique to attract the users. That means the item might be of a limited economic value but not easily obtainable by someone. As a result this could become motivating to users. It was argued by an expert that: "For example, a bank in the UAE has adopted a very successful marketing strategy by offering T-shirts of a famous football team with a brand logo so

that that only those who deal with the bank and use certain services will obtain it". In other words, the provider needs to be assures of the good value of the item, as well as the uniqueness.

- **Scarcity is secondary:** Scarcity seems not to be a very popular financial motivational technique (e.g., a discount). One of the experts mentioned that: "This is for a limited period, buy three, and get one free". People don't really bother to do that, what is important is the value and the need". This seems that scarcity is just a secondary motivation technique and could be used as a helping factor.

- **Scarcity in limited social recognition:** It also seems that scarcity, in the sense of recognizing only a limited number of people or achievers may work. One of the experts referred to the importance of this factor by stating that: "hiring a famous person is a very effective way of motivating citizens, especially if the competition is organized or endorsed by a known celebrity or an influential person". For example, those who use smart services and invite the top 10 highest numbers of people would get a meeting with that celebrity. Again, this utilizes the third and following persuasive technique, authority.

- **Scarcity and negativity:** People would view scarcity as a way to dispose of a product and hence if this is designed badly, it may have negative consequences. It seems that nationals of the UAE would get a bit suspicious of a scarcity type of offer such as: "few items are left" as this indicates that the product is not good enough to be fully sold. One of the experts confirmed that and stated that this is especially true given the open market in the UAE and the many techniques already used, as well as the many diverse cultures involved in marketing and selling, including telesales.

5.2.4 AUTHORITY PRINCIPLE

Authority relates to the influence of celebrities and public figures on the use of a service. An opinion or feedback by a famous person might encourage users to personally experience the targeted service. Nevertheless, authority is a vital motivational technique also observed from the interviews, and it could help motivate the UAE citizens on a large scale. However, experts

highlighted some challenges that can be seen in Figure 5-10 with proposed provisions analysed and attached below:
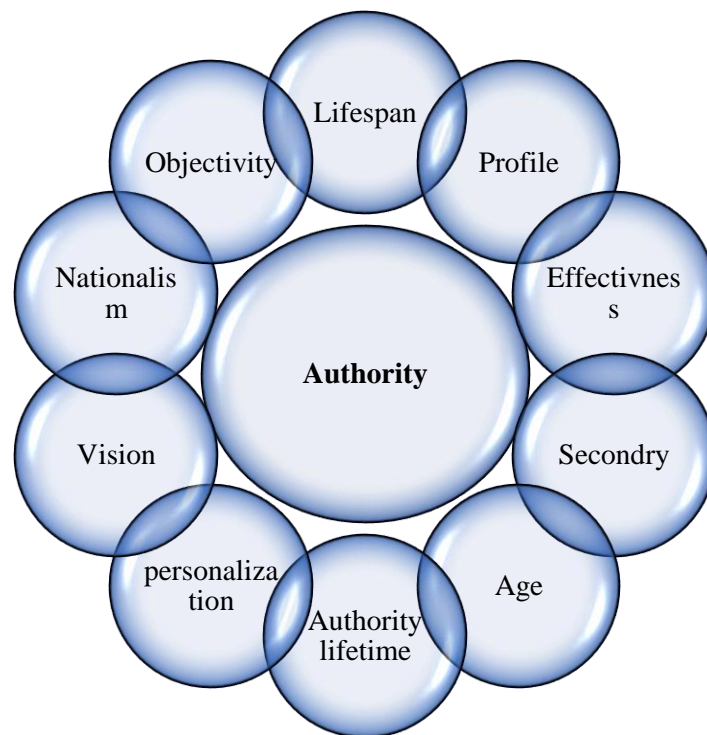
FIGURE 5-10 AUTHORITY MAIN CHALLENGES BY EXPERTS

- **Highly effective:** All experts agreed that this technique is one of the most influential in the UAE. The society and culture recognize individuals who have contributed to the growth of the country and celebrities can play a significant role in such a method. One expert stated that "if someone who is well known and well respected endorsed a product, definitely half the population will go for the product."

- **Authority profile and promoted service**: Interestingly, even if the promoted service does not relate to the expertise and contribution of an authority, people would still highly consider it as experts indicated. While this is generally expected, the respect in the UAE for influential people and authorities seems to be higher than in other cultures, as experts indicated. One expert mentioned that: "This is a common attitude in the Middle East not only in the UAE". This is in line with the literature (e.g., Venkatesh & Davis, 2000).

- **Long Lifespan for Recognition:** Moreover, the lifecycle of the influence is relatively longer and people respect the authority for a longer period of time in comparison with other societies. This was confirmed by one of the experts who dealt with international

markets. He stated that: "It is observable in the UAE that a longer lifecycle for recognition exists".

- **Authority is secondary:** Experts mentioned that authority for new products could be premium. However, for existing services and service providers it would be seen as secondary, but is still seen as an influential motivational technique. One expert mentioned that when two services are advocated by two authorities "people will go with their preferred product and still feel happy that it is endorsed by one of their heroes". Therefore, providers need to take this fact into consideration when using authority in motivation.

- **Age:** The choice of the authority to promote a service should take into account the age of the targeted customers. For example, for young people "a celebrity could be a soccer player. At the same time, if one of the most respected people is chosen for the elderly, e.g. founders of a non-profit organization, definitely everyone will be encouraged". As a result, the targeted age could imply different needs, even if using the same technique.

- **Authority lifetime:** Using a famous person to promote the targeted services is very important and will result in a vast return on an investment (Pringle & Binet, 2005). However, it is understood that the authority technique would be useful to attract people to the service, but not really to utilize it. Therefore, the link to authority should be designed with that fact taken into consideration, in order not to lose potential users.

- **Authority and personalization:** While monetary rewards might not seem very attractive to the UAE locals, it does seem that a reward offered by an authority would make a difference. For instance, if the reward is sent by computerised software or a senior manager calling to offer the reward it would not be valued in the same way. One of the experts said: "An Emirati might prefer someone calling him/her, maybe the manager calling him/her, telling him/her the benefits". As a result, they will clearly proceed, since it appears that a more personalized approach would make a difference to the UAE citizens.

- **Authority and vision:** Experts indicated that the authorities might not need to advertise or encourage people to use a service-by-service, but rather to endorse a vision, which entails that usage. For example, when "the smart city initiative has been taken as a vision by the leaders of the country, one can always see the UAE nationals are most passionate about following the leaders' vision and following their authority". Additionally, the government can benefit from this fact by linking the smart services to

the general nation's vision, which is identified by the leaders, and as a result of that, nationals of the UAE will be naturally motivated to contribute to the country's whole vision.

- **Authority and nationalism:** It also seems that the link between authority and feeling of community is highly valued in the UAE. For example, when the use of smart services is treated as an improvement of the profile of the country in a certain domain, e.g. the ICT usage, the UAE nationals would do that as a sort of community target. Nevertheless, governments should take advantage of that fact and inform the public about the expected effect of the individual usage of smart services on the economy. Finally, clear answers should be given about this online upgrade, how this can increase revenues and significantly help the national economy.

- **Authority and objectivity:** It was argued by an expert that: "when a user is being passionate about what an authority says about certain services, this may not always lead to the expected results". For instance, when a user follows a celebrity endorsement of a product, he/she raises a high expectation towards that service or product. However, when the product does not meet the expectation, it is possible that the users might reject the whole service all together. Nevertheless, that might not be case if they decide to use it without influence. Thus, the use of authority should be moderated to avoid the case where the service is not what the user expected.

5.2.5 COMMITMENT AND CONSISTENCY PRINCIPLE

The user can be committed to a specific provider and as long as the service he/she receives is matching his/her expectations and quality definition, then it is likely that the user will keep using the service and will build self-motivation towards the provider. In other words, this technique relates to the consistency regarding the provided service and the expected commitment from users once the provider triggers their needs. Moreover, experts argued that this concept could work efficiently in the UAE due to the cultural values and existing background of the Emirati nationals; however they mentioned seven potential challenges regarding this technique, seen in Figure 5-11 and analysed below:.
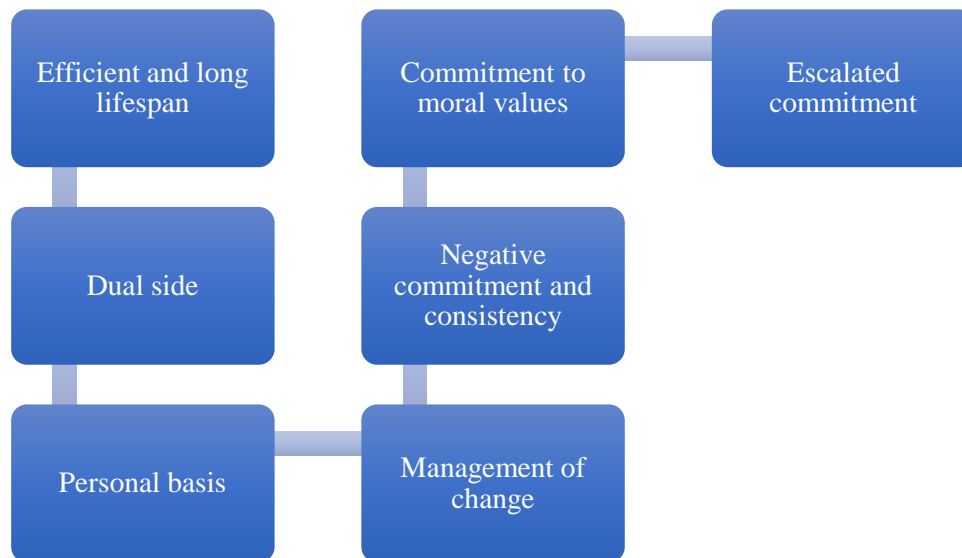
FIGURE 5-11 COMMITMENT AND CONSISTENCY CHALLENGES

- **Efficient and long lifespan:** Commitment and loyalty are common aspects and highly respected values in the UAE due to historical/social norms and background (e.g., loyalty to authority figures).Nevertheless, loyalty to a service provider grows over the time and as long as the received quality is decent, users would not move to another provider or search for alternatives. In that respect, one expert mentioned that: "we have to be very careful with this in order not to threaten the loyalty, therefore, if we are very consistent in services and after-sales services, the loyal part of the public will never leave".

- **Dual side:** Users would have similarly high expectation regarding the providers. Additionally, the rapport grows and if the provider fails to meet the increasing expectations then the commitments and consistency will come to an end. On the other hand, it seems that the degree of tolerance is low and users in the UAE would expect a high quality standard in return for their loyalty. One expert mentioned: "we have to be consistent in our services and quality of services that we provide, since deviation from the expected quality might lead to an unavoidable loss of our loyal customers". As a result, it is vital for the service providers to always assure high quality delivery.

- **Personal basis:** Commitment and consistency could take a personal nature. One expert said, "If I'm a UAE national and I have a relationship manager with whom I am dealing for the last 20 years, it could be a possibility that one day he might have promised something and hadn't delivered it as agreed. Nevertheless, I might have ignored it, only because I have a very long and loyal relationship with that person." If that person leaves, the loyalty to the service provider might be affected, since the social relation plays an

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important role (Venkatesh & Davis, 2000). For that reason, it is essential for providers to avoid any personal relationship establishment, since it is almost impossible to keep the same personnel along the customer journey with the provider.

- **Management of change:** It is argued that the success of any IT based service is relatively linked to the commitment of the present and potential users and respectively the commitment is linked to the consistency of the service design (Yogesh & Galletta, 2004). The service design may evolve eventually, so that the service might be merged with other services, or it could expand to the point where it could change name or be endorsed by various celebrities. As a result, that might affect the commitment and consistency, since users may not be able to understand the new change and will believe that the new services are not the same. Thus the design should take that into account. Moreover, one expert gave an example from his professional experience by stating: "when two banks merged, some of the users did not willingly want to join the new formed bank, until they were made sure that they will still have the same treatment as the one in the former bank".

- **Negative commitment and consistency:** This persuasion technique towards maximising the use of smart services applies for the traditional in-person services that are preferred by many UAE citizens. For instance, when users are committed in using the same in-person services and they are loyal to a certain branch they will face difficulties in shifting and using the smart services. In line with the above, an expert indicated that: "the UAE nationals have a strong sense of loyalty, making it more challenging for the various providers". As a result, it is vital for the government to take into account the loyal nature of the UAE citizens and give extra attention to the quality and consistency, especially during the user switch phase, namely when moving from in-person to online portal use of the services.

- **Commitment to moral values:** It seems that moral and religious values are of a special consideration in the UAE. The commitment of the service provider to respect those values will strengthen the commitment of their clients towards the provider. For example, an expert mentioned: "if the service provider commits to offer a certain percentage of the profit to enhance Internet access in rural and far areas, this would also consolidate the commitment of the users". On the other hand, such activities from the provider should be communicated to the public wisely and timely, in order to show that

the values of the users are also the same for the provider. Hence this will encourage users to interact more and build trust.

- **Escalated commitment:** This challenge refers to the fact that a user will increase the commitment once the provider shows high commitment and consistency about the service provided. Although this seems simple, in reality it is difficult to be managed as the expectation of the users will possibly increase unpredictably over time. An expert stated that: "When a user is committed to the service, he would expect a service that is customized to fit his needs personally and this might be inflexible for a general-purpose service". Nevertheless, the design must make clear how a service is designed. Additionally, following the point of moral values and collectivism of the society in the UAE, one would also view that in a positive way so that the change is welcomed regardless whether it is a good fit to each individual.

5.2.6   SOCIAL PROOF PRINCIPLE

The social proof efforts relate to the involvement of social media applications and features to serve the use of the smart services. Most of the experts, offered opinions of importance and raised eight challenges involved (Figure 5-12). The experts highlighted that the government will benefit from the social proof techniques and the help of social media, in order to keep updated with the existing development around the world
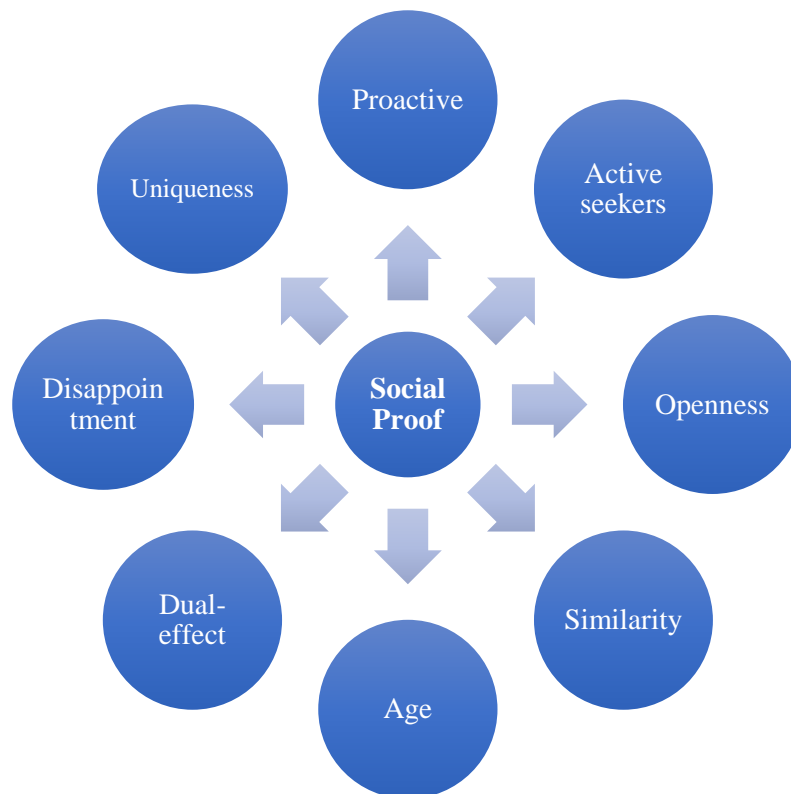
FIGURE 5-12 SOCIAL PROOF ELEMENTS OF CHALLENGE

- **Proactive social proof:** This is when a provider takes the initiative and sends the social proof to customers rather than customers searching for it. In fact, this would work with customers having a limited time or knowledge of the needed skills to search for such a proof and the message will be informative. However, this would not have a major consequence without the openness of the service specifications and limitations as part of the communication efforts offered by the provider to the users.

- **Active social proof seekers:** Experts indicated that with the proliferation of the current social media practices, it is now feasible to search and spot the reputation of a specific service provider, e.g. through the users' feedback and customer reviews. Nevertheless, an expert highlighted that: "They are a segment who always makes a lot of research before taking decisions or using a service, purchasing a product or service. Therefore, this part of the public will be motivated with such a social proof pattern". Thus, the service provider should take the initiative to add and promote those reviews and social proof. For example, some hotels started to include the reviews posted on the Tripadvisor's website (a third party review provider) into their website to inspire trust and transparency. As a result, it seems efficient to add customers' reviews so other users can be informed and feel more secure about the service and their choice.

- **Openness and frankness:** Following the previous point, an expert mentioned that users in the UAE would value openness and clarity even when it comes to shortcomings in the service. There will be no negative outcome if the providers offer further explanation or an apology to users when the social proof is negative, e.g. in external review platforms. . As a result, this behaviour will inspire trust and users will value the efforts by the provider. However, being clear and open than being ignorant about negative feedback is of importance to the users. One expert mentioned: "Once frankness and openness exists in the relation between provider and users, and then this will play a key role when a provider is using this technique to avoid any dissatisfaction, since social proof is definitely going to work because it is the endorsement of people". Therefore, part of the motivation techniques used here is to be open and honest with users in both negative and positive reviews.

- **Similarity:** Social proof should be deriving from a similar group of people. Thus, when this technique is been used to motivate, users in UAE would like to see messages and opinions related to similar people. Additionally, users of a certain age group would also be more interested in a social proof of people in their age and perhaps interests. Nevertheless, this technique could have no effect if feedback from a user of a different profile is presented. For instance, a UAE national trying to renew a passport online, would not be interested in the feedback written by a foreign national with different age and background renewing his work permit.

- **Age:** Younger age groups seem to use the social media more, making social proof more applicable to them. They are also familiar with the meaning of statistics and the new concepts of "social capital" and connectivity. Moreover, one of the experts argued that they enjoy more when: "they can track the reputation and try to locate the best service as this gives them a feeling of self-achievement". On the contradictory, the older generation would still be happy with a simple and direct communication of social proof, rather than searching for the information.

- **Dual-effect:** In fact, social proof could work positively but also negatively for a certain service. One expert mentioned that many UAE nationals are heavy users of social media and the word of mouth spreads very quickly. As a result, a mistake in a service or a bug, especially in the initial stages of deploying a service where the trust relation is still not completely built, might become a popular story and this would negatively affect the chance of success. Therefore, the provider needs to take into account the sensitivity of

social proof efforts and be aware that minor mistakes could have negative financial and social outcomes.

- **Disappointment:** It seems that nationals would evaluate the service after using it especially when the social proof is strong. This could work in both ways. If the service meets their expectation, they would then use it. But if the service is not what they expected, in quality or functionality, the social proof exerted efforts may make them very disappointed as it raised their expectations. Thus, a moderate utilization of the social proof and merging it always with awareness should be the case. Nevertheless, providers should not ignore the change in expectations from a user to another, since both the online behaviour and the available vast information make it challenging to achieve the users' expectations. The providers also must bear in mind the motivation of online behaviour, the impact of online peers opinion, as well as available reviews from either users or third party companies evaluating the available services offered to the public and publishing their evaluation to the community. (Kevin & Coovert, 2013)

- **Social proof and uniqueness:** Social proof would be weakened if it minimized the feeling of achievement. In that regard, one expert stated that: "If you are offering something on social media or through any other online channel, assuming that you already say that 100,000 people are using it and 100,000 people are recommending the service, you're indirectly telling them that the markets are using it. So it will likely not be attractive for them". Besides, this is inevitable for some products, but in the case of smart services it should be used carefully at least within the initial stages, until the use becomes more consistent. However, social proof could still maintain the uniqueness, when for example, 10% of people are using the smart services and 90% of them are finding it time efficient.

5.2.7   LIKABILITY PRINCIPLE

This technique uses similarity as a motivational factor. In fact, this technique is quite broad and could include many different aspects, where similarity can play a vital role in the motivational process of the UAE nationals. However, experts paid great attention to this technique. They highlighted the fact that not all similarity concepts that have already been successful in other countries would definitely achieve the same results in the UAE. Experts discussed the importance of the following eight factors, seen in Figure 5-13:
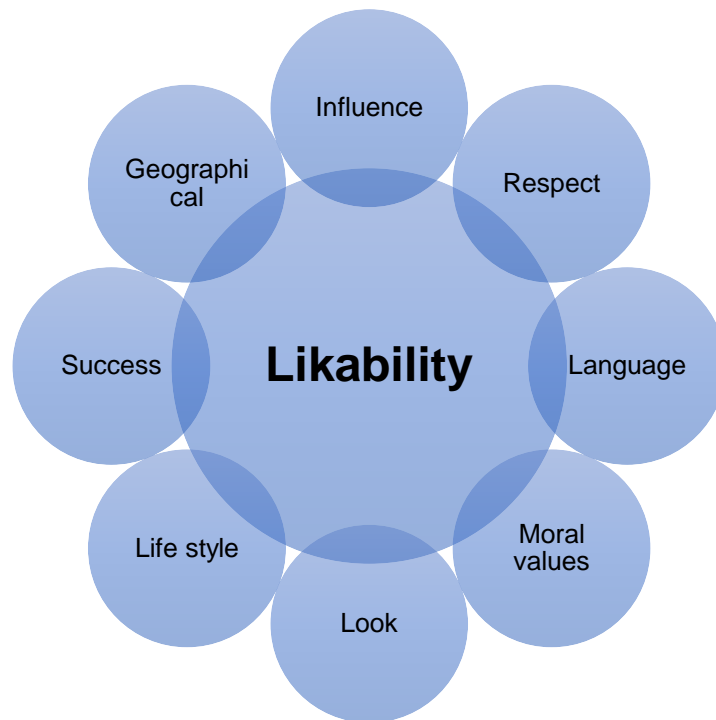
FIGURE 5-13 LIKABILITY INFLUENTIAL FACTORS

- **Influence:** Likability seems to be highly influential. Users in the UAE would like to be assisted by someone who understands their culture and ideally looks similar to them in the way they dress, behave and talk. In fact culture plays a vital role in every motivational effort by any provider in different industries and it is important to take into consideration all the cultural aspects in order to have a successful motivational outcome (Munro et al., 2014). One expert mentioned that: "the Salim's avatar which is a software program character wears traditional clothes and aids people using their local accent and way of greetings". Therefore, the more similar the person representing the government is in characteristics and appearance, either in the form of software or personal interaction, the more likely it is for the person or the service to be widely accepted by the UAE nationals.

- **Respect:** Likability seems to be a sign of respect to the local customers as it shows that the software design considers their culture and way of interaction. Additionally, one Expert mentioned that: "most of the software is designed by developers who are Western or Indian based and the design seems oblivious to the local community which is in some cases seen inconsiderate". As a result, it is essential to consider the local characteristics when designing software and interaction channels whereas western examples may not apply successfully in the UAE market.

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- **Language:** Similarity in the language and expression used is needed. An expert referred to this point by stating that: "even the way we are talking, the way we are interacting with them, how we use the national expressions like Salaam Alaikum, all this is going to play a big role especially with the nationals".

- **Moral values:** The character in use needs to reflect the moral values. One expert mentioned that: "The way they look, and their beliefs, are not the only essential aspects; they also need to have very high moral values, so they influence the nationals positively". Therefore, moral values are vital when it comes to the UAE nationals and this should be taken into consideration when setting motivational strategies.

- **Look:** In many industries several companies are using the appearance as a motivational factor, especially when they hire models from different genders to attract customers. However, this might not work in the UAE. Another expert mentioned: "the use of physically attractive models might not be seen acceptable in the norms and values of the UAE society especially for the females". Moreover, this concept is seen as western culture and may result in possible rejection of the motivational technique, especially if the person does not conform to the culture, e.g. in the dressing style.

- **Likability for similar and better life style:** A national would like to be approached by someone who shares the same lifestyle with them but at the same time striving for new initiatives. In that regard, an expert stated: "For a young user, if the avatar or the character explaining the service appears like them in their busy and digitally connected work environment, a national would have a better acceptance. The avatar should also be aiming for a modern life or work style where smart services are part of it".

- **Success:** Besides the different similarity factors, the success achieved by the person speaking and the success story make them more likable and motivate the users to follow a similar patterns. One expert argued that: "They will go for someone who is known as a winner more than someone who is just similar to them". Thus the application of this strategy should seek what UAE nationals' value in terms of success at the first place. For instance, a person who has plenty of free time, mentioning that the service saves time, will not influence positively.

- **Geographical similarity:** In traditional business, people prefer to visit their local area office or branch representing the provider. Thus the similarity in the geographical location is a motivational approach to initiate the discussion. Nevertheless, in the case of smart services this factor might be confusing, since a customer service or a call centre

might be even in a different country or continent. However, the consideration of this factor when designing motivational techniques should be given special consideration. This also relates to the principle of commitment and consistency.

5.3   RESEARCH FINDINGS: CITIZENS SURVEY

In this section a descriptive analysis will be reported. This is to reveal the trends and also the level of agreement with the experts' statements. In addition, the comments given by the participants will be analysed in order to add greater insight and also contextual factors to the statements.

5.3.1   RECIPROCITY

Figure 5-14 demonstrates the level of participants' agreement with the ten statements made as a result of the experts' interviews. Generally speaking, the participants tended to agree with the experts' insight. As expected, some reservations were made in relation to the 'manner' facet and also the 'quality' and 'experience' facets.

- **Manner**. The questions about manner concerned whether reciprocity could be seen as a lack of manner, i.e. conditioning the offer by mutual commitment. Analysis of the comments demonstrated that reciprocity by itself is not seen as a lack of manner but rather the type of offers and the way of introducing it. For example, some of the participants believed that "most offers are carefully formulated to serve mainly the interests of the company rather than the clients". Hence, there is a degree of suspicion about it. However, this could be seen as a lack of manner by some and a lack of quality of the offer by others. This could give a mixed view of the answers.

- **Quality**. The question in relation to quality concerned the effect of trust in the product as a precondition to look at the offer. The participants were divided here. Some believed that quality is the highest factor while others expect that an offer should be for a product either in the early stages of development or one that has a certain defect. Therefore, the first view was strict about the quality whereas the other was expecting quality issues, not necessarily a bad design or faulty, when it comes to a reciprocity offer. In addition, some of the participants linked quality to the wealth of information, stating that "not knowing the source of the offer and its history affects its quality".

- **Experience**. The questions about experience were "I am happy to engage with service/goods providers who offer meaningful deals, even if it does not involve a direct financial benefit" and "I am not interested in special offers and deals that do not offer me a direct financial benefit or saving, even if the provider offers interesting and exciting benefits". Indeed, these two questions are the opposite of each other and different views are expected. Some of the

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citizens might still be interested in a reciprocity offer which has direct and tangible financial benefits while others could be interested in those in relation to intangible offers, e.g. enhancing service (such as a priority queue) and providing better communication.
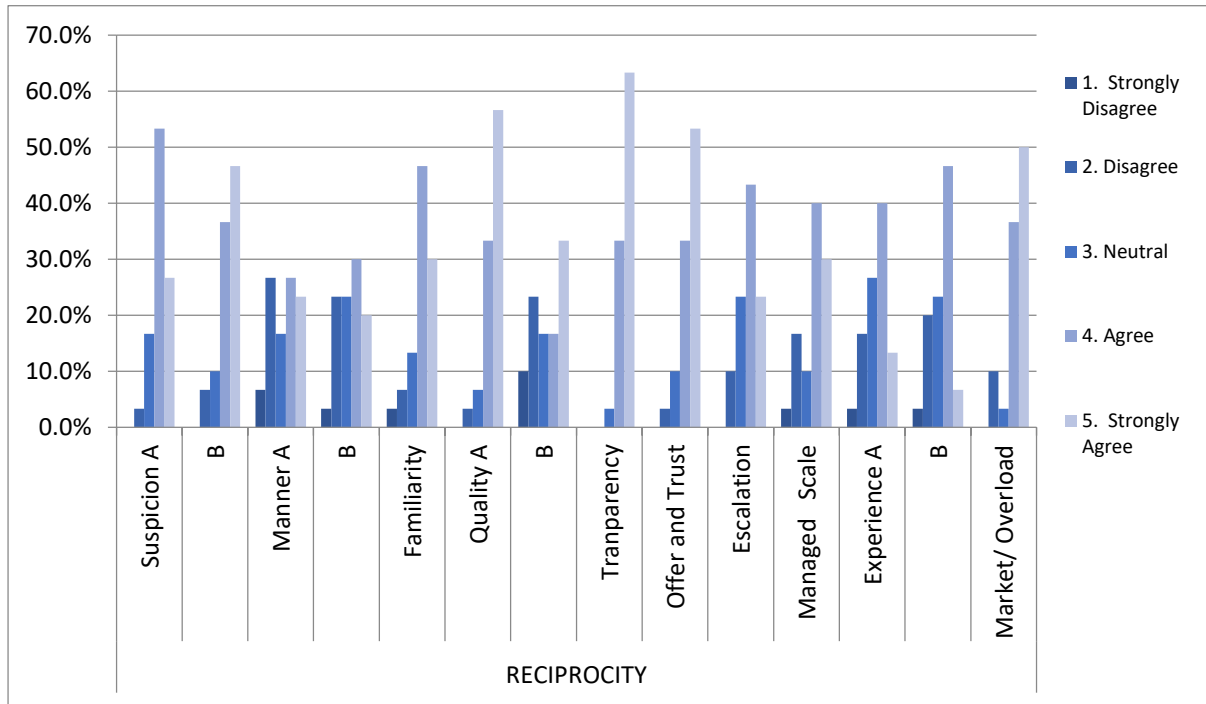
FIGURE 5-14 RECIPROCITY: USERS' PERSPECTIVE

Figure 5-15 shows an aggregated form of the answers which reflect the users' agreement level regarding the entire set of findings in relation to the reciprocity principle:
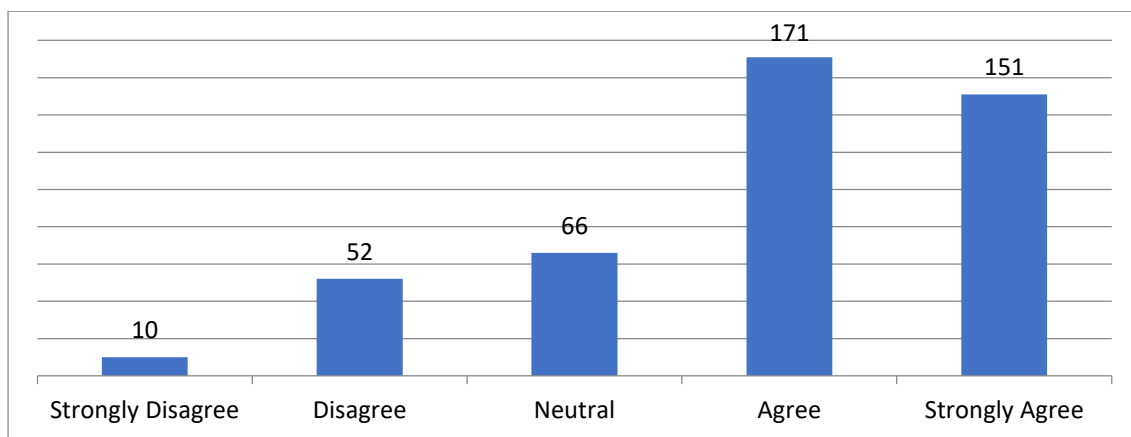
FIGURE 5-15 RECIPROCITY: AGGREGATED STATISTICS

5.3.2   SCARCITY

Figure 5-16 demonstrates the level of agreement among the participants about the various statements and findings derived from the expert interviews.
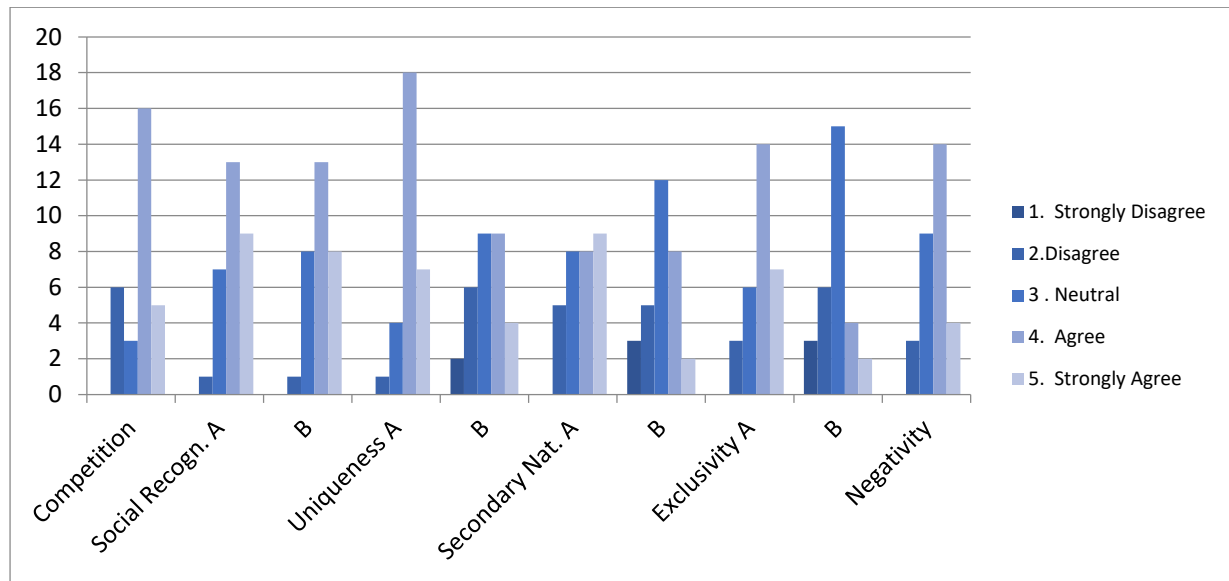
FIGURE 5-16 SCARCITY: USERS' PERSPECTIVE

A general level of agreement on the underlying principles is achieved here. This is demonstrated by agreement on both statements in questions which were divided into two views: marked as A and B. This means they agree with the principle although the participants stated different contexts of use. However, some of their concerns related to disagreement with some of the findings. Indeed, they led to mixed views although in principle the participants understood the finding but explained why they were uncomfortable with a plain agreement, hence the relatively high percentages of 'neutral' and 'disagree' responses to some of the questions. Mainly, the users had comments and a degree of disagreement about the 'uniqueness,' 'secondary nature,' and 'exclusivity.'

- **Social Recognition**. The different views here come from two different perspectives. Social recognition and scarcity means that the offer has a social nature, e.g. extended to family members and also achieving a position in a community by being one of the premium users. Participants were reluctant to adopt one of the statements, i.e. whether this is or is not the case. The general view is that social recognition may be ineffective for smart services but it would be more effective for something of a high social nature. This suggests that scarcity in the recognition for smart services should strive to show the social benefits so that scarcity of social recognition could appeal to users.

- **Uniqueness**. Similar to scarcity in social recognition, participants were able to see the point in both directions of scarcity being unique such as having a badge. Among the common comments and observations were those relating to the fear of fake or little value uniqueness. One of the participants mentioned that "many of my friends and I, out of personal experience,

were manipulated by offers". Others wanted uniqueness to be enshrined by the terms and conditions. For example, having priority when queuing while doing parts of the transaction online and completing it in person should not be given to many participants because that queue will become overloaded.

- **Secondary Nature**. Scarcity does not tend to be the primary motivation unless people need the product. However, the opposing view also seems to appreciate the fact that people may start looking at the benefits of the product if the offer is scarce. In other words, it is a mechanism that triggers their curiosity to investigate and perhaps eventually buy the product.

- **Exclusivity**. Similarly to uniqueness, exclusivity as a scarcity mechanism could be implemented differently and could have an effect in each of the ways it is implemented for a certain segment of users. The arguments about social recognition and uniqueness mentioned before apply here as well. One of the factors which could be added is personality and gender. The researcher cannot confirm these based on the small sample size and, therefore, further research will be needed.

Figure 5-17 shows an aggregated form of the level of agreement on the different statements:
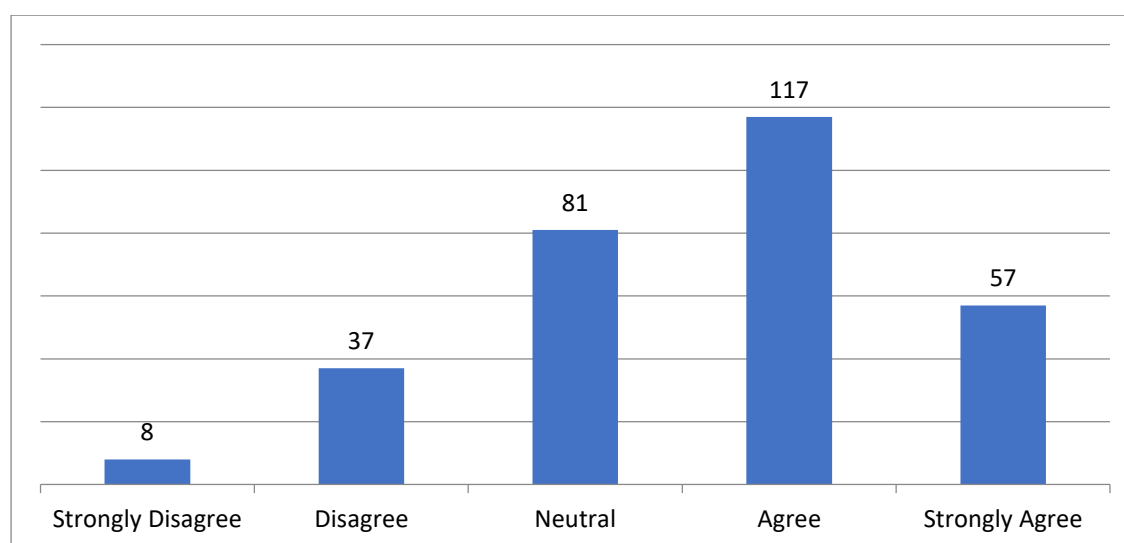
FIGURE 5-17 SCARCITY: AGGREGATED STATISTICS

5.3.3 AUTHORITY

This principle of Cialdini emphasises the role that authorities and authoritative figures play in changing people's perceptions towards certain norms, services or products. The results of the survey demonstrate a general agreement with the experts' statements. Interesting observations were made by the participants in relation to the statements concerning lifetime and objectivity. Figure 5-18 demonstrates the level of agreement among the participants about the various statements and findings in relation to Authority derived from the expert interviews.
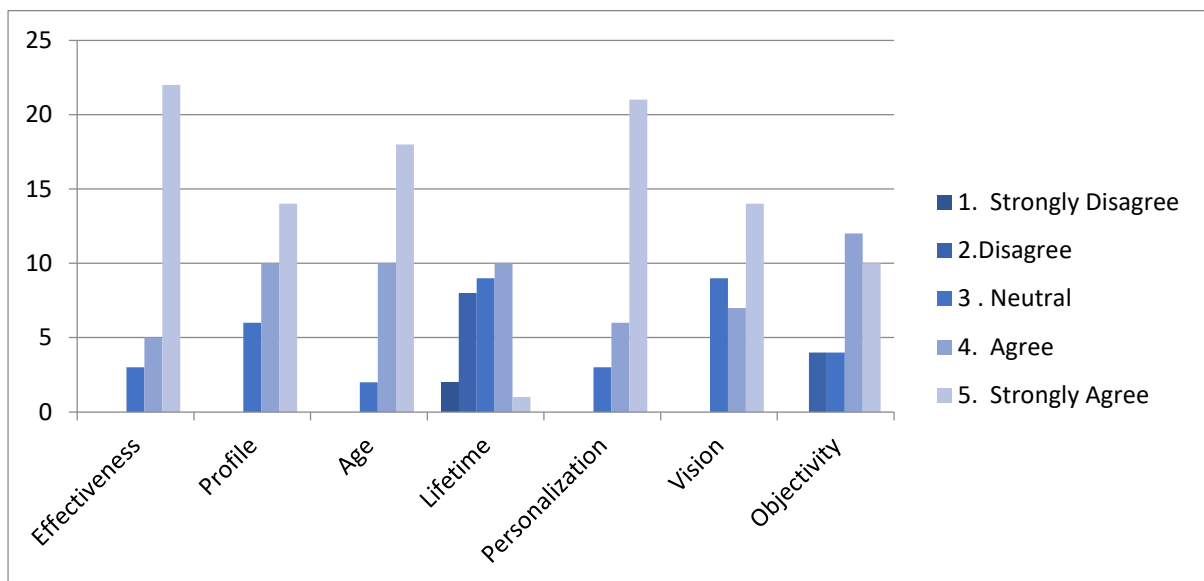
- **Lifetime**. The statement was that "if one of the authorities associated with the service being offered transfers to another field, I may change my mind about my future loyalty to this service". This means that the authority would need to demonstrate continuous support to the service. If they stopped doing that, it may mean that service quality has been reduced. Apparently, this was not the general opinion of the participants. The participants seem to agree that they would indeed look at the reason why an authority has stopped their support but they are open to interpreting that as being for pragmatic reasons, e.g. lack of time. One participant commented that "I must consider the situation carefully before I take my decision" and another commented "If the person were a role model for me, I would for sure change". This suggests that the withdrawal of authority from the support of services should be managed with care because it may well be interpreted as a lack of quality.

- **Objectivity**. The statement was "I expect services offered and advocated by authorities to be trustworthy and of a high quality – if they do not meet my expectations, I will not support them or their services in future". A very interesting comment raised by the participants emphasised the need to consider the growing development in the sector of smart services and the need for tolerance when attempts fail. One of the participants commented "I will support it if it is already supported by the state". This is also consistent with the finding about nationalism and the perception of smart services as a part of the national agenda intended for collective societal benefit.

Figure 5-19 shows the aggregated form of agreement on the entire set of questions in relation to authority.

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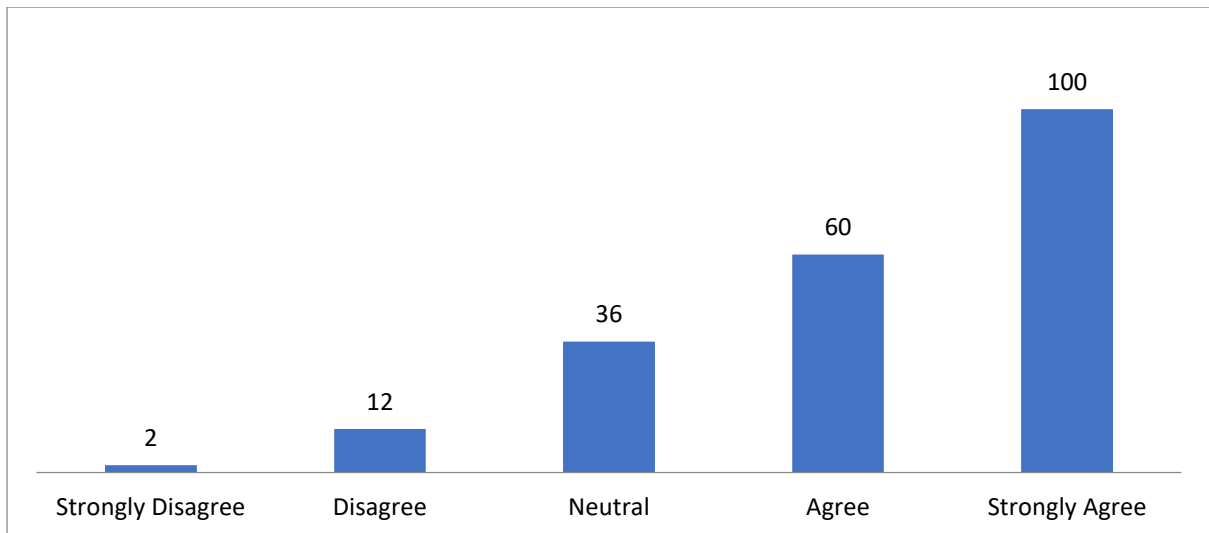
FIGURE 5-19 AUTHORITY: AGGREGATED STATISTICS

5.3.4 COMMITMENT AND CONSISTENCY

Users strongly agreed with most of the findings of the experts' interviews in relation to Cialdini's principle of commitment and consistency. Figure 5-20 demonstrates this level. Indeed, it seems that loyalty to customer providers is hard to change unless a mistake frequently happens. Combining this result with the fact that reciprocity and scarcity offers do not seem to have a very strong impact, this suggests that commitment and consistency is an effective technique to use. The challenge would be to move users from classic mean to smart services as their loyalty may be placed at risk, e.g. when they develop close relations with their branches and feel comfortable making direct contact.
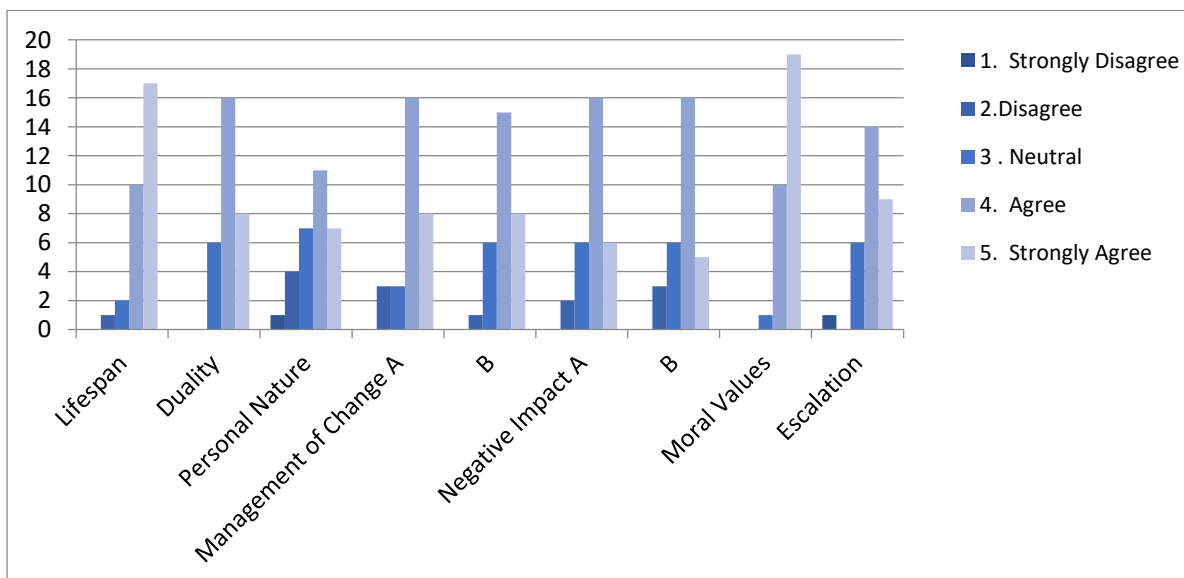
FIGURE 5-20 COMMITMENT AND CONSISTENCY: USERS' PERSPECTIVE

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The three findings which triggered debate and demonstrated a need to consider contextual factors were 'Personal Nature,' 'Negative Impact' and 'Escalation.'

- **Personal nature**. The question asked here was: Suppose your service provider's representative is well known to you and you trust him; would you agree with this statement: "Because of my experience with the representative, I am prepared to overlook some slight shortcomings from time to time"?. A lack of agreement with this statement is indeed expected because the personal nature of the principle is a supporting rather than main factor. However, the level of agreement also suggests that participants would still tolerate even quite significant mistakes. In the context of smart services, the conclusion could be that alternative channels should always be available to cater for eventual mistakes, e.g. leaving a message or a fault report and then receiving a personalised response. This countermeasure would be viable as long as the service is generally known to not be faulty.

1. **Negative Impact**. The two questions concerned the level of loyalty in relation to an eventual lack of consistency with the provider's commitment. The first question concerned mutual consistency and the other concerned whether the informal contract with the provider should continue when the commitment can be lower than expected. In general, users agreed on the mutuality of commitment and also that they may lose interest when the provider neglects it. Interesting comments were made about some contexts. Participants indicated a complicated arrangement for obtaining specific commitment from the provider would be a discouragement. A frequent comment indicated that the public do not like becoming involved in complicated arrangements for obtaining a specific service. Another frequent comment was that receiving services and offers must be quite easy and smooth and they were keen to ensure transparency in transactions.

- **Escalation**. This question concerned the need to increase the level of commitment and consistency from both sides over time. While most agreed with this, interestingly, some warned of added complexity and the need to avoid inflating it. One participant mentioned that "the telecom company's offer for internet data is a generous one but it entails that I renew my subscription on a daily basis which impelled me to overlook this offer and opt for a monthly subscription package which, by far, is more expensive". This suggests that escalation of commitment is not only about quantity and frequency but rather the subject of it and the balance among the different factors.

The aggregated level of agreement in relation to all of the survey questions in relation to commitment and consistency is demonstrated in Figure 5-21.
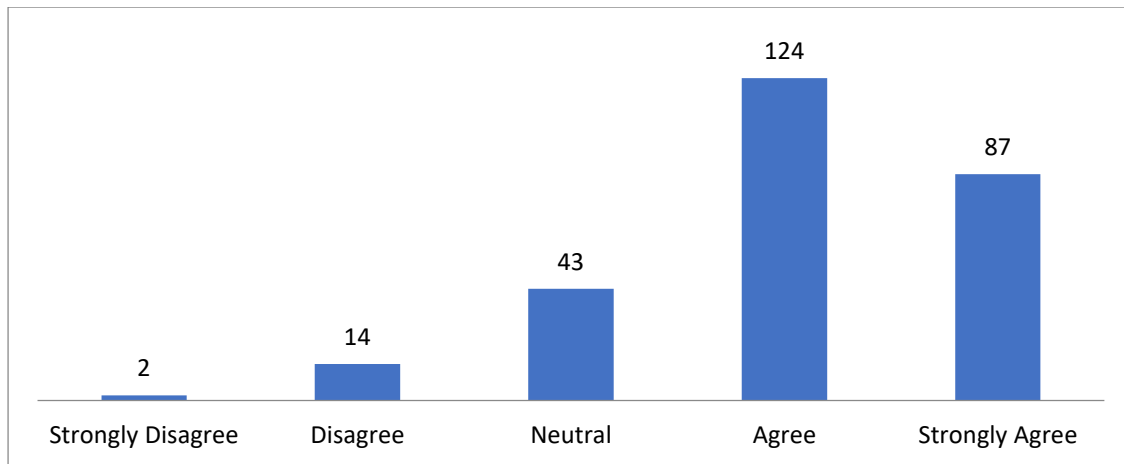
FIGURE 5-21 COMMITMENT AND CONSISTENCY: AGGREGATED STATISTICS

5.3.5 SOCIAL PROOF

Similar to commitment and consistency, it seems that social proof has high potential in the socio-cultural framework of the UAE when applied to smart services. Figure 5-22 demonstrates the level of agreement among users regarding the statements made by experts in relation to the social proof principle of Cialdini. Users mainly expressed concerns in relation to three points: proactivity, opening and frankness, and also uniqueness. This is discussed in the following section:
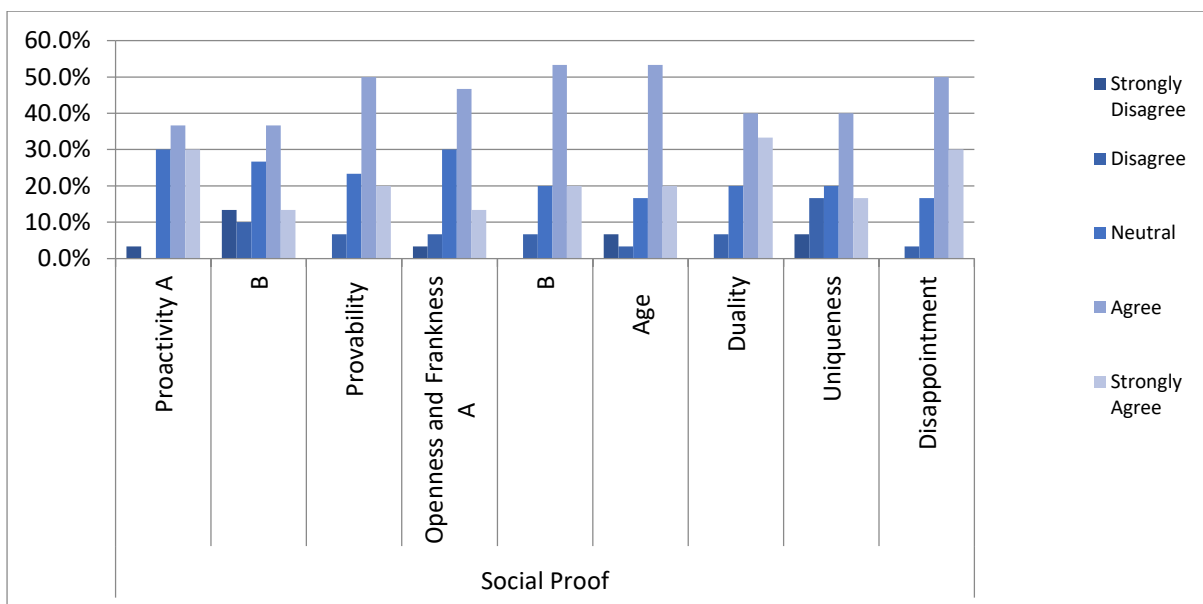
FIGURE 5-22 SOCIAL PROOF: USERS PERSPECTIVE

- **Proactivity**: This question concerned whether the information about social proof should be pulled by the user or pushed by the service provider when they may be in need for it. Some stated that "Service providers must notify [them] of all the changes", while others indicated that the risk of hiding or not updating information related to social proof. One mentioned that

"failure to notify clients of any changes that transpire on the service may consequently lead to reluctance or aversion on the part of clients to subscribe to other services provided by the same entity". It can be concluded that social proof is asked in both ways: i.e. when the service is doing well and also when it is performing badly. In the second case, the provider should demonstrate what they have done to fix the problem in a transparent way, otherwise it may exacerbate the situation, especially when social proof is heard through other channels such as via social media users reporting faulty services while the providers are just ignoring them.

- **Openness and Frankness**. The question concerns catering for the user's own community and the necessity, therefore, to have social proof which takes into account the demographic factors of users. For example, youths may not like social proof based on the experiences of other age groups. Interesting insight was provided which stated that social proof based on social media and what is seen to be an indicator of popularity is not always trustworthy. This means that social proof could be open and frank but simply based on faulty sources of data or fabricated ones; e.g. made up pages and unclear measures.

- **Uniqueness**. The risk is that social proof may reduce the exciting nature of the service and contradict the scarcity and uniqueness. It may also make people biased and lead them to ignore design faults. There are mixed views about this and it would be a sign of different perceptions of uniqueness and different levels of individualism amongst participants which would be a normal expectation.

Figure 5-23 demonstrates the aggregated statistics in relation to the findings of the survey results for social proof statements:
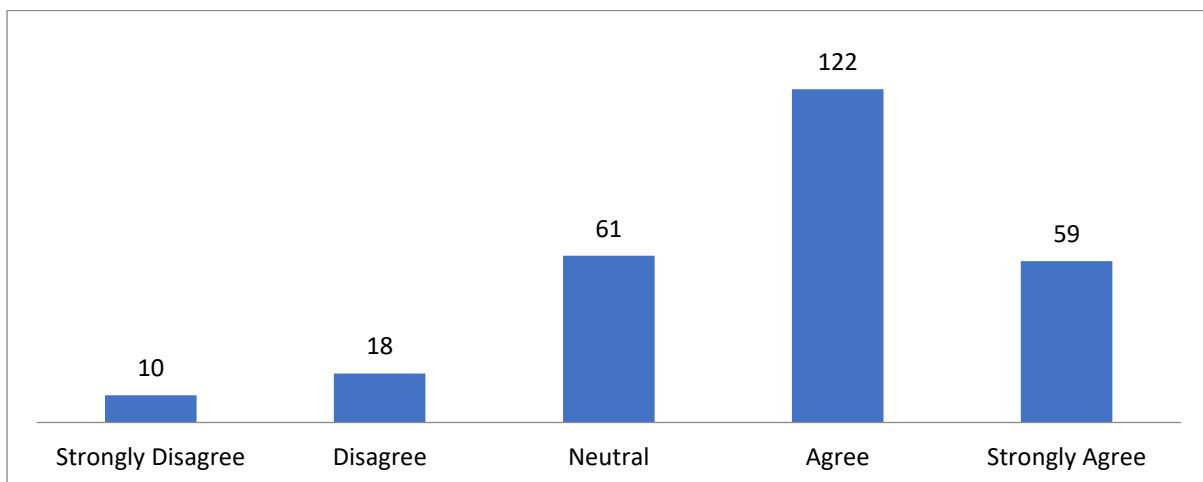
FIGURE 5-23 SOCIAL PROOF: AGGREGATED STATISTICS

5.3.6   LIKEABILITY

Likeability refers to similarity and also closeness to someone's appearance and preferences. A high level of agreement with the experts' insight seems to be the case. The survey made two statements about the 'look' aspect that provoked interesting debate. The lifestyle aspect also seems to be of a debatable nature. Figure 5-22 demonstrates the level of agreement among users regarding the statements made by experts in relation to the likeability principle of Cialdini.
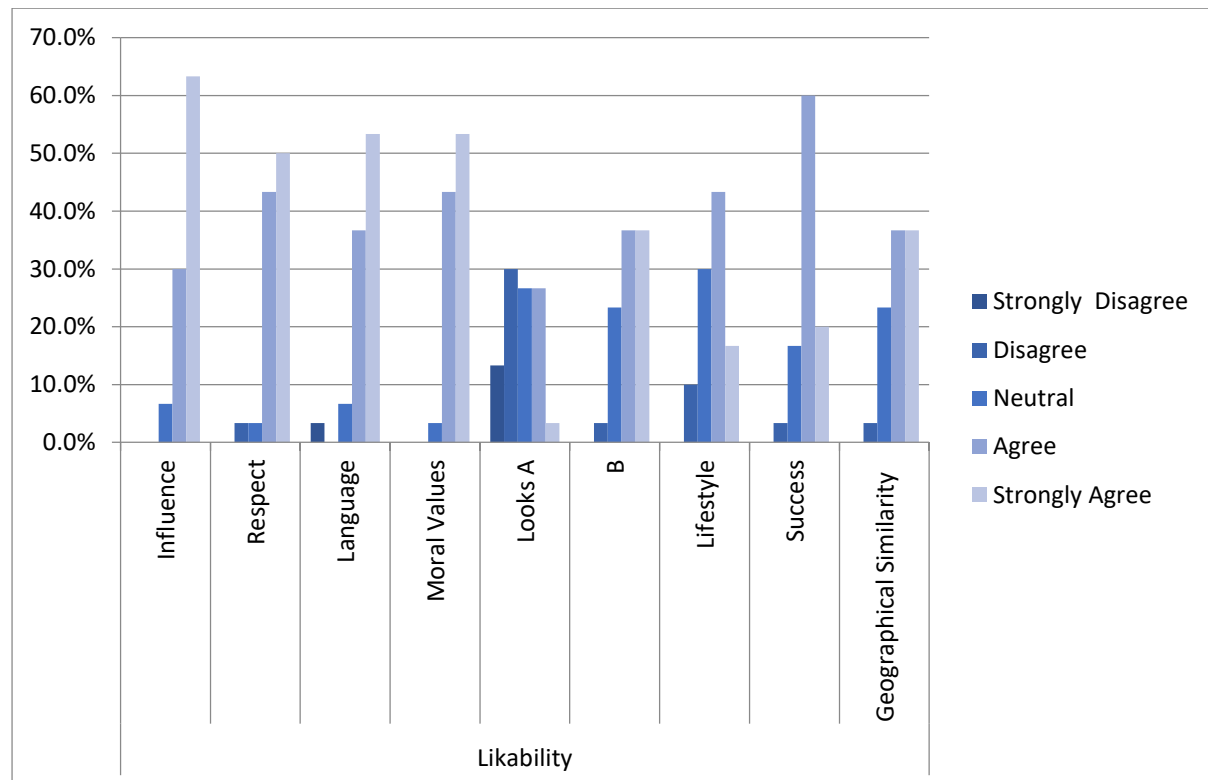
FIGURE 5-24 LIKEABILITY: USERS PERSPECTIVE

- **Look**. The expert insight concerned the potential risk of relying on the look in the sense of being attractive and preferring similarity to cultural values. The survey questions asked the participants to state their level of agreement with two statements: "*I prefer to deal with staff and representatives who are very presentable and look good*", and "*The outward appearance of a service provider's staff and representatives does not make any difference*". The second statement enjoyed a higher level of agreement although there were a considerable number of participants who expressed a preference for a good appearance and attractiveness. This confirms the view of the experts that one should be cautious of possible rejection when reliance on appearance is high. One participant commented that they would not mind diversity about the look and would reject the promotion "only on the condition that the outer appearance lacks decency".

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- **Lifestyle**. The question statement was that "similarity to the lifestyle and background of the person promoting a service is important to me and may influence my use of a service". Two interesting insights where obtained here. One participant commented that having services and persons who match their preferences and the lifestyle of citizens may imply additional cost for the company which may then lead to raising fees and prices. An example was given about a perfume company which pays great attention to the appearance and background of people who they employ and this entails higher service prices. Another comment in relation to lifestyle and background was that it does not violate social norms with the most important condition saying that "the general appearance of the employee should be compatible with social norms and values".

Figure 5-25 demonstrates the aggregated form of the level of agreement with the different statements made in relation to the likeability principle of Cialdini.
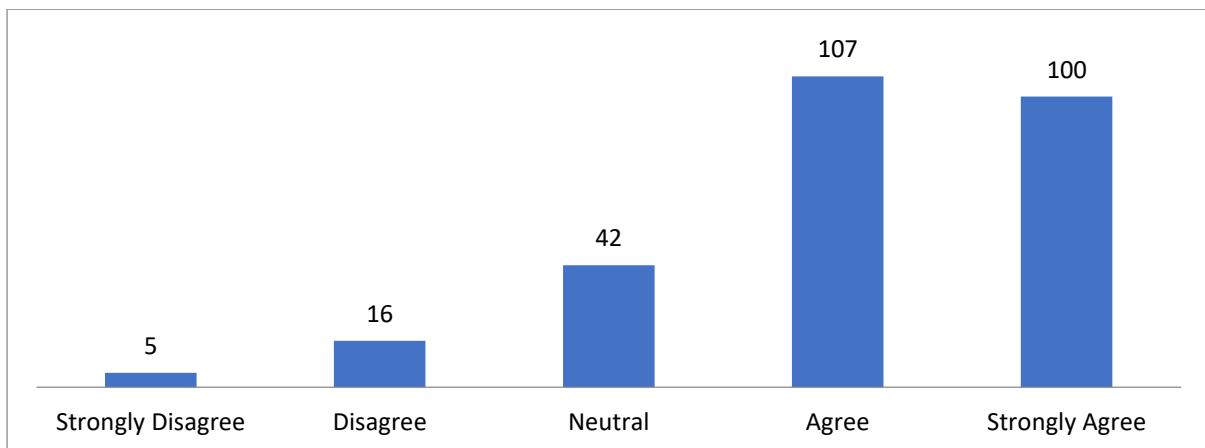
FIGURE 5-25 LIKEABILITY: AGGREGATED STATISTICS

5.4   SUMMARY

This chapter has explored the Cialdini's approach to motivate the users in regards to smart services offered by the UAE government to the public. Within this chapter interviews with various experts have been analysed focusing on the six principles of Cialdini's approach. In order to link the theory to the current situation of the smart services and their potential development, four experts have been interviewed and provided the available areas of motivation that could be used as per the theory. Nevertheless, as expected, the experts offered different approaches regarding the six aspects of the theory, as they claimed that some of the methods could be very successful to motivate the citizens in the UAE, while some others will not work as efficiently. The experts stated that the efficiency of the motivation techniques can be influenced by:

- Technology deployment
- Richness of the nation
- Age & Gender
- Culture
- Religion
- Education

6. CHAPTER 6: AMENDED FOGG'S PROCESS FOR PERSUASIVE SMART SERVICES DESIGN

In the previous chapters the researcher introduced many different point of views from either users, or experts that are directly currently involved with the smart services, and/or since the idea was firstly initiated in Emirates. Accordingly, many concerns were raised and it was possible to understand better why the smart services are limited in usability among the Emirati people after analysing the collected data. However, it was noted that the problem is actually divided into two main parts:

- Hardware based, such as the infrastructure and the technicality.
- Service based, which include all areas of motivation and design issues

The researcher decided to address only the service based part as the hardware part require more technical knowledge and is actually out of the scope of the research which focus on human motivation, therefore this chapter is only about the service challenges. Nevertheless, the challenges facing the smart services are many, but the researcher decided to focus only on the main and common challenges between the experts and the users, which are:

- Challenge 1: Citizens prefer in person.
- Challenge 2: Lack of awareness and third party involvement.
- Challenge 3: Design related issues.
- Challenge 4: Security and trust issues.

Additionally, the research is actually meant to focus more on the human motivation part of the user rather than the software, and therefore researcher used Cialdini (Cialdini, 2009) persuasion model previously. However, the focus of the researcher is to identify challenges limited the use of the smart services, and to also give recommendations on how to increase service engagement, and in order to serve the four main challenges well, the researcher decided to adopt one of the most famous persuasion models, which is BJ Fogg's model (Fogg, 2003) of persuasion. This model has been chosen for many reasons such:

- Clarity in phases and needed work.
- Popularity and known for being very successful previously.
- Provide room for suggestions.

Nonetheless, it is expected to have some limitations while applying Fogg's model, and that is mainly due to the need of dedicated design team to be responsible of applying the model on every known challenge, by following the defined Fogg's phases. And since there is no possibility to deploy a design team then it is expected not to be able to recommend some actions,

but the researcher will identify areas where limitation exists, and other areas where recommendations are possible while explaining every challenge separately.

6.1 FOGG MODEL PHASES AND ITS APPLICATION ON THE EMIRATI EXAMPLE

Fogg has identified a comprehensive eight steps approach, which is recommended to design any technology based persuasive techniques that aim to motivate users to engage more in any potential development of service. The basic idea of the approach is to define persuasion goal or targeted behaviour as an initial step, followed by potential users identification, and then introduction of the technology channel to use. Moreover, the model include imitation of previous successful behavioural, performing small experiments and measuring behaviour outcome, and then building on a small success as a final step of the model in order to reach bigger success, but as a first step in long term success and user engagement. The eight steps are essential to adopt the model, however they are not all applicable to the research, as some of them cannot be argued before having results from previous phases. Therefore, the researcher will explain the phases separately and link the steps to the Emirati model when possible.

6.1.1 WHY FOGG'S EIGHT STEPS PROCESS

For the purpose of this research, the choice of Fogg's eight steps process is motivated by two reasons. The first is its domain independent nature and the receptiveness to customization. The second is the stage of development this process is meant for, i.e. the initial analysis and design stages. Being domain independent and flexible about changes is ideal for this thesis, which aims for a domain-specific version of a design method of persuasive techniques. Nonetheless, the Fogg's process is an established one and follows a long-standing experience in this field. Moreover, it is also based on established theories on motivation in psychology such as planned behaviour and reasoned action. On the other hand, the Fogg's model adds the spark to that and uses technology to facilitate it. Hence, for these two reasons, the receptiveness to change and the suitability for the stage of development, the Fogg's eight steps process was chosen. It is also worth noting to mention that not only the findings of this chapter are structured around the eight steps but also they are usable by themselves. For example, the select of the right audience and the guidelines provided through the analysis of this chapter would be usable for any analysis and design process for persuasive technique including the classic systems and design. Similarly, the localization of the persuasion techniques to match certain socio-cultural dimensions is findings of an interesting nature whether linked to Fogg's process or others.

6.1.2 SPECIFY TARGETED BEHAVIOUR

The targeted behaviour is to identify simple and clear significant behaviour that concerns the users more often and to target it deeply. However, it is not simple to define a small goal that matter and to set it as targeted behaviour, as it often requires a lot of brainstorming from different members and much efforts in order to be able to set that goal. As a contradictory, if the identified goal is big and not simple, then it will be very vague and hard to target and to design a proper motivational map to follow will be even more challenging. For instance, the smart services offered to the Emirati citizens is facing many motivational challenges, and we cannot set the use of the services as the targeted behaviour, but we will need to identify a small and clear part of the motivational issue, such as the lack of motivation to use the services app, or people are not confident enough to use their financial or personal details online, and so on. On the other hand, Fogg argued that motivational professionals have always argued that succeeding in getting people to perform small tasks will definitely lead to the adoption of the big idea, or the desired global outcome.

6.1.3   GOOD CHOICE OF AUDIENCE

Choosing the audience to adopt the motivational approach is a challenge itself, and it could easily enhance or hinder the whole process. Fogg argued two main points to be addressed here:

- A need to choose responsive people is major, and will significantly enhance the whole process. Additionally, it has been argued that the more involved users in similar technology the best to serve the approach and wrong people can result in big failures. For the case of the smart services offered, for instance if we would like to increase the motivation of people to use the online payment option, it would be ideal to start with those who already did online shopping so that the trust the service and spread the word. People who already successfully passed the fear of revealing their payment details online would be a starting audience for smart services online payment. On the other hand, if the target audiences are people who never requested to issue a credit card before, then most likely they will not respond to the motivational approach.

- The next issue with the target people is the familiarity itself, as it is essential to choose the people who are already familiar with technology, and always keen to use it when possible. It is also highly recommended to avoid people who are scared of adopting new technologies and find it difficult to switch between old to recent technological channels through different providers regardless of the concerned industry.

6.1.4   IDENTIFY OF PREVENTION CAUSES

It is considerable for the design team to point out the reasons that prevented the desired behaviour. For instance, Emirati citizens are not using a certain services of the available smart services through the app, in specific all services might be in use but the passport renewal is not. Therefore, the design team need to identify the reasons for that and why this services lacks motivation. Fogg argued that most of the preventers could be categorized in one or more of the below three elements:

- Lack of motivation.
- Lack of ability.
- Lack of timing trigger to perform the behaviour.

Additionally, it is essential for the persuasive technology not to focus only on triggering certain behaviour, but to also motivate and facilitate the desired behaviour. Moreover, by being able to answer and/or prepare the above three steps, then the design team is ready to move to the fourth phase of the persuasion approach, and they will be able to determine the needed work according to the previous analysis.

6.1.5 CHOOSE APPROPRIATE OF TECHNOLOGY CHANNEL

Design team shall move to this step only after identifying what are the factors preventing the desired behaviour, and then they should decide on the best technology channel to be used to serve the desired behaviour. Fogg argued that in order to choose the right technology, three factors should be taken into consideration:

- The target behaviour
- The audience
- Motivational preventers

Nevertheless, the vast technological development introduced many channels that could be used differently, which created a challenge for the design team to choose which channel is to serve their audience in the best possible way, and which channel is the most efficient as a medium, therefore it is the team responsibility to decide on one or more of the too many available channels such as the below:

- Web
- Mobile Apps and text
- Video games
- Social media

Secondly, it is very essential for the design team to choose a channel, which is familiar to the group of audiences and not completely novel. Applying this approach to the UAE citizens, if government would like to motivate a group of young generations to use the smart services more, it will be almost impossible to expect them to change their behaviour if for example they decided to use the regular post services to communicate with them, as they are likely using e-mails and social media as a medium of communication, and according to Fogg it is already proven that expecting audiences to change two behaviours is unlikely to happen, and here we would request users to first change their regular communication channels, and moreover increase their motivation to reach the design team desired behaviour. Moving forward, the team should consider

the answers of step three question in order to facilitate the choice of the channel, as some of the available channels work well with lack of motivation, while some others can perform better if the issue is lack of ability, and indeed it is very recommended to choose the channel that work in best effective way with the already identified causes of lack of motivation by the design team.

6.1.6 BENEFIT FROM EXAMPLES OF PERSUASIVE TECHNOLOGY

It is mandatory for the team to search for successful and relevant persuasive technologies. The technologies they will identify need to be relevant to the outcome of the previous four steps. For instance, if the Emirati government is working to persuade older people to use the smart services channels rather than the traditional methods. It is then necessarily to find a solution that already succeeded before in a similar context, this could be something like a similar technology used before in the same industry or even different businesses where they could have for example used it to persuade same group of people to use Internet banking. However, it is well known that most of the companies are not sharing their outcomes of a certain persuading technology used before, but the design team can come over such an obstacle by expecting the successful methods. For example, a bank is using a specific technology with similar group of users, then it is most likely a successful skill otherwise the bank will stop utilizing it and will search for a different and new technology. Therefore, even without explicit information, still possible to guess what technology could work well for the desired behaviour.

On the other hand, Fogg argued that the team will need to study more than one technology in order to decide on which one to use, and even if they find the successful and relevant technology, they still need to study more than one. Fogg argued that the best practice for the team is to study nine different examples, and he classified them as the following:

1. Three examples that targeted similar group of audience before.
2. Three that achieved similar behaviour before.
3. Three examples that used the same technology before.

Nonetheless, it is also advised for the design team to learn from the professionals' best practice that worked in the same field before. For instance, the Emirati government can utilize the various models of other governments in order to decide on the persuasion technology to be used. Additionally, Emirati government will need to do the same by identifying nine different technologies following the suggested sequence of Fogg before deciding on any.

6.1.7 IMITATE SUCCESS

Subsequent to completion of step five, by studying different examples of persuasion technology, it is the time to decide on one of them, and imitate it. Long time ago, it was a novelty era, and a design team was required to come up with a new and innovative technology to persuade a certain group of people, to adopt a specific behaviour. However, in today's business it is much easier, and the design team will need just to decide on existing technology and use it, since there are many examples already in the market, and they are very successful. Additionally, by doing so, the design team will benefit from many advantages such:

- Save time
- Avoid big risks
- Adopting already successful technology
- Carry on already known best practices

Nevertheless, it was argued that most of the design teams resist to this step, and they prefer to be innovative rather than mimicking existing, or already used before technologies. However, it is very recommended to adopt a technology rather than start from scratch, and by following Fogg's model the creativity indeed exist but after adopting a technology. In fact, creativity will be at a later stage, and in particular in step eight. Additionally, adopting a technology might be seen easy, but it is still challenging for the design team to identify the reasons of successful of a certain technology. Fogg argued that, the best approach to identify the reasons of success is by using the answers of questions in step three. For instance the team will need to answer questions such: What the successful technology is triggering in order to achieve the desired behaviour?

- Increasing Motivation
- Providing ability?
- Triggering audiences to adopt behaviour?

Furthermore, when applying this phase to any of the challenges facing smart services in UAE, design team will need to first identify what is prohibiting the desired behaviour. For instance if users are not using the app because they find it time consuming, then there is a motivation problem. While if users are avoiding the services because they don't know how to use smart phones in general, then it is ability problem.

6.1.8   TEST TO PROTOTYPE

This phase is where the team need to test the audiences' behaviour. It is recommended to establish many small testes rather than big one. Moreover, every test should not take more than few hours in total, and tests should be done repeatedly. The idea behind the tests is to monitor people reaction to the used technology, and to give the team a chance to establish prototype.

On the other hand, the tests are to give the design team a chance to experiment the technology they decided to use, and to reach the audiences, as well as to experiment the change in behaviour. Furthermore the ideal situation is to run the tests quick enough in order to gather information on the progress of the persuasion. Nevertheless, the design team shall not move to step eight without achieving success on a small scale on any of the tests, and this achievements will not be possible without running many small and quick trials till change in behaviour is observed from the targeted audiences. Applying this phase on the Emirati model, we can say that the design team will need to run several tests, for example if the team decided to use internet and particularly social media channel to motivate users, then different websites and different format of interaction could be used on a small scale firstly, before the team moves to the last phase.

6.1.9   EXPAND ON SUCCESS

The last stage of Fogg's model should not be started unless the team achieved success in step seven on small scale as argued earlier, before they move to step eight and magnify the initial successes to a larger scale in order to achieve bigger and noticeable change in behaviour results. Achieving bigger results could be done by following different ways amongst which Fogg suggested three approaches:

- **Set targeted behaviour more challenging**. For instance if the team was successful to encourage people to use specific smart service channel, we can ask them to use more than one channel in order to provoke bigger successes. This approach is used with the same audiences who already showed cooperation and by doing so the design team have the choice of either setting more challenging targeted behaviour, or by using more complex technology channel.

- **Set new targeted audience**. For instance, if the UAE government was successful to persuade the citizens of certain group of audiences to use the smart services, then it is possible to expand to cover different audiences, or even to target same character audiences but with less likely adoptive behaviour. In other word, this approach rely more on targeted new audiences with possibly different behaviour.

- **Expand on same audiences**. By expanding on the already targeted audiences, the design team can possibly scale up the already acquired successful behaviour by targeting similar audiences but on a wider geographic area. For instance, the UAE government can expand the tested persuasive technology to be used across the whole country, or possibly not the whole country, but more cities or emirates could be included in order to reach bigger group of citizens, and consecutively bigger scale of success.

To conclude, Fogg's persuasive design is used to give a successful start point to the design team and not to achieve an immediate big result. Therefore, by following the eight steps, the team should be able to identity successful technologies, and also be able to adopt on a larger scale. In other words, and as argued by Fogg, the model is a starting point of a controlled experiment, where a team can lead the change in the human behaviour of a targeted audiences. Nevertheless, the model cannot be adopted randomly as the steps need to be followed in the correct presented order in order to achieve success, and to respect the instructions set by Fogg. Furthermore, the different phases are quite challenging and the needed works on some of the phases are heavily relying on the result of some previous steps, therefore the design team need to pay attention and to follow the order. The graph below explains the different phases and combines them in three main parts. Fogg eight steps classification is shown in Figure 6-1.
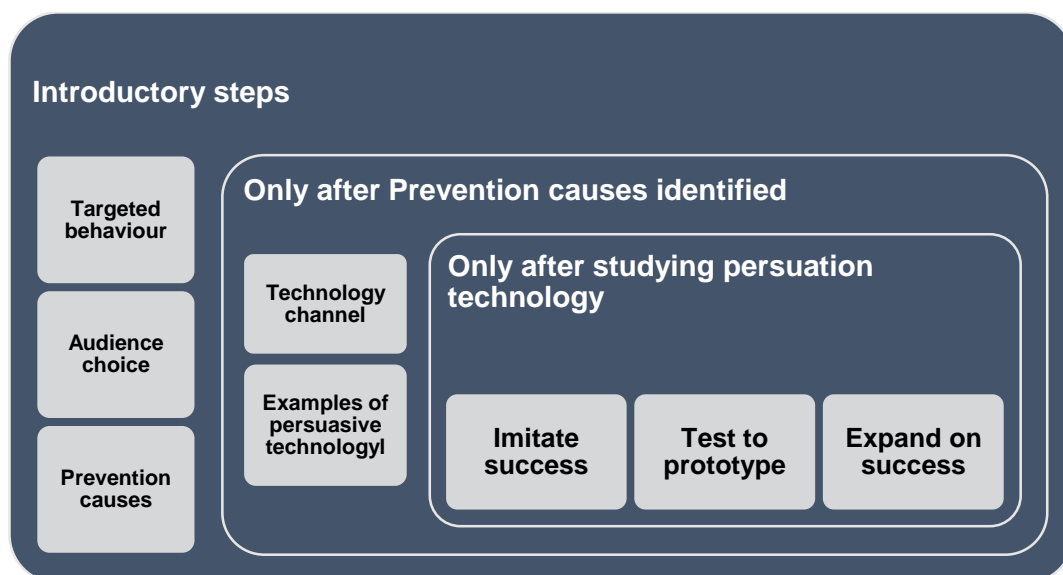
FIGURE 6-1 FOGG EIGHT STEPS MODEL OF PERSUASIVE TECHNOLOGY

6.2 SMART SERVICES INVOLVED PARTIES

In every proposed challenge there are different key players, either the ones who are offering the service itself and that could be the government or any entity representing the government in dealing with public, the beneficial persons or entities of a specific service, and the people or entities that are concerned about the success of delivering the service to the final users in the desired way. However, the different involved parties can be categorized into the below three main segments:

- *Steerers*: This segment includes all customers either citizens of the UAE or foreigners living there, which are using the service and directly concerned with any of the four main challenges.
- *Offerers*: This segment includes the different entities that are representing the authorities and offering the service to the final user.
- *Interested*: This segment includes the different ministries and authorities that are concerned on providing the service to the citizens either by themselves or through third parties.

After the Introduction of the eight different phases of Fogg's model and linking the different steps to the Emirati form of the smart services, it is essential to apply the model and give recommendations to the major four challenges facing the government. Below is deep analysis of each of the four challenges separately in alignment to Fogg's model and possible actions suggestions.

6.3   CHALLENGE 1: IN PERSON CITIZENS PREFERENCE

6.3.1   CHALLENGE 1: EXPLANATION

In the previous chapters the researcher introduced several aspects of the smart services usage in the UAE. The researcher collected the information from users, experts in the field, and different involved stakeholders in the smart service introduction and execution. Moreover, the analysis of the collected data supported the researcher to highlight the main challenges that are facing the smart services usability among the Emirati citizens, and one of these obstacles is the preference to use the traditional channels rather than the smart solutions for two main factors:

- Negotiation power.
- Use of mediator.

The survey results confirmed that the minority of the people are using the smart services regularly, and if we call back the answer to the question in the survey about: "do you use the smart service

or not", we can assure that only few people using it regularly, as the results showed that 85% have used the services at least onetime, but only 33% use it on regular basis. On the other hand, citizens still prefer other channels tin comparison to the available online tools to acquire certain service. For instance, the survey question about: what method do users prefer to have any of the services done whenever needed, the answer to this questions strongly confirmed that the internet channel is not very popular in UAE. For instance, more than 30% confirmed that they prefer to interact with the government over the phone, as they can speak to a human representative and negotiate with the government agent, on the other hand more than 40% declared the fact that they still prefer the face to face method, where again they can negotiate and interact with a human rather than machine, at last but not least, around 11% said that they use agents to get their services done.

6.3.1.1   NEGOTIATION POWER

The survey vital part is about the comments participants wrote at the end of their participation. Furthermore the researcher grouped them all together in previous chapters and analyse the significant comments. The researcher observed that one of the most repeated comments is about the divergence between the in person and on line offered services. Participants indicated that the use of online services does not imitate the completion of services in person, and they argued that such a difference is one of the major reasons to push the users to stick to the offline channels. Additionally, users confirmed that the overall benefit is relatively higher since a negotiation power exists, and staff is indeed willing to negotiate different solutions and offers. Moreover, participants mentioned that in most of the cases the in-person tend to be more productive not only from the perspective of getting better explanation, but also in getting better and more benefits as a result of the direct negotiation. On the other hand, participants argued that culture plays important role in their preferences, since in-person attendance is seen as a sign of more interest, and a general perception of a better value or offered services, could be claimed by using such a channel.

6.3.1.2   USE OF MEDIATOR

Furthermore, according to the participants the offline channel is still preferred due to the need of mediation, and they mentioned that this is a major factor drives people to still use the offline channels rather than the smart services. Mediation is when users tries to find a person in their friends circle who is working for the government, and they will attempt to reach that person out in order to ask for help in either finalizing the regular services, or getting special discounts or reduced fines when applicable. It is not only confirmed by users that the in person is still much preferable over the smart solutions, but also experts confirmed that fact. Additionally, experts

linked this challenge to the motivation of the users, and they argued that the in-person is more motivating for the users in comparison to the electronic channels, and they believe that the design is one of the reasons causing motivation variation against the will of the government when introduced the smart services first.

Nevertheless, experts claimed that people are not willing to give up the negotiation power they have when they go in-person, experts stated that according to the different laws of the various emirates, officials in the governments authorities have the power to reduce fees or give special discounts. As a result, citizen do actually get better benefits when they go to the public offices rather than finishing the service online, and therefore it is enormously difficult to convince people to abandon good discounts for the sake of using the smart services solutions, which shall cost them more money. Furthermore, the options available to the public through the offline channels are much more than what they can get online, and experts claimed that it is not only negotiation but also the flexibility available is much better and far valued by the citizens. For instance, payment could be done on instalments as a result of negotiation with a staff member, but it is impossible to get such a solution if dealing electronically.

6.3.2 CHALLENGE 1: INVOLVED PARTIES

This section list the stakeholders involved in the in-person process. This knowledge is important to design the online alternative as some of the motivation relates to a cooperative process amongst the stakeholders.

Steerer

The in person challenge includes more than one steerer, as the challenge itself includes two different aspects, and therefore steerer segment includes the below two main dissimilar group of users:

- Group 1 contains those citizens who still prefer to go to the regular offices to deal directly with the government representative to finalize any issue related to the government services. This group prefer this method in order to negotiate directly face to face to work on getting better value or service, and possibly they are expecting better service value, in terms of cost or process.

- Group 2 includes the citizens that still prefer to search for a mediator, in order to help them get better services, or cheaper fee than the regular costs. Such segment of users are mainly seeking better service or reduced costs, and they avoid the smart services channels

because human interaction is not permitted, and they will not be able to use their connections to get better services as they would prefer too.

Offerers

The in-person challenge includes one offerer but represented in many formats. The offerers are actually the government offices that are still offering direct interaction with users in order to offer and deliver a certain service to the public, which is also offered by the smart solutions. The government offices can take many formats and offer different services but still users will be able to negotiate and use mediator to finalize a services. The different formats are many and the below are three examples:

- Traffic authority office: where users can go to request driver licenses or to renew their license, and could be also used to register a car. In other word any service related to driving a car, which is done through the traffic authority, as a representative to the government. And users will be able to negotiate and use mediator to receive better services.

- Immigration authority: which includes the offices where citizens might go to request a relevant services such as issuing and renewing passports and family cards.

- Telecommunication providers: citizens might need to apply for a certain services such as a fixed line, or to request any added services to their existing services offered via the telecommunication providers, and rather than interacting online with the government, they might prefer to go in person and have the chance to explain to the representative and getting better service or discount.

Interested

This segment includes all the parties that are keen to deliver the service positively and offer good service. For the in person challenges the below are the three main interested players, and even if all are representing the government authorities but they can have different point of interest.

- The government as a general authority itself: as it is concerned to offer all the services to its citizens through the different channels, and even if they are pushing the people to use the smart services, but they are still working towards offering good service level through different channels.

- The sub government authorities: this could be any of the miniseries, which is keen to offer the various services to the citizens, and is using the smart services applications, as well as the traditional channels.

- The different offices: Which are representing the various ministries and dealing with the citizens directly, and keen to offer a good service, and deliver the expected service level.

An illustration example of the interested party is a citizen is interested to apply for a new fixed line to his or her new house. For such a case we can find that there are three different interested parties (Figure 6-2) to get this service done as the below:

1- The government: which it is objective to offer good and reliable land lines services to all citizens.

2- The Telecommunication Regulatory Authority, which is keen to offer fast, and good quality telecommunications services, and representing the government for all the issues related to the telecommunications.

3- The telecommunication customer support offices that deal with the public and should be able to offer good service to all different users according to their needs.
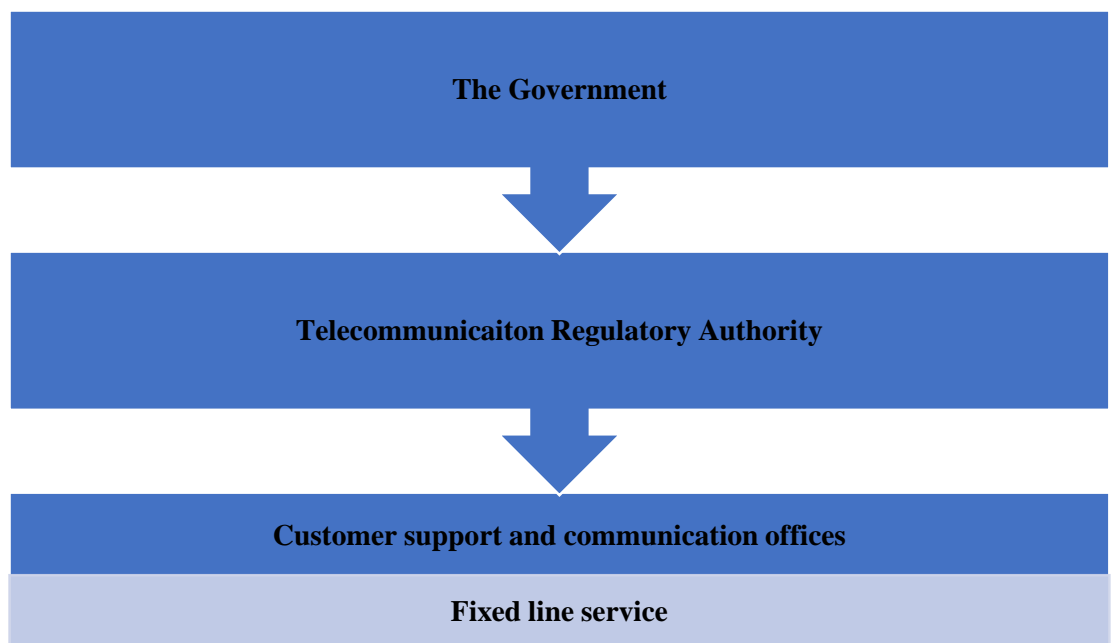
FIGURE 6-2 INTERESTED PLAYERS IN THE "IN PERSON" CHALLENGE

Nevertheless, all interested party share service delivery goal but in different forms, and the use of the smart service channels could be promoted at any of the different levels, and communicated to the citizens wisely. Figure 6-3 summarizes the different roles in relation to Challenge 1.

Steerers	Offerers	Interested

UAE citizens that prefer traditional channels with direct interaction	Direct interaction offices	Government
UAE citizens that seek help of mediator		Government authorities
		Government public offices

FIGURE 6-3 IN PERSON CHALLENGE INVOLVED PARTIES

6.3.3 CHALLENGE 1: APPLICATION OF FOGG MODEL

In order to overcome this challenge, the researcher apply Fogg eight steps model and will recommend a guideline to the UAE government on how to solve such a problem in alignment to Fogg's suggestions. Furthermore, the below eight steps represents the solution bearing in mind that this recommendations are not replacing the need of design team as argued by Fogg, However, framing the eight steps in accordance to the in-person motivation problem:

6.3.3.1 TARGETED BEHAVIOUR

The behaviour the government should work on is limiting the in-person preference and switches the citizens step by step to the smart services solutions. And for this challenge in specific, the behaviour will be eliminating the mediator use, and stop the negotiation power positive outcome, which already exists, and motivating the in-person behaviour.

6.3.3.2 AUDIENCE CHOICE

As argued by Fogg it is essential to choose the right people as it could entirely hinder or enhance the solution. The researcher recommends targeting people that already showed potential from the survey, as they have used the smart services at least one time before. This is essential; as by doing so the government is making sure that we are not targeting absolute irrelevant users. After identifying the group of users that used the service at least once, it is time to filter them in order to select the people that showed in person preference even though they are able to use the service.

6.3.3.3 PREVENTION CAUSES

The data collected through the user survey and the answers received during the interviews with experts all together, confirmed the fact that the positive outcome users are getting by using the in-person, or a mediator, are the main causes that prevent citizens from using the smart services. Therefore, it is clear that such outcome is preventing the strategic goals of the e-government

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practices. Therefore, the need to eliminate the benefits that users might get by hiring mediator is essential.

6.3.3.4 TECHNOLOGY CHANNEL

To choose the channel to be used it require a dedicated design team, however since the users already showed that they are familiar with technology and internet, so it is most likely to be electronic channels such e-mail or social media, however researcher can not confirm such a channel since it requires a full dedicated team. Nevertheless, the channel could be combined with other services, for example if the targeted audiences use the land line often, then the government could send them recorded messages directly to their fixed lines in form of a regular phone call, explaining all the details and the benefit of the smart service to them and to the country general interest too, as the survey showed that country benefit is very good factor driving the behaviour of the Emirates citizens.

6.3.3.5 PERSUASIVE TECHNOLOGY EXAMPLES

As argued by Fogg, this step cannot be done before the previous four steps, and it is essential and the success of the whole model is highly relevant to a successful choice of technology. However, this is challenging phase, and is not simple for the team to decide on which technology to use. On the other hand, the design team can take examples of similar success stories in the smart service industry from other governments, and even if the data is not available to the public through regular channels, but still smart service success in different countries can be reached from different reports, and the design team can estimate the success of different technologies available in the market and then build on that.

The government need to decide on one of the successful technologies and to start adopting it in order to use it. Nevertheless, the design team will need to decide on that, but we can recommend using the social media since the targeted audiences are highly sensitive to the mediator power, and by getting recommendations from their friends and other users, that should facilitate the switch to other channels by triggering their motivation.

6.3.3.6 IMITATE ON TECHNOLOGY

This step would not apply to this challenge. The main reasons is that the persuasive technology could be an augmentation for a more profound change and normalization of both in-person and online processes.

6.3.3.7 PROTOTYPE

Following the previous steps, it is the role of the team to start testing the audience behaviour as move seven require. For the challenge of in-person, and assuming that the design team will come to a decision on the use of social media to eliminate the negotiation power and limit the mediator use through behaviour change, then there is a need to run several tiny tests on small scale and often enough. As a result to the tests, the design team will be able to determine which technology is better serving the targeted behaviour. Additionally, the social media and search engines websites could be used to run the small tests in several formats such:

- An social media group or forum where users can get discounted fee by inviting other users to like and follow the page.
- An invitation through social media websites to perform at least of the targeted smart services and get it at very discounted rate.
- Advertise for the smart services through the social media websites, or search engines and these advertisements campaign shall target only the selected audiences.

6.3.3.8   EXPAND ON SUCCESS

The UAE government represented by the design team will need to expand on the results achieved by the successful technology and channel. For instance, if the facebook page successfully switched the behaviour of many users to use the smart services apps and website, then it could be positive to build on such a channel and expand on the target audiences or the geographic area. Fogg recommended three possible ways of expansion and for the in-person challenge they could be one of the below:

- Use the same page to reach more users.
- Change behaviour to more challenging goal.
- Same technology to reach audiences with different characteristics.

Figure 6-4 summarizes the findings in relation to Fogg 8 steps process and the Challenge 1.

Targeted behaviour	Audience	Prevention causes	Technology channel	Persuasive technology	Imitate technology	Prototype	Expand on success
Stop or limit the	Users with		Online	To be decided	NA	Social media	Same technolog

in-person preference	ability to use smart services	Benefits of negotiations		by design team		Search engines	y but different goals, audiences, or targeted behaviour

FIGURE 6-4 IN PERSON CHALLENGE THROUGH FOGG MODEL SUMMARY

6.4 CHALLENGE 2: LACK OF AWARENESS AND THIRD PARTY INVOLVEMENT

6.4.1 CHALLENGE 2: EXPLANATION

Smart services applications in the UAE are facing many challenges, and that has been confirmed by the data collected from participants during the survey, and also from experts during the several interviews carried to investigate the issue and point out the current challenges. Additionally, one of the challenges, which were mentioned several times both users as well as experts, is the lack of awareness about the services offered by the government, and also the involvement of third party in the service operation to represent the citizens, due to the lack of awareness and may other factors.

Nevertheless, the public awareness involves many parties and it relates to the procedures and strategies followed in order to analyse and improve the knowledge about the smart service and its utilization. Additionally, the public awareness is a joint work between many different entities, and one of the main players is the telecommunication companies, which are naturally a key stakeholder in the decision making, e.g. how the service would be presented and the pricing decisions. Moreover, the involvement of the third party agent in the process is directly relevant to the lack of the awareness by users, and is a solution reached by them to overcome the lack of knowledge they have, and a trial to adapt to the smart services offered by the government. However, the awareness challenge consists of two main factors as explained below and confirmed by users and experts.

6.4.1.1 PUBLIC AWARENESS AND EDUCATION

It come into view from the experts collected feedback and the users survey analysis, that services are being introduced without enough preparation in place on how to educate the public about the services, and no clear strategy on public engagement with the smart services channels as well as how to create awareness among citizens through education. Nonetheless, the lack of awareness is

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quite significant and include many different factors that affect directly and indirectly the usage of the smart services, and those different factors that were highlighted by experts as well as users, are categorized differently, however not all of them are applicable for persuasion technology model adoption, and therefore the researcher have decided to utilise the below four (illustrated in Figure 6-5) only within Fogg model of persuasion:
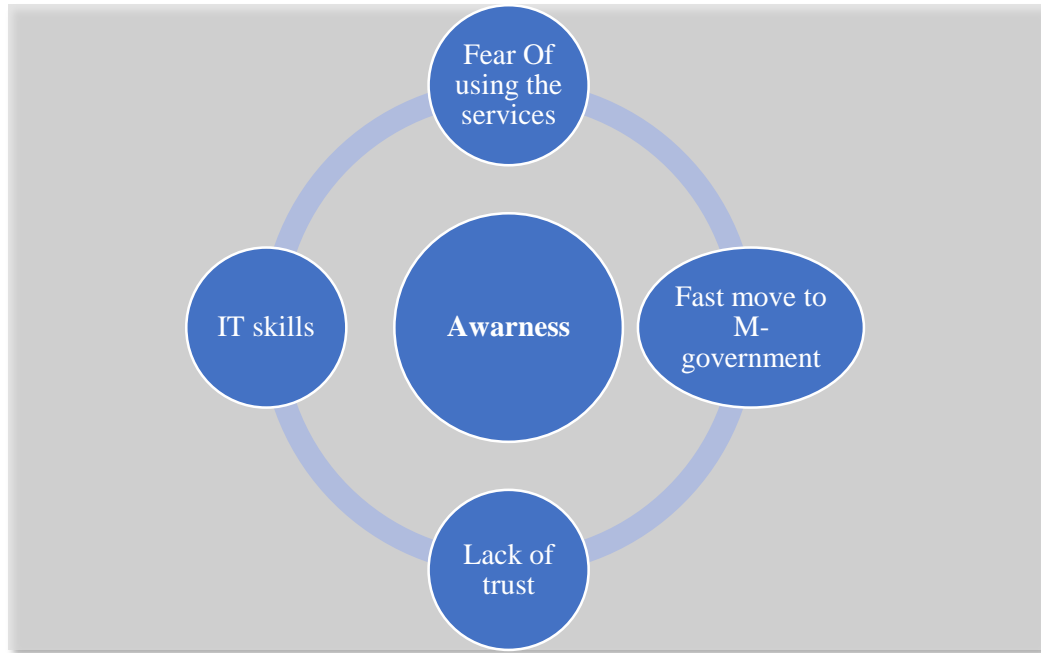
FIGURE 6-5 AWARENESS FACTORS FOR THE PERSUASION MODEL

- **Fear of using the services**: Users lack confident in technology still, and they fear using the new channels due to lack of trust in the offered channels and their understanding.

- **Fast move to M-government**: The UAE government is moving very rapid toward the smart government application, and in reality much faster than the development of the public awareness, which if forming a challenge towards the awareness.

- **Lack of trust**: Experts mentioned that awareness is not only about the knowledge the users have about a certain service, but also about the degree of their trust in the offered services, Experts argued that it is essential to educate the users about the smart services and communicate all involved risks and benefits so users can enhance their trust, and as a result increase their awareness.

- **Awareness of IT-skills**: Experts mentioned that one of the main issues is the IT skills knowledge possessed by users, and they argued that the IT skills are considered a main awareness issue that threaten the smart services.

6.4.1.2   *EMPLOYMENT OF THIRD PARTY*

Many of the users eliminate the use of the smart services, and avoid it through one of the available channels. The reasons behind that are many but the main ones are the following:

- Lack of knowledge about the smart services.
- No online banking facility.
- No IT skills.
- Lack of trust in technology.
- Better services offline than online.
- Negotiation power.

All these factors helped the foundation of the third party agents' business involvement. In other words, those users who avoid the use of the smart services, they have the option to go to agent which is representing a specialized company to deal with them, and get all the services done on their behalf for an extra fee as a commission collected by the agent. Nevertheless, the foundation of the third party ended the challenge to switch to smart services even harder, as the government now is actually facing two challenges

- Convince people to switch to the electronic channel.
- Convince people to not hire third party agents.

In spite of this, the third party challenge exists as some of the users cannot really use the smart services for either age or education reasons, and the government cannot ask them to use the services without external help since they don't have the ability to do so. Nevertheless, the answers collected from users during the survey have leaded to highlight the use of third party factor, as users mentioned that some of them can use the smart services easily, as they do have the IT skills and the needed technology, but they still prefer to have someone else to represent them in order to avoid risks, which is due to lack of trust in the used technology. In other word, some users can do the transaction easily with no difficulty, but they prefer to pay extra and to have someone to communicate with and be responsible of any mistake might happen during the transaction. Moreover, some of the users mentioned about the added values they can get through third parties, and they prefer that even if it will cost them extra money. Furthermore, third party agents, are offering more than what the government does to the public, as they can provide faster and direct customer care, less waiting time in comparison to traditional channels, better trained and educated staff, and better understanding of the smart services and how it works.

Moreover, it is obvious from the results collected that the third party challenge exists and is working against the engagement of users in smart services, it is also confirmed by the users and experts that lack of awareness is huge, and is not limited only to the smart services, but it is wider

and include many aspects that are directly or indirectly touching the smart services applications, and the exerted efforts by the government to encourage the citizens to move to the smart channels.

6.4.2 CHALLENGE 2: INVOLVED PARTIES

Every challenge includes various involved parties represents all the different behaviour and goal of every group of people that are directly concerned with the challenge of interest. Additionally, and as explained previously, parties are always categorized on three main segments, steerer, offerers, and the interested segment.

Steerer

For the lack of awareness and third party challenge we can find that there are three main steerer segments as outlined below:

1. The first group includes those who lack awareness, and they are not able to deal with the channels offered by the government. This segment of people is not limited to a certain type of awareness, but includes all different aspects. For instance, citizens that lack IT skills or knowledge will be all included in this segment equally. In other words, this group represents all users that face awareness issue.

2. Second steerer group is the smart services users that cannot perform any of the smart services transactions due to various reasons that hard to come over without third party involvement. An example could be elderly people, or citizens that never use online banking facilities, and/or people that absolutely not able to integrate with the development of services for different reasons and they always hire a representative to finish the transactions on their behalf when dealing with the government.

3. The third steerer group is the people that actually lack awareness but they are keen to develop and educate themselves through the different available channels. Moreover, this group could be considered sub segment of the segment of users that lack awareness in general, but they are differentiated by the fact that they develop their knowledge. The education here is not necessarily through a certain channel such media, workshops, and/ or schools, but the vital point is that education is happening.

Offerers

The offerers are the entities that are providing the services, and are involved in the lake of awareness challenge. Nevertheless, the offerers here are more than one and can be described as the below:

1. *The public affairs department* of the different official entities that are concerned with the smart services. Such departments can be considered as offerers, however, this can be different sections in the different ministries such:

    - The information department in the telecommunication authorities: they are directly responsible of communicating the knowledge to the citizens, and consecutively to develop awareness of the citizens and motivate them to use the different services. Additionally, they are accountable to interact with the public on behalf of the ministry, and it's their responsibility to communicate the needed knowledge to perform various services through the relevant channels.

    - The media authorities: they are responsible of enhancing the awareness and knowledge of the public in general, and for the case of the smart services, they are furthermore liable of communicating to the citizens the benefits on both, individual and community level, as well as the available channels to get or learn about the smart services utilization.

    - The public affairs departments in all the different government authorities that are offering smart services. These departments are responsible of offering up to date knowledge and information by all formats to the public, and to make sure that the information are always available and easily accessible when needed.

2. *The third party agent*: they are considered offerers as they are representing people in dealing with the service provider. While doing that, the agents may take a role of informing users about the service and how it is achieved. However, educating users might be contradictory to their direct interest, since they charge people for the service they provide, but still educating users should be part of their work, and should be encouraged by the government. Nevertheless, third party agents could be observed in various formats as offerers such:

    - External website offering help to users with smart services.

    - Offices offering direct interaction with users.

    - Printed material with steps and help on how to use the smart services.

3. *Non-profit organization*: these organizations that are there to help citizens without monetary benefits, and they are offering their services free of charge in order to offer better community services, and to provide support for people that in need of help. Moreover, such organizations are offering their support in different ways such:

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- Free brochures on how to use smart services.

- Direct and free help by staff representative in the public offices.

- Staff helping senior people to deal with the government.

- Advertisement in the different media channels to educate users.

Interested

The Interested segment is group of entities that are concerned with the delivering good smart services education, and enhancement of awareness among users. The interested group is represented by three sub groups as the below:

1. *The government itself*: smart services are part of the global vision of the country, which is keen to shift to cover at least big percentage of the citizens if not all towards the smart services. Therefore, the government is concerned with the awareness among the public, and is investing in educating and offering different knowledge resources and channels to encourage users to use the smart services.

2. *Ministries within the government*: every concerned ministry is keen to decrease the number of transactions done through its offices in order to match the global vision of the smart government. Therefore, ministries are interested in the awareness of citizens' increase, since they are directly affected by either the more or the less awareness.

3. *Third party agents*: are concerned to get the smart services transaction done in order to keep generating money by working on behalf of the citizens, and to keep offering their services to the public. There could be a profitability risks for these agents in case the users are willing and able to use smart services by their own.

Figure 6-6 summarizes the relation between the different roles and challenge 2.

Steerers	Offerers	Interested
People with lack of awareness	Public affair departments	Government
Permanent lack of awareness	Third party agents	Ministries
Citizens keen to increase awareness	Non-profit organizations	Third party agents

FIGURE 6-6 LACK OF AWARENESS-INVOLVED PARTIES

6.4.3 CHALLENGE 2: APPLICATION OF FOGG MODEL

As decided before that Fogg's model is the most suitable persuasive technique to be applied on the smart services challenges faced by the Emirati government. However, the model consists of eight steps, but it is not always the case that the whole process can be applied; therefore, the model will be applied only when applicable.

6.4.3.1 TARGETED BEHAVIOUR

The main behaviour problem is the lack of awareness by users. Nevertheless, this problem might lead users to search for mediator, or hire third party agents to deal with the government on their behalf, however, the main challenge still not the mediator but the lake of awareness and shortage of knowledge which drive the users to actually search for alternative solutions to get their services done. Furthermore, the awareness problem could be permanent or temporary as explained before, but regardless of its nature it is still a challenge, and need to be address.

6.4.3.2 AUDIENCE CHOICE

The researcher recommends to focus on the segment that face only temporarily lacks of awareness and to avoid the users with permanent awareness problem. For instance, audiences must be the people that are able to develop knowledge, additionally the awareness challenge they have must have been developed due to solvable issues such:

- No trust on the system
- No trust on online payment
- Slow internet connection in certain far areas
- Long online procedures

Additionally, audiences should not be by any means with permanent problem awareness preventers such:

- Elderly people that cannot handle technology at all.
- Users that refuse dealing with banks in general.
- Users that have illiteracy problem.

6.4.3.3 PREVENTION CAUSES

As argued by Fogg, it is vital to recognize the reasons preventing users form undertaking the desired behaviour and affecting the strategic goals, and for this challenge, the desired behaviour is using the smart services regularly till full switch from traditional channels. Nevertheless, from the collected data from both users and experts, the researcher is able to identify some of the prevention causes, which are covering two of the three main segments identified by Fogg:

- Lack of ability
    a. Users are old and can't use technology.
    b. Users don't have the minimum education level.
- Lack of motivation
    a. Users prefer to avoid risks by hiring third party agents.
    b. Users can't find the needed information easily.
    c. Service providers is not communicating the information often enough.

6.4.3.4 TECHNOLOGY CHANNEL

Since the researcher recommends focusing on audiences with lack of motivation prevention causes, and not lack of ability. Therefore, two possible channels could be used:

- Offline
    a. Offering direct education through the third party agents, in other words, when user go to the companies to help them, they will be offered live educational session in order to support them understand and perform the tasks individually afterwards.
    b. Advertisement campaigns in different media channels such TV, radio, magazines, newspaper, and street banners.
- Online
    a. Educational advertisement on social media websites.
    b. Encourage knowledge enhancement by offering discounts after tutorial completions.
    c. Send regular newsletter to users via e-mails.
    d. Participate in online social media websites actively.

6.4.3.5 PERSUASIVE TECHNOLOGY

To decide on which technology to use it is imperative process. Fogg argued that the design team should study around nine different technologies covering either same or different audiences, and also same-targeted behaviour to be able to decide on which to use. Nevertheless, it is recommended in the previous step by the researcher to use both direct interaction by hiring representatives in the third party agents, as well as online tools to increase awareness, such advertisements and social media channels. Consequently, the below are some of the question, which should be answered by the design team if Emirati government decided to follow the recommended approach:

- Which advertisement format to use?

- Which social media provider to use to interact with public?
- Hire or outsource the staff to educate users?

6.4.3.6   IMITATE TECHNOLOGY

In this phase it is the time to decide on a successful technology to use after studying the different available technologies as argued by Fogg in phase five. However, the researcher cannot give recommendations since the technologies need to be decided by the dedicated design team.

6.4.3.7   PROTOTYPE

Assuming that the design team decides to use the two recommended channels, education through direct interaction, and advertisements. It will be necessarily to test the channels often and on a small scale such:

- Run various version of video advertisement through online streaming websites such as YouTube, and monitor the users' behaviour.
- Hire personnel in the third party offices to educate users, and run survey directly to test users opinion about the knowledge they just receive.
- Send newsletter to users e-mail in different formats and with different promotion, and monitor the users' interaction toward the instructions, and promotions communicated to them.

6.4.3.8   EXPAND ON SUCCESS

After running several tests on small scale, it is the time to expand on the most successful channel. For instance, if a specific video format achieved the highest percentage of viewers then the government should expand on three different axes:

- Reproduce the same video but requesting more challenging behaviour change.
- Produce same format and similar contents on larger scale and various productions.
- Target same-targeted age group and gender on a larger scale to cover bigger geographical space.

Figure 6-7 summarizes the relation between the Fogg's process steps and Challenge 2.

Targeted behaviour	Audience	Prevention causes	Technology channel	Persuasive	Imitate technology	Prototype	Expand on

				technology			success
Increase awareness and enhance engagement	Users with temporarily awareness problem	Permanent	Offline	To be decided by design team	NA	To be decided after technology choice	NA
		Temporarily	Online				

6.5 CHALLENGE 3: DESIGN ISSUES CHALLENGES

6.5.1 CHALLENGE 3: EXPLANATION

Design is an indispensable factor and can straightforwardly encourage or discourage users interaction, and consequently the usability of a service in particular, or smart services in general. During the interviews with experts, they mentioned in many occasions that the design is believed to be an issue limiting the smart service popularity, and this belief is actually confirmed by the users during the survey, as almost 71% of the participants consider that lack of understanding and service mechanism are the reasons of not using the services frequently. Nevertheless, due to the nature of the various involvements in the smart services, experts and users identified the design problem in a different way, and gave dissimilar reasons from their point of view that helped to have a design problem.

6.5.1.1 *DESIGN CHALLENGE FROM THE USERS POINT OF VIEW*

Question number seven in the survey is about the factors that limiting the usability from the participant point of view, and contributors answered that questions by rating the design as number one factor out of six factors in total scoring 71%. On the other hand, most of the comments that were written by users at the end of the survey were relevant to the design factor itself. Additionally, users positively introduced clear idea of where exactly the design problem is during the survey, and we can say that according to them the challenge is in the below four parts:

Mobile friendliness: users believe that the mobile website of the smart services is poor and not encouraging easy access. Nonetheless, they added that for some services, using mobile phone is time consuming and tiring, since they need to navigate across different pages of the same form,

and if they forgot some information then they will need to search and edit on a small size screen. Therefore, most of users claimed that they would prefer to avoid the whole smart service concept due to the difficulty they faced with some of the services.

Service nature: some of the users linked the nature of the service to the design, and they claimed that certain services are complicated and wont be easy to provide simple design anyway, since it requires many fields to be filled and documents to be uploaded. Additionally, users mentioned that they tried to use the smart services for some of the complicated transactions, and they claimed that it was very difficult, and especially when using a mobile phone with relatively small screen, which is limiting the move easily between the fields especially, when it is a big form with many fields.

Service flexibility: According to the participants, this is driving most of the users away, since it is impossible to edit any submitted forms. Users argued that after filling a form and successfully submit it, it is not possible to retrieve the application and do some edits if needed. Additionally, users believe that this is a design problem and they should be able to edit the forms even after submission, especially during the time when no real transaction is being done such weekends and evening time.

In person: according to users feedback, some smart services require offline attendance even if requested online, especially if there is signature or personal photo is required. Accordingly, users claimed a vital design problem, and complained that there is no point to request something online if they have to go anyhow to the public office to finalize their request. They added that the smart services in such a case could be even more time consuming in comparison to the regular channels, since it will require both, online and offline engagement.

6.5.1.2 DESIGN CHALLENGE FROM EXPERTS POINT OF VIEW

Expert interview meant to test three different core areas, and the service design is one of those. Questions were designed in order to assess the significance of the design part, and to also investigate if there is a room for design development or not. Additionally, experts were asked directly how the service was designed, and what business goals were taking into consideration during the design phase, as well as the participated parties in the design. On the other hand, the interview findings and analysis lead the researched to eight main themes and design is one of them. Nevertheless, experts argued that when smart services were designed many factors were considered; they also confirmed that they are currently facing many design problems that are the results of poor design such:

- **Lack of ease of use and user friendliness:** experts argued that using the smart services is not really easy for some users. There could be a need for a higher clarity about what is really required from them, what steps to be followed, as well as instruction on how to finish an online request. Additionally, it was also mentioned that the used language might be a problem itself, as sometime it is too technical or unclear, and users cannot understand most of the terms easily, which will discourage the usability.

- **Current design allow lengthy process and does not avoid traditional channels:** experts believe that one of the design challenges is the length of the request, as users take more time to understand the form and the relevant online questions in comparison to offline. And users tend to terminate the online transaction if they are faced by unclear questions, accordingly, the online process might take longer time, which could results in offline preferences to avoid ambiguity and lengthy process.

- **Service classification and taxonomy:** smart services are offered to users with different backgrounds and not only Emirati citizens, even if most of the services are available to mainly citizens but the fact that it is used by different nationalities is there. Experts argued that this fact was not taken into consideration when services were designed, and that result in poor design for some segments since the user behaviour was not considered and as a result some users find it very complex and does not match their needs, while others might not spot it the same way.

- **Lack of instant explanations and educational instructions:** The current design does not really educate users, and is not informative enough to encourage participation and increase usability. Experts believe that one of the main design problems is the lack of explanations and information windows during the process. Moreover, experts believe that all involved parties should work together in order to provide instant help, and users should be able to find explanation for every form and/or step easily and in simple and clear wording.

- **Not considering elderly people and electronically illiterate segment**: The design does not take into consideration such segments, and one of the current challenges is that segment, which can not access the smart services due to their inability. Additionally, some of the smart services offered by some of the authorities are very strict, and they apply zero offline strategy, which is pushing this segment to seek help outside, and might cost them more money in most of the cases.

- **Design to maximize users' security:** Experts confirmed that security is an issue with the current design, as most of users still fear using smart services for security reasons. One of the reasons is that security measures are not communicated to users, and that the government assumes user responsibility to protect personal information. On the other hand, the current design could still need to increase the direct communication with users in relation to payment and privacy issues. For instance, instant confirmation SMS when payment was done or a form was submitted under the users' username would be a desired feature. Additionally, the importance of security for both financial details and personal information is very high and the design besides maintaining them would also need to inform the users to protect their data and apply high security measures.

- **Design lack channel of continuous development:** Current status of the smart services does not allow much room for development, and experts expressed their concerns about the lack of quick development for the services design when needed. For instance, currently there is no clear workflow process on how to investigate and fix design issues, and this result in poor design since positive and/or negative aspects are not easily spotted and dealt with. On the other hand, unsolved design failures will cost the whole smart service concept a lot and will be very difficult to overcome if left without immediate fix.

- **Design is not matching current public configuration:** Experts argued that one of the current design problems is the lack of public understanding. Moreover, experts complained about the fact that the people who are responsible of the design, are not well connected to the public, and that result in unintentionally poor design, since the nature of the current population of the Emirates include many different nationalities with different needs. On the other hand, understanding the public behaviour and characteristics and apply them into the smart service design is not the only issue to match public needs, but a continuous channel of quick adoption to the needs change is vital.

6.5.2   CHALLENGE 3: INVOLVED PARTIES

As mentioned before that every challenge includes different parties, with different role they are playing and different interest. The involved parties are either the entities that offering the services, or the people or entities that are seeking the services, and finally the interested group which is the entities that are concerned with the success of the interaction between the other two segments.

Steerer

This is the first segment of the involved parties in the design challenge for the smart services. It represents all the people that are directly affected by the design challenge, and their usability of the smart services is limited. Nevertheless, this segment includes mainly four different types of user according to the design issues raised by the experts and the survey participants.

- **Security concerned users:** this group include all smart service users that are able to understand the process, and have the technical ability to use the smart services, but they avoid it due to lack of security measurements and/or communications. Nevertheless, this group main concern is protecting their personal and financial data when using the smart services, and they assume that by dealing through the regular channels, they are limiting the risks and transmitting the responsibilities to the government representatives.

- **Elderly and computer illiterate users:** this grope includes all users that cannot use the smart services at all due to their inability to deal with smart phones or using Internet in general. Such category are currently neglected in the design as the smart services are not offering any regular channel for this group, and they usually overcome the challenge by hiring third party to deal with the government on their behalf.

- **Users that do not understand the services:** This group include the people that are actually able and willing to use the services but they cannot due to the lack of instructions or explanatory tutorials. This group are computer educated and able to use and understand the smart services wisely once they are educated on how to use it, but since the current design is not giving clear instructions or methods to follow in order to use the smart services, so this segment is avoiding the services due to lack of instructional approach in the design.

Offerers

Offerers include all service providers. It is not a must to be the governmental body as it could be a third party that is dealing with the public on behalf of the government, and this could be partial or full service supply. However, the design challenge includes many service offerers, and indeed they are more than just the government as outlined below in the four main offerers identified by the researcher:

1. All different ministries and authorities that are connected to the smart services portal, and offering services to the public through the online channel. This segment includes all the services that are available online through dissimilar forms, and that require users interaction. Nonetheless, it could happen that in the same ministry that not all available services are accessible online for different reasons, and in such a case, the departments

that are offering the services online are the only offerers and not the ministry as a whole body.

2. **The design team:** this group include the people that are responsible of the design of the smart services forms in the different ministries. Additionally, it also includes employees that decide on what information to be asked online and what not, as well as what documents to be asked to include to the online application and what not. However, this is different from service to another and from authority to another, but in general they are a vital player of the offerers group, since they decide directly on the length and complexity of questions included in the various forms.

3. **The web design team:** this segment includes the people that are responsible of producing the smart services layout to the public, and they are indirectly responsible of how the layout is attractive to the users and friendly to use. This segment could be either a department within the involved ministries, or could be outsourced as the current trend is to assign the web design part of the business to more dedicated companies that hire high quality designers. However, in both cases the web design team is responsible of making a simple layout, and self-explanatory as well as educationally rich design. Therefore, this segment is considered as offerers as they are linked to the lack of instruction and complexity of design of the smart services.

4. **Third party:** this segment includes the companies that replace the government to deal with the elderly and computer illiterate users. Such companies are responsible of providing the services to the segment of the users that cannot perform the transactions solely. Nevertheless, third parties companies exist in the smart services industry due to the defects of design that does not offer an easy channel for unable users. Therefore, these companies are considers to be part of the offerers segment even if they are not directly connected to the design issues of the smart services.

Interested

The interested segment contains the different governmental and non-governmental entities that are keen to deliver the smart services to the final benefiter, and to overcome any design errors that are limiting the services usability. The design challenge includes few interested groups and they can be outlined as the following:

1. **Ministries and Authorities:** this group include the different departments of the government represented by either ministries or authorities that decided to take part in the smart services, and are offering one or all of their services through the online portal. The government, is keen to increase online engagement and to provide friendly and easy to

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use design that attract users, and facilitate the communications as well as the interaction between users either citizens or residents, and the government.

2. **The research and development department:** the section in every authority that is responsible of analysing usability and received feedbacks from users, and put it into either actions, of recommendations between the hands of the decision makers. This department, can take different names from a place to another. However, the main focus is always the same which is developing the current workflow and design in order to facilitate the offered services to the public, in accordance to the collected feedbacks and communication with users. Additionally, this department is keen to offer up to date service design that match the users' needs and behaviour, and even if there is currently a gap in the design that does not allow development, and also neglect different users groups behaviour, but still they are part of the interested group since their work is linked to design updates.

3. **The public relations departments in the different ministries:** Within every concerned authority there is a team that is responsible of communication with the public through the available channels and educating them. This department is also concerned with educating online users, and offering clear instructions on how to use the smart services. Nevertheless, they should also provide the needed information to the web design teams regardless of its nature either in-house or outsources, in order to include the instruction online, and even if the design lack the instructional part, but still the public relation office of any ministry is considered an interested party since one of their goals is to educate users.

Figure 6-8 summarizes the different roles and their relation to Challenge 3.

Steerers	Offerers	Interested
Security concerned users	Ministries offering smart services	Ministries
Elderly and computer illiterate users	Design team	Research and development departments
Users with difficulty to the services	Web design team	Public relations departments
	Third party companies	

FIGURE 6-8 DESIGN CHALLENGE-INVOLVED PARTIES

6.5.3 CHALLENGE 3: APPLICATION OF FOGG MODEL

Similar to the previously introduced challenges, the researcher is proposing to use Fogg model of persuasion in order to facilitate the existing challenges with the design of the smart services in the UAE. However, Fogg model consists of eight unique steps, which are not always applicable to all the involved factors, in other words, it is not always possible to recommend certain actions to the government without having a dedicated design team. However, the researcher still proposes some actions when applicable.

6.5.3.1 TARGETED BEHAVIOUR

The design challenge is associated to the behaviour of citizens avoiding the smart services application due to design issues varies from either finding the online forms complicated to understand or sometime lengthy or require a lot of documents upload, etc. Therefore, the behaviour the government should be targeting avoidance of the smart services due to design reasons, however, the design challenge includes two segments:

- Users those are able to perform but avoid the services.
- Users those are unable to perform.

Nevertheless, the recommended targeted group should is the first, as the needed behaviour to change is the avoiding the smart services while being able to perform but the design is limiting usability.

6.5.3.2 AUDIENCE CHOICE

As always, it is essential to choose the right audiences, as the choice will have direct impact on the persuasion model. Nevertheless, the researcher recommends targeting the users, that showed interest in the service before, and they have used it at least for one time, and they avoided repeating the experience. Additionally, it is recommended to focus on three different design avoidance reasons only, and that should be done in respect to the most repeated design issues raised during the experts' interviews, and by the participants during the survey. Therefore the researcher suggests to focus on the below three reasons:

- Service is difficult to understand.
- Online services are lengthy and time consuming.

- Service design does not match the configuration of the actual users and their different needs.

6.5.3.3   PREVENTION CAUSES

Fogg argued, that it is very important to name the prevention causes as accurate as possible, as these causes will be the base to initiate the persuasive model. Nevertheless, it was argued that the causes are always cantered around one of three reasons: ability, motivation and time triggering, for instance the preventions cause of using the smart services within the design challenge is obviously the present design itself which is not motivating users. However, there are many design prevention causes that are liming the users to use the services, and in accordance to the targeted behaviour, together with the answers collected from the participants, the researcher can mention that the causes are mainly:

- The need for more user-friendly nature in smart service layout.
- The need for more instructions and guidelines.
- The need for less lengthy process that is time-consuming.
- The need for a universal design is needed to cater for diversity of users

Nevertheless, the prevention causes are not limited to the above and the design team will better confirm this once they start working on the persuasion model on the occasion the Emirati government decided to adopt Fogg as smart service persuasion model.

6.5.3.4   TECHNOLOGY CHANNEL

To decide on the technology channel to be used it requires a lot of work from the design team, but we still can recommend channels bearing in mind the nature of the targeted behaviour, as well as the possible targeted audiences and preventers. The targeted audiences are technology familiar users and they already used the smart services at least once, but they are currently avoiding it for different reasons. Therefore, the researcher believes that the channel must include but not limited to online channel. Additionally, since we already have the contact information of the audiences as they used the services before, so we can include the e-mail as direct and effective channel of communication. Nevertheless, another possible channel could be the regular postal service, and even if users are technological capable but still postal services could be effective, especially with the non-Emirati users as most of them are there to work and might not be active on the local social media pages for time or interest reasons, therefore a different channel is needed such the postal services, as it allows maximum customization, given that it could be addressed to the user directly to his/her house and could be even written in the local language of the targeted user.

6.5.3.5   PERSUASIVE TECHNOLOGY

The decision on which technology to choose is not easy and will impact on the success of the whole design as argued by Fogg. Nevertheless, it is not just a single technology decisions as it is recommended to choose nine different technologies before deciding on the one to use. The nine technologies should be three targeted same audiences' characteristics before, three achieved similar targeted behaviour before, and finally another three that used the same technologies before. Additionally, the choice of technologies could be done by the help through observing the similar services in different markets and different industries, for instance if a certain bank in United Arab of Emirates is relying heavily on the internet banking applications available on the smart phones to do most of the transactions, subsequently the bank is clearly managed through a specific technological channel to motivate a targeted behaviour from the clients. As a result, the Emirati government represented by the design team can decide to test the used technology by the bank as it already showed success. Moreover, the design team will need to decide on more technologies to test before deciding on the final one, which is expecting to make the most of success as per available data. It is highly recommended to take into considerations the professionals in the smart services field when deciding on the technology and here is it highly relevant and helpful to investigate the possible technology by asking the interviewed experts whom already showed concerns about the design and are aware with the challenge.

6.5.3.6   IMITATE TECHNOLOGY

After completion of step five, the design team should have now in hands the possible technology, and it is the time to decide on one of the available persuasive technologies and imitate. Nonetheless, it is crucial to imitate the technology and not to try to invent something from scratch as there is absolute no need for that as argued by Fogg, and the innovative efforts can be done at later stage. Additionally Fogg mentioned in the model that the decision on the best technology to imitate is linked to the answers of phase three, which is about the reasons behind the lack of the desired behaviour. However, the design challenge is facing a motivation issues rather than ability or time, and therefore the technology shall be linked to increase of motivation, as some of technologies work better with specific behavioural hinders. On the other hand, we cannot recommend any technologies since the design team should do this after identification of possible technologies as per last step.

6.5.3.7   PROTOTYPE

It is mentioned by Fogg that there is a need to run several tests on a regular pace in order to examine the reactions of the targeted audiences towards the desired behaviour. Furthermore, the

desired outcome of step seven is actually achieving success on a small scale, and it will not be possible to move to step eight before achieving any success, within any of the carried over tests that resulted in changes in the audiences behaviour. Nevertheless, assuming that the design team will choose to use the postal services to target one of the audience groups that are concerned with the design problems and are mainly foreign nationals, the minor tests could be something similar but not limited to:

- A letter addressed to the user with the changes in the service design and asking him/er to try the smart services again.
- A registered mail asking them to try the new layout of the smart services and addressing the new facilities.
- A letter written in the user local language, and motivating him/er to use the smart services and get a discount on some services.

Additionally, the above formats could be used as well to the second group of audiences, which include the nationals of Emirates but instead of sending letters by post, the channel could be direct e-mail. Nevertheless, the channel could be even different and not addressed to the client directly either by postal mail or electronic mail, as the design team could send advertisements material in form of direct and generic advertisements to be seen online by the targeted group, and/or hard copies of advertisements material to be distributed among the targeted group of foreign users either directly to their homes, or through their employers. Additionally the advertisements could also communicate different information to test several reactions and regardless of either hard or electronic copy it could be done in the following order:

- Advertisement communicating changes in smart services design and asking the user to attempt it again.
- Advertisement communicating the changes in the smart services and offering the users a discounted rate for the service fee.

6.5.3.8 EXPAND ON SUCCESS

Expand on success is tied to successful achievements on any of the small testes run previously, and without any success no expand will be possible. However, after success is achieved it will be the time to expand on it and reach bigger success by following one of the suggested approaches by Fogg.

For instance, assuming that the e-mail campaign and /or the postal service mail is successful then there are three options of expansion such:

- Set more challenging targeted behaviour by asking the users to use more smart services, that could be even more complicated or at the same level of complexity but different in nature.
- Address new audiences and motivate them to do similar behaviour.
- Expand on the same group of audiences whom already showed positive change in behaviour, by reaching more users through expanding the geographical area to include new users.

Nevertheless, all the above are recommendations assuming that the design team will adopt the researcher suggestions, still the practical analysis could facilitate different approaches to be adopted in respect to Fogg model. Figure summarizes the relation between Fogg's eight steps process and Challenge 3.

Targeted behaviour	Audience	Prevention causes	Technology channel	Persuasive technology	Imitate technology	Prototype	Expand on success
Enhance service design	Users that used the service at least once	Layout & friendliness	Mainly online channels with possible offline usage	To be decided by design team	NA	Different formats of online communication and possible postal services	NA
		Unmatched with behaviour					

FIGURE 6-9 DESIGN CHALLENGE AND FOGG MODEL SUMMARY

6.6   CHALLENGE 4: TRUST AND SECURITY

6.6.1   CHALLENGE 4: EXPLANATION

Long time ago and before the invention of the internet and trust was always essential in order to motivate users to interact, and that was not only few decades ago, but even centuries ago and trust was always a vital aspect of any interaction between two business parties. Nevertheless, the trust and security unsurprisingly exists with the Internet as a market place, and even with more power than any other marketplace, and that is due to many reasons such the absence of visible physical existence and the reputation associated to the use of Internet and the risk of being hacked.

Nonetheless, the trust and security issues were raised many times during several interviews with the experts, as well as the users survey collected answers, and it was always raised as a significant factor limiting the users interaction, and resulting in limited popularity towards the smart services in general. Additionally, according to the users and experts, security and trust exists in different aspects of the smart services such:

- Available online payment options.
- Providing personal data online.
- Use of banking details online

6.6.1.1 SECURITY ISSUES BY EXPERTS

Experts and users indeed both touched durably the trust and security challenge, but even if they both sometime shared same concerns, still it was also times they expressed different concern towards the same challenge. Therefore, the below is explaining the vital issues that concern the trust and security in the Emirati smart services from the experts point of view:

- **Pricing and trust:** experts argued that the pricing is not an element that can enhance the trust by users in the smart services, as for most of the Emirati citizens it will not be a main issue, but it could be a trust enhancer in case a discounted fee is communicated to the users by a trusted provider. For instance, the government can increase trust if they communicated discounts and pricing promotions themselves to the users, and in such a case trust will be enhanced even if pricing was not an issue itself.

- **Trust the offer maker:** it is argued by experts too that users must trust the provider as this will increase motivation through trust in terms of Reciprocity. In other words, experts believe that trust is not good enough in the provider, and the government shall work on the motivation through trust, since users are expected to be more engaged in the smart services portal if motivated through reciprocity, which is mainly showing a good behaviour towards users in order to push them to interact more.

- **Trust and awareness:** Experts during the interview mentioned a link between trust and awareness, and they indicated that most of the users are lacking trust in the services for reasons not always linked to how reliable the services are but to how much they know about the services. Experts argued that the workflow of the smart services can increase trust too if communicated well, as users might intent to use the service more if they know exactly how everything is processed, their data handled, and what will happened in case of a problem or a mistake.

- **Data security support:** Experts highlighted the fact that most of the services are passing through the mobile operators diverse networks as a part of the process itself, and that many clients fear passing their personal data over mobile networks. Moreover, experts mentioned that the problem is not the fact of using the mobile networks itself, but rather the users with limited IT knowledge and they fear the smart services for sometime unjustified security reasons that could be linked to their limited knowledge. On the other hand, experts argued that the security issue here is mainly due to the absence of any support or precautionary efforts by the governments to communicate the risks and the security protocols in place to protect users.

- **Security and legislation:** A further vital issue is linked to the need to ensure and inform about security measures and the legislation which will protect the customers rights in case of service failure. Experts confirmed that citizens need constant assurance that the highest security standards are being applied in smart services and the legislations are being updated and strengthened to cope for the new threats and challenges.

- **Security and user protection:** Smart services requirements would need to consider security not only from the implementation perspective but also from users' perception perspective. Smart services may not be allowed on all devices without defined minimum requirements in terms of hardware and software, as this will significantly enhance security measures. Additionally, the security approaches should be communicated to users informing them about the requirements and how this is helping securing the provided information. On the other hand, experts claimed that users are also concerned about security issue they experienced some scams and banking details hacking trials previously when dealing with shopping vendors or services providers in general, and users intend to link their unpleasant experiences to the smart services portal, adding up the lack of security support and communications from services providers, all together made it easier for users to avoid the smart services for security and trust reasons.

- **Expertise and security:** smart services are already applied across the globe in many countries, some are highly efficient applications while some other countries are still struggling to find their way. Experts mentioned that taking advantage of the already available could enhance the security. As per experts, some examples already in the smart services are phenomenal and could be applied on the Emirati model with the aim to enhance security and users trust on the smart services. Additionally, the use of the expertise could be either done by sending existing employees abroad for learning, or by

inviting international experts to visit Emirates and give recommendations on security and trust issues.

6.6.1.2   SECURITY ISSUES BY USERS

Users were asked during the survey about their opinion on what is limiting the smart services, and they were given many options. However, trust and security was number four factors that were mentioned the most by the users, which reflect how importance it is towards the use of the smart service in general by about 21%. On the other hand, in the free comments section, users also mentioned about the security many times, and after data analysis it was clearly confirmed that trust and security from the users point of view is one of the eight factors that limiting the usage of the smart services in general. Below are the vital security issues raised by users:

- **Data lose:** Users emphasized the importance of trust as some of them mentioned that their requests were lost at a certain point before and in some few occasions the application process they went through online needed to restart again. This raised the question in their mind about whether these available services are really trustworthy or not. Few failures stories could affect the perception of the whole paradigm. On the other hands, some of the users showed understanding and that they can tolerate such mistakes when the service is new, but they also showed that even if it is possible mistakes but it directly affected the whole trust in the provided services.

- **Smart devices trust:** users showed concerns about the smart phones and the different smart devices that could be used to access the smart services. Some commented on fear of losing personal data, or unintentionally providing personal and sensitive data to other parties when the service is not carefully designed. However, users indicated that they always use many different apps and games on their devices, which regularly asking to access some personal information, and they would not like to access the smart services from the same devices, as they might end up having their personal and banking information between the wrong hands. Additionally, this trust concern is also clear from the collected answers to the second question of the survey, which asked the users to select the devices they use the most to access the smart services, and the first three devices were with respect to order, smart phones (87%), desktop computers (74%), and laptops (70%), and the minor differences in percentages, confirms that smart phones is not so popular by majority of users.

  On the other hand, users were tested on trust and security through one of the questions, which was about listing the channel user prefer to use to interact with the government,

and answers varied from offline to different online channels. However, most of the users ranked Internet through computer as a number one channel, even though they had the option of Internet through smart phones. For instance, users selected computers as a channel are 58%, while 55% of the users selected smart phone as a channel.

6.6.2   CHALLENGE 4: INVOLVED PARTIES

Similar to the previously discussed challenges, security and trust involve many different parties, and they vary from either governmental or private parties, but all share the fact of having an interest or playing a role in this challenge. The interest vary from party to another, as some are interested to offer the security part of the service, while others keen to receive the service, and last group are interested in having a success interaction and service delivery to the final user.

Steerer

The steerer is the group of users that are affected by the security and trust issues within the smart services, and they are not in a position to make full usability of the services due to the security issues. Steerer includes many different groups of users and the main five ones are the following:

- **Users with previous negative experience:** this group includes any smart service users that have had faced electronic services problem before. The negative experience could be relevant to banking scam or service provider trust issue, or any other negatively received experiences which impacted directly on the user trust towards any electronic service provider, and as a result the user is building a shield to protect himself from any unpleasant future experience.

- **Users with security measurements sensitivity:** This segment includes the users that always check the certificates and protocols used by the service provider before engaging in any transaction. Therefore, the users are always avoiding the smart services due to the need for more awareness and of the applied and possible security measures, and they are not intended to provide their personal or banking details through the smart services portal as long as the security measures are not clearly communicated, and once done, users will decide if the measurements followed are enough for them to trust the portal or not.

- **Trust issues with third parties:** Smart services are processed through different networks, and when user uses the mobile phone, they are then accepting to use the cellular network, which is owned by the mobile phone service provider to transmit their data to the service provider network. In fact, users of this segment do not mind using the smart services, and they trust the security measures taken by the governments, but they need

assurances to use the networks specially those provided by private sector to process their data and they fear to have the information ended up with the wrong people.

- **Smart phone operating systems:** In order to use smart services, users need to employ their personal computers, or smart phones, and in case they will use smart phones, then in most of the time the operating system will be either android, or IOS. However, users showed vast concerns about the smart phone, as they claimed that they don't feel secure using their smart phones with personal data. Users argued that most of the applications they download on the phone are regularly asking for permissions to access their data and for that reasons they avoid using smart phones to store personal information as they cannot trust all the applications they have on their phone, and they better off avoid the risks by not using smart services from mobile phone.

- **Negative past experience in smart service usage:** Unfortunately some of the users argued that they do not trust smart services portal anymore as they have had negative experiences when they first used the services. It happened for some customers at the early stages of the services to encounter issues processing their applications online, and the common fault was data lose after filling most of the online application requested fields. Furthermore, this group of users are resisting the smart services strongly as they have well-built doubts in the trust measures applied by the government, and as other segments they decided to avoid the services to limit risks.

Offerers

Security and trust exists as a challenge in the smart services offered to the Emirati citizens, and it could exist in one or many of the service providers that are collaborating together to deliver the final service to the end users. Nevertheless, offerers are the involved parties that offer the smart services and are concerned with security and trust issue, and they are mainly three different parties as detailed below:

- **Legal department:** in every ministry or entity that is involved in the smart services portal by offering its public services through internet channel, there is a legal department which is regulating the services and enforcing laws to be followed, additionally there is the country telecommunication regulatory authority in the Emirates which is responsible of organizing the internet and telecommunication services across the different emirates. However, such departments are considered as service offerers as they are directly responsible of the absence of the regulations that enhance security and assure the latest

security measures are used by the service provider, as well as communicated to the public well and clear enough, in order to increase public trust in the smart services.

- **Smart service portal developer:** The services are offered to the public through a website, and either users are using the mobile phone or personal computer to access the services, their requests will always pass through the same webpage. The website is designed and managed by either the IT department in the telecommunication providers or a third party company that designed all the technical aspects and layout element, yet managing the website on behalf of the government. However in both cases the party that run the system is responsible of the trust issues involved as well as security challenges. The webpage should be using the latest security protocols and protections to secure the users data and ensure highest level of privacy. Additionally, it is also the responsibility of the web development team to communicate to the users the certifications and the measurements used when they are using the website, by making this information visible and easily understandable. Therefore, the smart service portal running body is considered as one of the main offerers, since they are directly involved and responsible of one of the trickiest issues within the security and trust challenge, and by offering high or less secured service they can impact the usability of the whole smart services.
- **Internet providers:** smart services are offered to the users online, and they could access it from their mobile phones or personal computer, but they will always need Internet connection. User using mobile phone will usually connect to the Internet through their mobile phone service provider, while users using computers will either connect through mobile phone providers, or landline internet service providers. Moreover, all Internet providers are responsible of delivering good and secure connection to the final users, and therefore they are considered as part of the offerer's segment.

Interested

The name of this segment is a self-explanatory. Every entity regardless of its organizational nature and has interest to provide high security smart services, and enhanced trust is considered as an interested party. Furthermore, the interested party varies, as security is relevant to many aspects of the smart services such as the payments, online portal, and the apps for the smart phones. Nevertheless, the below are the most essential four parties that are considered as of the interested group.

- **Banks:** the online payment is done through different banks in the UAE, and either if the portal is managed by the government or third parties but still payments must go through

the Emirati banking system. As a result, the banking are very concerned with the completion of the smart services transaction safely without having any security problems, since they have responsibility to protect their clients when using the Internet for banking. Therefore, banks that allow their customers to do Internet payments are highly involved as interested party.

- **Government:** the different ministries provide their services online as a part of the smart services, and if the customer is facing a payment issue, or security concerns towards the portal then that will directly affect the relation between the government and the final user. Additionally, if users have security concerns about the services or decreased trust in the smart services in general, that will affect the usability and will push the users to go to the public offices rather than the online channel, and since authorities are working towards shifting users to smart services, therefore they are interested in having minimum security problems and maximum trust in smart services.

- **Web developers:** The Internet portal is managed by and updated regularly by either the government staff or an outsourced company specialized in websites management. For either case, the party managing the smart services portal is interested in having the transactions start and finish safely without exposing the users data to any security threat. The maximum security is associated with the way the website is designed and the various developments protocols that are used, as well as the way the website is set to communicate with the users to increase trust, and assure security. Therefore, the smart services portal management department is one of the interested groups that are concerned with security and trust issues

- **Mobile phone operators:** The smart service is meant to make government services accessible every time and everywhere. Therefore a large number of users rely on their smart phones to access the services, and/or using the mobile phone network as an Internet provider for their personal computers. In both cases, user is using the mobile network to process his data and interact with the government, and many of the users showed concerns, and trust issues of having their data processed through the mobile phone networks. Therefore, the mobile companies have responsibilities of assuring high standard and maximum security on their network, and they are actually liable of communicating to their clients and assuring to them the security of their data while using the cellular network.

Figure 6-10 summarizes the relation between the different parties and Challenge 4.

Steerers	Offerers	Interested
Previous negative experience	Ministries offering smart services	Banks
Security measurements sensitivity		Government
Insecurity of third parties	Legal department	Web developers
Smart phone operating systems	Smart service portal developer	Mobile phone operators
Negative smart service experience	Internet providers	

FIGURE 6-10 SECURITY AND TRUST INVOLVED PARTIES

6.6.3 CHALLENGE 4: APPLICATION OF FOGG MODEL

Researcher uses Fogg model as a persuasion technique to be recommended to the Emirati government seeing that a solution to overcome the present challenges facing the usability of the smart services. Some of the steps could be recommended by the researcher, while others wont be possible as they require full dedicated team, and many studies and investigation to be carried on before giving recommendations. The below are the researcher suggestions in alignment to Fogg model.

6.6.3.1 TARGETED BEHAVIOUR

Users are concerned with the security measures currently used and need assurance; on the other hand they need a high level of trust in general in the proposed services, particularly for their non-governmental parties. Therefore, the behaviour government should focus on to change is increasing trust in the security measures, and encourage users to engage more in the smart services and reduce or eliminate when possible the fear of exposing their personal and/or banking details over the various involved networks.

6.6.3.2 AUDIENCE CHOICE

Government need to wisely select the targeted audiences, and it is recommended to target users, that already showed some concerns about the security measures. Such audiences could be identified from the user survey participants. Furthermore, users must be smart services knowledgeable and already using online banking for services including or excluding the smart

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services. On the other hand, the targeted participants could be either present smart services users, or users that stopped using the services for security and/or trust concerns. It is also vital to make sure those completely irrelevant users such as citizens that will never use Internet banking, or their banks are not supporting such services, are excluded.

6.6.3.3   PREVENTION CAUSES

According to the collected results analysis, we can conclude that various factors are preventing the security and trust enhancements, these factors are not limited to the government, but also include some external players that take part of the smart services cycle by a way or another. These factors are many, but the below are the most significant ones from the researcher point of view:

- The need to increase trust in the mobile phone operators' networks.

- The need to increase trust in security measures used on the smart services portal.

- The need to increase confidence in the smart phones operating systems.

- The need to increase clarity in communications about the applied security measures.

- The need to increase security precautions and awareness support.

6.6.3.4   TECHNOLOGY CHANNEL

Fogg argued that to decide on the technology channel it requires a lot of efforts by the design team in order to assure suitable choice, and that will happen by keeping in mind the targeted behaviour, audiences, and motivation preventers. Nevertheless, the targeted audiences are people already familiar with technology and using smart phones; additionally their fears are mainly due to previous negative experience, or lack of trust in portal or involved networks, therefore, the channel could be but not limited to technology based. On the other hand, the government could ask for the involvement of the mobile operators since they are part of the prevention causes, and their participation shall tackle one of the vital trust issues raised by users. Nevertheless, the government could also use the direct communication channel through written advertisements, which is not technological based, but it should work with users that are visiting banks, mobile phone service providers, and government offices.

6.6.3.5   PERSUASIVE TECHNOLOGY

To decide on the persuasive technology after choosing the channel would not be simple, and it will require investigation from the design team in order to research for similar success models. Furthermore, the team will need to ideally name nine different technologies that targeted similar

behaviour before, similar targeted audiences, and used same technology before deciding on any one. Additionally, it is recommended to investigate with experts before choosing a technology, and it is also advisable to choose already success proved technology. However, from the nature of the targeted audiences and the targeted behaviour, the researcher can recommend to focus on direct communication to assure security, and increase trust through either online or offline channels.

6.6.3.6   IMITATE TECHNOLOGY

After identifying the various possible persuasive technologies, the team will need to imitate an already exists technology, and it is important to avoid using new technology from scratch rather than imitating. As per Fogg, it is not recommended to invent a technology, and it is much more efficient to duplicate already succeeded technology. Moreover, it is fundamental to investigate the reasons that facilitated certain technology to success before adopting it, since some of the technologies work well with some targeted behaviour more than others, or with a specific group of audiences more than others, and therefore the team will need to answer questions linked to the previous phases of Fogg model to highlight the areas that the technology need to trigger before imitating it, and that is possibly by identifying the reasons that prevent desired behaviour.

6.6.3.7   PROTOTYPE

It is required to run several small and often tests targeting the desired audiences. Assuming that the design team will focus on communication as proposed, and will work both offline and online, then the tests could take different formats such:

- Easily seen messages on the smart services website communicating the security measures followed.
- Messages on the website educating the users how to use the services safely.
- Messages on mobile phones from both the government and the mobile networks communicating the security measures.
- Educational e-mails with all the instruction on how to safely use the services, and protect personal information to be forwarded to he targeted users.
- Printed material advertised in mobile phone operator shops and banks, targeting trust enhancement and security increase.
- Collaboration with banks and mobile operators to advertise on their website the smart services by highlighting the security standards.

Nevertheless, the above are just ideas and could be applied as it is or developed more or less as per the design team point of view, and the technology channel they will decide on.

6.6.3.8   EXPAND ON SUCCESS

Following the prototype phase, the team will need to expand on success, and this will be based on the tests carried on at the previous stage. Success expansion could take different format to either include more audiences, or target for more challenging behaviour. For instance, assuming that the e-mail campaign scored the best results, and managed to convince many users to use the smart services and distract their security fears, then the expansion could be:

- Send same e-mail to more people sharing the same characteristics as the already targeted group.
- Target new grope using the same e-mail.
- Send similar e-mail requesting more challenging task such performing two services in a given time frame.

Figure 6-11 summarizes the relation between Fogg's eight steps process and Challenge 4.

Targeted behaviour	Audience	Prevention causes	Technology channel	Persuasive technology	Imitate technology	Prototype	Expand on success
Increase users trust and security	Users fear smart services for security issues	Smart services causes	Offline (Government and third parties)	To be decided by design team	NA	Possibly : online and printed material	NA
		External reasons	Online Government and third parties)				

FIGURE 6-11 SECURITY AND TRUST THROUGH FOGG MODEL SUMMARY

6.7   THE AMENDED FOGG'S PROCESS FOR SMART SERVICES IN UAE

In this section, an amended Fogg's process to design persuasive technology will be presented. It is based on the discussions in the previous sections in this Chapter and previous chapter. It adds to each step general consideration and guidelines to fit the nature of the problem, i.e. adoption of smart services, and the UAE socio-cultural framework.

Previously, we have discussed the rationale and amendments of Fogg's eight steps process in detail (Fogg, 2003). Nevertheless, the amendments are following the studies that were already done in previous chapters, which were knowledgeable by the user study and the interviews carried on with experts, on both smart services and user motivation in UAE. In Chapter 6, the amended process is under the evaluation, which will be performed in order to have the findings consolidated and refined. Additionally, the main suggested amendments to Fogg's process will be discusses (Fogg, 2003), and listed so that it give the reader a sufficient and indicative picture.

6.7.1 STEP 1: CHOOSE A SIMPLE BEHAVIOUR

This step is mainly to recognize the power of persuasive technology and it is limitation, as well as to recommend a scope, which is expected to be of a small scale as a start. Nonetheless, It is argued that the accumulation of simple behaviour changes would eventually lead to the desired collective behaviour on a phase to follow. As a result, the UAE customer base smart services behaviour, main recommendations and considerations for the first step, are as indicated by the graph, (Figure 6-12), and explanations below:
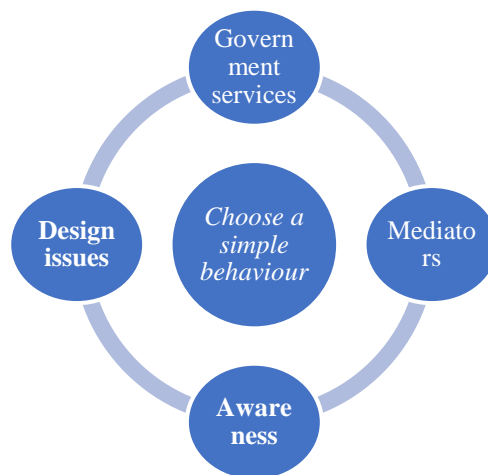
FIGURE 6-12 FOGG AMENDED PROCESS - CHOOSE A SIMPLE BEHAVIOUR

- **Government service:** This means that the service relates to fundamental areas and not entirely optional for users. This means that we can perhaps choose services of a more complex nature on the assumption that the need will increase the users will to interact.
- **Mediators**: The choice of the smart service would significantly need to consider the other alternatives available to the end user, in order to get a certain service done, with extra attention to the use of brokers and mediators as alternative channel. Nevertheless, this has to address the need to persuade users not to sacrifice their autonomy and privacy, for the purpose of getting the services done fast on a paid basis.

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- **Awareness:** It is vital to consider the present awareness level of the existence of the smart services and their current status in the society, e.g. performed fully or partially in a remote style. Therefore, the awareness of the service itself is perceived as precondition of choosing it to be augmented by persuasive technology solutions.

- **Design issues:** When choosing a smart service to be augmented with persuasion, the design issues of the service that are preventing users from using it, should not be neglected. In other words, the profound issues should be identified and perhaps solved as a preliminary step, in order to be able to decide on whether to add persuasive technique or not. Therefore, the influence of the persuasive techniques are limited if the design issues are still persistent.

6.7.2   STEP 2: CHOOSE A RECEPTIVE AUDIENCE

It is also recognized that the targeted person need to have the will in order to target behaviour change. As per the Trans theoretical Model for behaviour change (James, 2013), the user should be already in the contemplation stage. Nevertheless, the pre-contemplation stage would require dissimilar approaches so that the person or groups move into the contemplation, as a good example of that is the campaigns and public awareness programs that are targeting the society. However, in the case of Smart Services for UAE, the main considerations and amendments to this step are the below five illustrated in Figure 6-13:
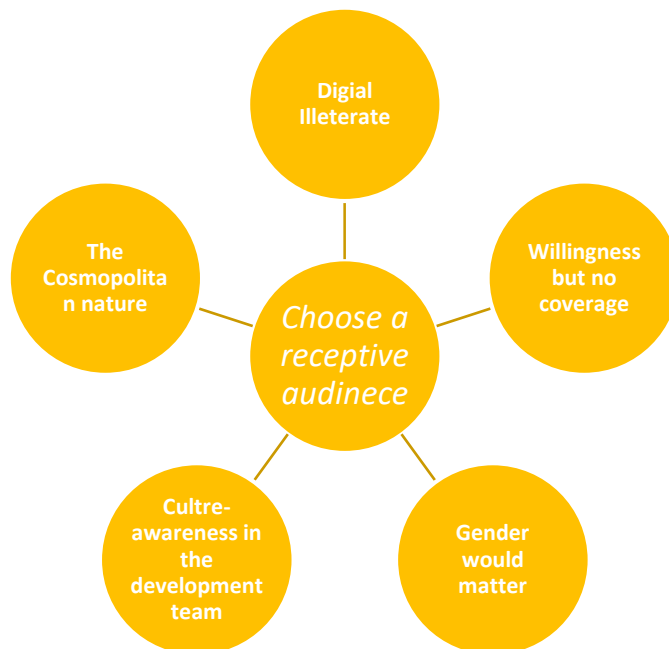
FIGURE 6-13 FOGG AMENDED PROCESS - CHOOSE A RECEPTIVE AUDIENCE

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- **Digital Illiterate:** the design of persuasive smart services will need to consider the case where some residents may not necessarily have the enough needed technical skills to use smart services in the first place. Accordingly, adding persuasive elements to the services is seen as a less meaningful solution. Therefore, it is essential that the persuasion then follow different methods for that user group, and this would be beyond the design of the convincing elements to augment smart services with.

- **Willingness but no coverage:** In the case of Smart Services, the connectivity to the network is a vital element to the success. In reality, there is a sector of users, which may not have the desired network coverage in order to use the services. Accordingly, persuading them to use such services is not the profound problem, meaning that the choice of augmenting smart services with persuasive elements, may not work for this particular user group.

- **Gender would matter:** Gender is one of the significant elements that are influential to the willingness and receptiveness to new technology by different users (Morris, 2005). Moreover, this has to do with the cultural norms, e.g. going in person to the customer services is usually done by a majority of male customers. As a result, the persuasion to use smart services would necessarily need to take the gender impact into account. On the other hand, it could be argued that the feasibility of augmenting smart services with persuasive elements may work at diverse degrees, depending on the user gender, confirming the fact that the use of smart services itself could be gender-related.

- **Culture-awareness in the development team:** When it comes to choosing and approaching target audience, it been noted that this phase should be based on a profound culture awareness, nevertheless, it tends not to be the case of the current practice of developing smart services. Therefore, the outsourcing of the development team may lead to a gap, where the engineering team makes assumptions about the audience and their receptive nature, which may not be true. A good example of that could be many of the software companies, where a large proportion of the hired developers are expats (Carano et al, 2007).

- **The Cosmopolitan nature:** As a matter of fact, the UAE is a multi-cultural society. Which is something needed to be taken into consideration when the sampling and clustering of users to assess their receptive nature is taking place. For instance, the interesting nature of some apps run by charities to raise awareness, and gather donation for human aids could possibly depend on the geographic coverage of that charity, as well as the funding countries and their supported agendas. This means, it is advisable to run a

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pre-selection test whether the service is of a genuine interest to them before persuading a user to use the service.

6.7.3   STEP 3: DISCOVER WHAT PREVENTS THE TARGET BEHAVIOUR

Within this stage, the focus is on the external and internal factors that could be perceived as obstacles, which might hinder the perception of the service usefulness, in addition to the perception of the ease of the use of the services. And naturally, will influence the adoption of the solution, e.g. a technology solution (Michie et al, 2011). Nonetheless, the prevention might be embedded in the proposed solution itself, but still preceding it through preliminary measure. As a result, the Smart Services design for UAE, need to consider the following eight obstacles before the adoption of the services, as illustrated in Figure 6-14:

Lack of ability	Service cost
Unified procedure and its beforhand Transparency	Communication cost
Technical correctness and explanation	Coverage
Security	Marketing
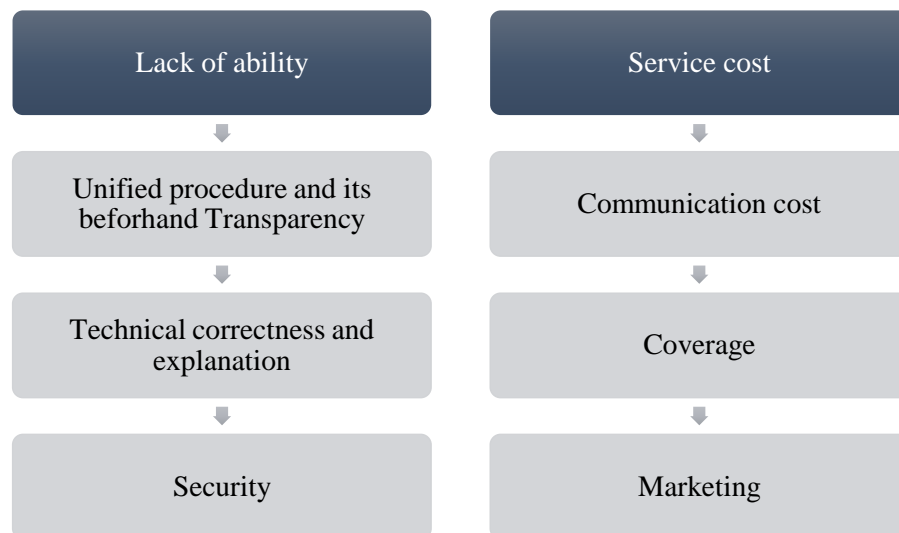
FIGURE 6-14 FOGG AMENDED PROCESS - DISCOVER WHAT PREVENTS THE TARGET BEHAVIOUR

- **Lack of ability:** This is linked to the perceived self-efficiency of the customers on their ability to use the services. In truth, it seems to be a subconscious rejection of certain residents, which is mainly relevant to the fear of mishandling the smart service and not being able to exploit them well, and sometimes to avoid erroneous transactions. However, this is not only due to the digital illiteracy, but also linked to the misconception of the difficulty and required set of skills.

- **Unified procedure and its beforehand Transparency:** One of the foremost obstacles that encountering the smart services, is the public expectations that smart services are designed in a way that mimic the in-person channel, without having the need to come to

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the customer service in person. On the other hand, this may not be easily the case, as some steps are introduced online and some steps might be omitted in the online process for the sake of the service. For example, it been mentioned many times during the survey, and the interviews that discussing a reduction of the fine is one of the features of the in-person process, where the customers are able to explain the delay or the mistake and get a reduction based on their negotiation skills as well as their reasons. Additionally, some of the services are unclear in their requirements for the in-person part. Example of that is when the customers have to go through the online process, and then eventually are called to complete it in-person. Consequently, such discrepancy between the expectation and actuality of how the process is enacted on the other is a clear obstacle.

- **Technical correctness and explanation:** One of the major obstacles for the smart services adoption in UAE, is in fact linked to the limited ability of customers to have a precise complete picture of the process. On one hand, this is a requirement to make the smart services less demanding, i.e. by hiding unnecessary details, as customers seems to have the anticipation of knowing how services were processed, especially when something goes wrong. On the other hand, persuading customers can be based on committing to them, that explanation and transparency will be offered for the service, even partially, through the use of persuasive technology. E.g. is by providing customers with a display of their progress, and visualizing the steps where difficulties are encountered. Moreover, transparency is a motivational technique itself (Wong, 2007), which can be added to the smart services without a need of being a core functionality of it. By doing so, smart services can keep the balance between light weighted process, and the ability to use advanced features.

- **Security:** It has been noticed that, there is a perception that smart services may be more vulnerable from a security perspectives. While this could be genuine fact based on the limited power of smart phones in enacting complex security countermeasures (Min et al, 2016). Still the advanced technology and new features are making it much more powerful. However, the perception of the public seems that it has not changed yet.

- **Service cost:** In reality, there is an expectation from the public that using smart services should be rewarded in one way or another. Nevertheless, such expectation is mainly due to the added value of using the services, and the contribution of the different services towards the public interest such as, reducing traffic and making better use of time of the service providers, for instance, smart services usage is requiring less time allocation, and effort of a hired human operator. On the other hand, and when this is not the case, the

customers may experience less interest in using the services, and believe that the reciprocity principle is somehow compromised. Therefore, solving such an obstacle could be through enacting motivational techniques, which demonstrate to the users the equal benefits to them, as well as the benefits of the use of the smart services such, time and effort reduction in comparison to the in-person process would take. Moreover, the use of virtual rewards, e.g. social recognition could be one of the possible solutions (Insel et al, 2004).

- **Communication cost:** The costs of having Internet connectivity as well as how much data is required by the smart services may not be trivial. The customers expect that these costs are waived off so they can use the services without worrying about financial implications, and use the service without compromising its quality. For example, one of the services is about reporting car accidents, and it requires the claimer to take a picture and upload it. Naturally, this will entail costs, and depends on the mobile phone provider pricing, this cost might be relatively significant.

- **Coverage:** This item is directly linked to the infrastructure coverage, which can be difficult to resolve using motivational elements. However, still possible to offer those in remote or areas where the coverage is limited, a different requesting and/or pricing system as an appreciation to their effort using the services. Avoiding doing such a thing, could result in an increase of inequity perception, e.g. when rates are given to all customers on the same basis regardless of the quality of the infrastructure in their geographic areas.

- **Marketing:** Marketing strategies are seen as a main obstacle since some services are simply hidden from the potential users, or possibly the used marketing channel is not proactively allowing some or all the targeted users to reach or know about the services.

6.7.4 STEP 4: CHOOSE A FAMILIAR TECHNOLOGY CHANNEL

The main focus within this phase is the interaction and communication method that shall be used with the targeted consumers to change their behaviour. A good example is the recycle habit, since changing people behaviour in their recycling habits may require a led indicator in the recycle bin with different colours, and every colour is indicating different level on how much it is being appropriately used. This technology would form an interaction in the right time and format (Danilov, 2003). Nevertheless, many possible technologies could be used for the case of the smart services for UAE, the below is an explanation with possible channels. Figure 6-15 is a summary.
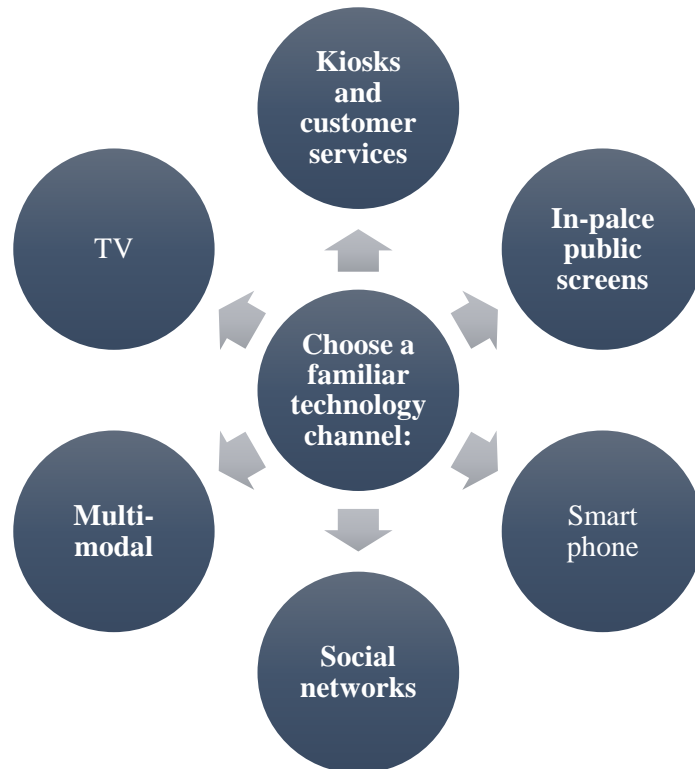
FIGURE 6-15 FOGG AMENDED PROCESS - CHOOSE A FAMILIAR TECHNOLOGY CHANNEL

- **Kiosks and customer services:** A physical place where the communication of persuasion could be more direct and with effectiveness. However, It would indeed be targeting those who prefer in person over the mobile channel, and possibly who may not be even aware of the availability of smart services solutions all together. Additionally, there is an added value of communicating the information through that channel, as users are already in the context of achieving the service, and they can formulate an instant credible and trustworthy evaluation from their immediate experience of the benefits they would get in case they utilize smart services. As a matter of fact, in UAE, this is usually a location initially used to convey information leaflet, which still can be further enriched by the implementation of information persuasion, e.g. social proof and authority.

- **In-place public screens:** It includes the installation of screens in public places where customer usually get served, such screens are meant to deliver mass-oriented information. Nonetheless, the persuasion message can be delivered using such screen. E.g. by showing statistics about the population using the service in real-time, and furthermore in advertising persuasion techniques such as spontaneous ones, e.g. a randomly selected customer of every 100 users using smart services will be issued a voucher. Naturally, the public screen is a basic form of communication, which could be further, enriched by

interactive information points and more interactive mechanisms such offering virtual tours via those screens and information points (Dane, 2002).

- **Smart phone:** Smart services are naturally linked to the use of smart phones, and therefore it is an ordinary medium to communicate persuasion to encourage the use of smart services. However, it must be considered that certain users group have limited access to Internet, and possibly may have limited usability skills. On the other hand, smart phones could be used for partial implementation of the persuasion, e.g. the collected points granted for the installed and used services, on the contrary also communicating other persuasion techniques that are requiring in person actions such, campaigns and social activities around the topic.

- **Social networks:** Peer feedback is one of the powerful persuasive techniques, and since the UAE is a collectivist culture, social networks can be a very powerful medium for such persuasive mechanisms (Bellemare, et al, 2010). For instance, users could be rewarded for inviting others to use the smart service. They can also be rewarded based on the score in terms of the number of in person interactions reduction during a set period of time, in a form of a visible dashboard to their peers. Consequently, such organize of social recognition may appeal to some users groups, based on the fact that, the social aspect of persuasion seems to be a strong one in UAE.

- **Multi-modal:** The interaction does not necessarily need to take only one form such text, video, animation or picture. It appears that preferences could vary, and also the ability to navigate the information can also be different not to mention preferences on the colour schemes, the avatars used, the phrasing, etc. This is primarily a natural result for having a cosmopolitan environment such as the one in UAE. Although the thesis is focused on locals; still most of the services are influenced and inter-related to others where expats are also engaged.

- **TV:** The use of TV still shows potential for smart service and this should also take into account the different languages that are in use in the country. In actual fact, TV is widely accessed, and the state TV channels are non-profit media, which can be seen by users, as a trusted source for delivering information and persuading the public to consider smart services.

6.7.5 STEP 5: FIND RELEVANT EXAMPLES

The main benefit for this step is mainly the heuristics, i.e. proven solutions and principles that can be customized on the way to fit a context of a particular problem. Theoretically, persuasion is

linked to the understanding of human reasons to follow certain behaviour that already exists. Nevertheless, there have been multiple instances of applications in the digital space, and these experiences would be much beneficial to enlighten the feasibility as well as the sustainability of certain solution. In the case of UAE and smart services, the below considerations and recommendations are made (Figure 6-16):

FIGURE 6-16 FOGG AMENDED PROCESS - FIND RELEVANT EXAMPLES OF PERSUASIVE TECHNOLOGY

- **Replicate the existing experiences in the domain of e-Commerce:** In UAE the domain of e-Commerce is well established, and several successful examples already exist which are applying some of the persuasive techniques. E.g. the points scheme in Emirates airlines (Heywood, 2005). Moreover, the banking domain is also another good example. Accordingly, the market provides a rich baseline to start with, which is a possible expanding to the smart services. The recommendation is to look at those experiences as a start.

- **Similar countries and cultures:** In reality, the use of persuasive technology for the applications of smart service is still ongoing process; however, it is already used in similar domains especially for those targeted to behaviour change in relation to health and lifestyle. On the other hand, there is an increasing volume of studies and applications but mostly applied in different countries and socio-cultural frameworks. Consequently, to benefit from existing systems, the development team is advised to look at frameworks similar to UAE so that the replicated experience fits.

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- **Experts consultation:** In order to augment the emerging research on technology acceptance and persuasion appropriateness to the UAE social and cultural framework, it is recommended to consult with experts who understands and have expertise in the interaction with UAE citizens, as well as how persuasion might be perceived. For example, banking industry and shops marketing practices could give prosperous understanding on how to reach the public, and avoid misunderstanding. Furthermore, this will be a preliminary step to decide which previous examples and

6.7.6 STEP 6: IMITATION OF SUCCESSFUL EXAMPLES

After reviewing the proposed examples in the previous phase, it is the time to decide on which one to use to fit the best the challenge of investigation, and this is the main focus of this step. Moreover, the decision would need to compare and contrast the problem and also the population. In the case of UAE and smart services, the following consideration can be made (Figure 6-17):

FIGURE 6-17 FOGG AMENDED PROCESS - IMITATION OF SUCCESSFUL EXAMPLES

- **Culture-customization:** As a matter of fact, the persuasion has an intense human factor, and it would be superlative if we can customize it to match the individual level (Tomalin et al, 2003). Nevertheless, this is characteristically an exceptionally expensive process, and the findings suggest that the UAE as a culture, shares elements with regard to praising authoritative figures and recognizing the social proof as an imperative technique. Thus, the reproduction of successful examples would need a culture-dependent customization stage. For illustration, reciprocity is a common persuasive technique on the contrary

without considering the peculiarities in UAE, this may be seen as a lack of manner if presented in a erroneous approach.

- **Nationalism:** The findings showed a high measure of nationalism and its effect when implemented to persuade users to adopt certain behaviour. Nonetheless, such a factor could strengthen the persuasive elements, and adds significance to it. Consequently, when mimicking successful experiences and previous application, an augmentation would benefit from the nationalism in a positive means so that it increases the sense of community amongst the users of the smart service, as well as the sensitivity to contribute collectively to the national economy, and society well-being in general.

- **Create comparison centre:** In UAE there is a incredibly dynamic environment for economy and services, and it has being exceptionally challenging to keep track of existing and emerging services along with experiences. Furthermore, in order to consent to this movement of Fogg process in an effective manner, the recommendation is to have a centre of archiving and comparison, therefore the experiences can be recycled for the sake of potential and existing users. At the present time, similar search for comparable experiences to imitate could be expensive, and also partial due to the lack of central and ease to access repository. Additionally, it is also the same scenario when tracing what happened to replicate what was adopted, i.e. whether the assumption of a successful replication was right or not.

- **Leadership adoption of reuse:** It seems that inside UAE, replicating successful experiences of other service providers is seen in a negative existence, and perceived as a lack of creativity sign. For that reason, this hinders the power of reuse and benefit from previous experiences. On the other hand, it is suggested that the principle of authority and social proof are themselves could be used to change the negative perception.

6.7.7   STEP 7: TEST AND ITERATE QUICKLY

In this phase, the focus is mainly on recognizing the volatile nature of motivation and its digital personification. Moreover, the main expected result is encouraging the dynamic and agile evolvement of the persuasive technology. Nevertheless, five aspects are recommended for this step in the case of UAE, which are as explained below and summarized in Figure 6-15:
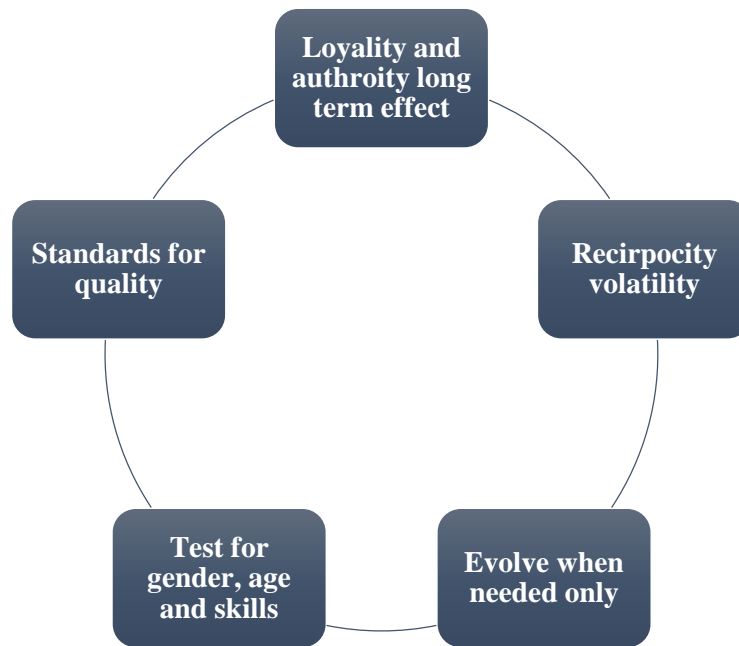
FIGURE 6-18 FOGG AMENDED PROCESS - TEST AND ITERATE QUICKLY

- **Loyalty and authority long-term effect:** The findings showed that loyalty and authority are the main values of influence and persuasion that have effect on the long term for the model of the UAE. As a result, it is suggested that their evolution and change may not be needed subsequently frequent. However, this does not mean the service quality should remain unchanged, but rather the persuasion itself may sustain itself longer.

- **Reciprocity volatility:** It has been mentioned that reciprocity offers could have sequential effect in UAE and especially when the monetary value is not high enough to match the UAE users' expectations. Indeed, the engage in recreation in reciprocity could be the interesting elements, where customers enjoy the fact of having another dimension for the usage of smart service, which has an interesting nature.

- **Evolve when needed only:** The findings showed an increase volume of information that the users of Smart Services in UAE are currently receiving, which compromises their benefit. Thus, the change in the persuasion techniques would add more to the already received information and this may not be perceived as a positive approach. Consequently, the evolution plan should take that into account.

- **Test for gender, age and skills:** It came to the attention that these three factors are shown to be highly essential in UAE. For that reason, the targeted sample of users for the testing or the design phase should cater for this diversity.

- **Standards for quality:** There seem to be necessity to a customized metrics for quality assurance in relation to the use of persuasive technology with smart services application.

It has been suggested to decide on the metrics beforehand, and agree on that with the involved service provider.

6.7.8   STEP 8: EXPAND ON SUCCESS

This stage advocates the need to keep looking at the application of persuasive technology as a continuous process, where a success can lead to another (Arruda, 2002). Nevertheless, it emphasizes the benefit of capitalizing on the already made investments. E.g. getting the audience membership and trust towards the use of the smart services. For the model of UAE, the three below recommendations are advised (Figure 6-19):

FIGURE 6-19 FOGG AMENDED PROCESS - EXPAND ON SUCCESS

- **Expand partnership networks:** The expansion could be additionally in the form of partnership that the used persuasion techniques can benefit from. For instance, the given vouchers and points could be spent through a wider network of shops, giving the users a better choices. Moreover, the success with one may lead to attract others. On the other hand, this will serve as a social proof that the smart services is of a public interest and high in value. In other words, the expansion of the network would mean a social proof by itself as an added value.

- **E-Forum and advertisement:** Yet again and due to the collectivist nature of culture, the success needs to be advertised and endorsed by authorities in order to be confirmed. Naturally, this is considered an expansion on success, as it will add to the credibility of the smart service paradigm. Additionally, new services would not need to commence from scratch but rather build on the already achieved success.

- **Continuous Feedback:** The findings also showed that loyalty is two-sided process. The customers would be loyal to services that listen to them and satisfy their need all the time, even subsequent to confirming and validating its successful implementation. Opening a communication and direct channel for customers' feedback, which is live and active all the time, will be one of the ways for that. Nevertheless, the expansion on success could

be through the catering for recent and emerging requirements, while at the same time through competing with alternative methods, where users can acquire the service.

6.8   SUMMARY

In this chapter, the challenges facing people adopting of smart services in UAE were analysed in respect to their involved parties and possible impact on the Fogg's eight steps process. In addition, the chapter introduced a set of general guidelines and concerns to take into account in each of the steps of the Fogg's process.

7.   CHAPTER 7: PERSUASIVE TEHNOLOGY ACCEPTANCE MODEL FOR USE SMART SERVICES

Modern governance and services have exploited the advance in computing and telecommunication technology and yielded a wide range of smart service systems initiatives; however challenges are faced with the acceptance, implementation and use of such systems. As it can be observed in the previous chapters, the UAE has invested time, effort and money in smart services resulting in a not very pleasing adoption and use of these services (Alghamdi & Beloff, 2016). Additionally, these countries face many issues and inadequacies with smart services, which has an effect on the acceptance and use, thus the general success of these technological improvements (Ziemba, Papaj, & Zelazny, 2013). A strand of the literature had placed a focus on the technical and structural perspectives of smart services' implementations disregarding the analysis of important elements affecting the motivation, acceptance and use of those systems from the public (Al-adawi, Yousafzai, & Pallister, 2005; Alshafi & Weerakkody, 2010; Sahraoui, 2005).

Maintaining in focus the prediction and interpretation of behaviour related to the adoption and dissemination of new technological applications, researchers developed several acclaimed models and theories. More specifically, these are the Innovation Diffusion Theory (IDT) (Rogers, 1995), the Theory of Planned Behaviour (TPB; Ajzen, 1991) extending the Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1975), the Technology Acceptance Model (TAM; Davis, 1986; Davis, Bagozzi, & Warshaw, 1989), the Perceived Characteristics Innovation (PCI; Moore & Benbasat; 1991) and the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh, Morris, Davis, & Davis, 2003). The above models have been implemented to ameliorate the adoption and use of smart services either as one theoretical model in an original or added form or as a combination of two or more models.

In the following part the elements of the above models will be described and critically analysed in order to assess their applicability and decide upon the framework that will best support the objective of this thesis, namely motivating the users to increase the use and adoption of smart services in the UAE.

7.1   CRITICAL ANALYSIS OF BEHAVIOUR CHANGE MODELS

The prediction and interpretation of behaviour, illustrated in models, was a main focus for researchers for the last two decades (Venkatesh et al., 2003). Research yielded a variety of such models, such as the Innovation Diffusion Theory (IDT) (Rogers, 1995), the Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1975), the Theory of Planned Behaviour (TPB; Ajzen, 1991), the Technology Acceptance Model (TAM; Davis, 1986; Davis, Bagozzi, & Warshaw, 1989), the Perceived Characteristics Innovation (PCI; Moore & Benbasat; 1991) and the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh, Morris, Davis, & Davis, 2003).There are similarities and overlaps between the models, with each having different concepts analysed.

Based on studies about new systems and services in information technology and their acceptance and use by the public, the IDT, the TAM, the TRA and the TPB have been broadly applied. Researchers in organisational analysis used the IDT more widely and the TAM, TRA, TPB were used for individual level analysis (Hameed, Counsell, & Swift, 2012).

Since information and technology systems are used in smart services, smart services' research emphasizes on the study of these acceptance and usage frameworks (Alghamdi & Beloff, 2016; Rabaa'i, Zogheib, AlShatti, & Al Jamal, 2016). Most of the studies analyse the models, use them in their original form or combine them with other models, use and apply them in various smart services situations in a variety of countries such as Saudi Arabia and Kuwait.

7.2   USE OF ACCEPTANCE MODELS IN SMART SERVICES

7.2.1   THE TAM MODEL

The TAM theory has been used in studies regarding the use of the Internet in context (e.g. Klopping and McKinney, 2004). However, there are not many researchers applying it to smart services' research especially in Arab countries (Rabaa'i et al., 2016).

Charbaji and Mikdashi (2003) investigated the attitudes towards smart services of 220 graduate students in a variety of universities in Lebanon using a questionnaire. More specifically, the questionnaire consisted of a cognitive part reflecting the students'

knowledge and awareness of smart services, the affective part focused on the student's feelings towards smart services; and the last part on the intention to use them. The authors found a strong correlation between the knowledge and awareness of the students and the intention to use the smart services.

Colesca and Dobrica (2008) used an extended TAM framework to investigate smart services in Romania. Their findings highlighted that perceived usefulness, ease of use, quality and trust of smart services influenced the adoption of smart services and the overall users' satisfaction. Similarly, Suki and Ramayah (2010) found that perceived usefulness, perceived ease of use, compatibility, interpersonal influence, external influence, self-efficacy, facilitating conditions, attitude, subjective norms, perceived behavioural control and use were important factors in the adoption of smart services in Malaysia.

In another country, Oman, Al-Shihi (2005) studied smart services' acceptance. He collected his data via interviewing employees working in both the public and private sector. He found that i) the absence of computer skills, ii) insecurity, iii) the undermining of smart services, v) absence of laws and vi) absence of motivation were factors that restrained the acceptance of smart services.

However, the TAM has been criticised by Alshafi and Weerakkody (2010) that it does not take into account other factors of inconsistency or other reasons that might guide users into not using smart services such as time and money limitations. In addition, the fact that the TAM model is always altered or integrated with other models might be a strong indicator that it does not represent a reliable framework to interpret user acceptance (Rodrigues, et al., 2016).

7.2.2 UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

Venkatesh et al. (2003) proposed the Unified Theory of Acceptance and Use of Technology (UTAUT) to expand on further models of technological acceptance, containing many similarities across eight models, and to explain the patterns observed.

This model had been used by many authors (Schaupp, Carter, & McBride, 2010) due to its reliability, validity, and aptness, in technology acceptance.

The UTAUT consists of four elements: i) performance expectancy, ii) effort expectancy, iii) social influence, and iv) facilitating conditions (Venkatesh et al., 2003). The first construct, of *performance expectancy*, explains the length that a person identifies that a new technological innovation will enhance their performance. The second concept of the UTAUT, *effort expectancy*, states the length that a person recognises the innovation is easy to use. Both of the aforementioned concepts of the UTAUT are comparable to the first two elements of the TAM model. Following the above two, *social influence* measures how much a user understands that an important individual feels that they should use the specific technological novelty. Finally, the concept of *facilitating conditions* evaluates how much a person understands that there is administration and technical support behind the proposed novelty.

The UTAUT model has received positive feedback because it is highly volatile regarding the intention to utilise a specific innovation (Venkatesh et al., 2003).

7.2.2.1 USE OF UTAUT MODEL IN SMART SERVICES

The UTAUT has been applied either in the initially proposed form or to employ non-quantitative methods, or using some elements of the exact theory (Williams, Rana, & Dwivedi, 2015). The UTAUT theory has been implemented in studies in a variety of fields and in different countries (e.g., Curtis et al., 2010; Zhou, Lu, & Wang, 2010). Additionally, Rosen (2005) states that the UTAUT model offers an insight to the adoption of technological systems due to its thorough and practical explanation of the user adoption compared to other theoretical models and frameworks. Based on the previous literature on the UTAUT model, countries such as the United States, Taiwan, Malaysia, Australia, and India have been reporting findings after implementing it. However, the UTAUT model is used in a few studies focusing on GCC countries (Rodrigues et al., 2016). Those are five in Saudi Arabia, two in Qatar, one in Kuwait and one in the UAE (Ahmad, Markkula, & Oivo, 2012; Rodrigues et al., 2016; Williams et al., 2015).

However, researchers have argued that the UTAUT implemented in some studies (e.g., Raaij & Schepers, 2008) did not take account of the constructs of quality of service and perceived awareness, and that might strongly affect behaviours and intentions which have been shown to affect adoption patterns (Alghamdi & Beloff, 2016). It is also claimed that the model did not take into consideration constructs such as trust, privacy and security. In addition, the absence of the cultural factor influencing the acceptance of the users weakens the model. Although UTAUT considered how certain personal demographic factors (age, gender) of the user might affect him/her in adopting a new system, factors such as location, education and income which are likely to influence both the acceptance and the use were not included. Finally, the factors in the UTAUT model might affect others in the model and dissimilar items are integrated in a single concept (Alghamdi & Beloff, 2016).

7.2.3 MODEL OF TAM, IDT & TRUST IN SMART SERVICES' ADOPTION

A research model based on TAM, IDT and Trustworthiness was presented by Carter and Belanger (2004). The initial elements of IDT, namely *relative advantage* and *complexity*, were included in the model along with the concepts of *perceived usefulness* and *perceived ease of use* from the TAM, whereas *trialability and observability*. Finally, trustworthiness was included in the proposed framework, where trust in smart services namely trust in the governmental source that offers the services and trust in the general concept of the Internet via which the services are offered and responsibilities are completed (Carter & Bélanger, 2005).

A combination of the TAM and the IDT, in order to provide an explanation in the acceptance of smart services, is included in the majority of studies by Belanger & Carter (2008) and Phang et al. (2005). On the other hand, Al-Adawi et al. (2005) and Warkentin et al. (2002) integrated TAM with Trust and Perceived Risk to investigate smart services' adoption.

7.3 EXPERIENCES IN USING ACCEPTANCE MODELS

7.3.1 IN THE USA AND AUSTRALIA

The acceptance of smart services in the USA was investigated by Dimitrova and Chen (2006) and how these were influenced by psychological and sociological elements. Using TAM and IDT, they assessed census-balanced Internet users and they found that perceived insecurity, perceived usefulness, previous interest in the government services and civic-mindedness affected the acceptance of smart services.

The TAM model was implemented in the public's acceptance of smart services in Australia (Titah and Barki, 2006). However there was no significant relationship between perceived usefulness and adoption of smart services. This finding led to question whether it would be valid to directly extend the TAM in the acceptance of smart services in public sectors.

7.3.2   IN KUWAIT

A very recent study of Rabaa'i et al. (2016) investigated the acceptance of smart services in Kuwait using the TAM. More specifically, this study investigated the factors and concepts that influence smart services' adoption in Kuwait. The participants that took part consisted of 534 students at a private American University who offered their insights regarding Kuwait's smart services. The authors found that the factors of perceived usefulness, perceived ease of use, computer self-efficacy, subjective norm, perceived credibility, attitude and behavioural intention can be utilised to interpret smart services' acceptance by the users. In addition, the constructs of computer self-efficacy and perceived credibility affected perceived usefulness and ease of use, with perceived usefulness being the most important concept in determining Kuwaiti users' approach towards smart services.

However, the study had a set of limitations, those being the number of respondents, the limited-cultural approach, and no report of the user's satisfaction with smart services and the quality of these services. Finally, the use of students does not represent the population and does not give insights to the influence of elements such as age, educational level and profession on the acceptance and use of smart services.

7.3.3   IN JORDAN

Rabaa'i and Al Jamal (2015) used an extended version of TAM to investigate the adoption and use of smart services in Jordan. The findings indicated that the acceptance of smart services can be explored based on the TAM, namely using the elements of perceived usefulness, perceived ease of use, computer self-efficacy and perceived credibility. Following the above, computer self-efficacy influences the perceived usefulness and perceived ease of use of smart services, with perceived ease of use being the dominant factor in the attitude of the citizens of Jordan.

However, the study had a set of limitations, those being the number of respondents, the limited cultural approach, and no report of the user's overall satisfaction with smart services and their quality.

7.3.4 IN THE UAE

Rodrigues et al. (2016) investigated constructs and elements that are likely to be important for accepting smart services. They applied the UTAUT model and collected data from prospective and present users of the UAE smart services. They statistically analysed 19 factors included in studies of smart services to identify the ones of greater importance. Regression analysis was applied to explore the effect of those 19 factors on the overall contentment of the users, and to investigate the connection amongst the satisfaction of users and the use of the Internet in general. They were also tested for differences such as in age, gender, nationality and education and their smart services' overall satisfaction.

Their findings identified that confidentiality, trust, facilitating conditions, transparency, pricing, accountability and attitude towards using technology affected significantly overall satisfaction. Additionally, overall satisfaction and internet usage had a significant effect on acceptance of smart services. Finally, there were significant differences in gender, where female users showed a greater degree of reluctance in using smart services compared to the males. Finally, there were no significant findings in nationality or educational level and the degree of accepting smart services (Rodrigues et al., 2016).

Alnuaimi, et al. (2011) established a research framework regarding the smart services' acceptance, which is based on the TAM, IDT and UTAUT. This framework takes into consideration and investigates the effect of 11 factors regarding the acceptance of smart

services in the Abu Dhabi government. Stated by Alnuaimi, et al. (2011) these 11 variables are: *trust in internet, trust in government, lack of awareness, perception of ease of use, perception of usefulness, compatibility, quality of information, age, education and computer literacy.*

However, the above study included only users of smart services whereas other people's perceptions that were not using smart services were not collected. On the other hand, Akman, Ali, Mishra and Arifoglu (2005) found slightly different patterns in Turkey. Various participants, from both genders, working in both public and private sectors, and from all educational levels, were recruited. They observed a significant effect of gender, education and occupation on the acceptance of smart services. Finally, the findings showing that the males used smart services more than the females were consistent in both of the above studies, whereas the education level was significant in the study of Akman et al. (2005) offering contradictory findings compared to Rodrigues et al. (2016).

7.3.5 IN SAUDI ARABIA

Alghamdi and Beloff (2016) initiated a new model named the e-Government Adoption and Utilisation Model (EGAUM). This model was developed based on previous acclaimed new technology acceptance theories and results from relevant studies. They also add some important elements such as *cultural influence, personal factors influence, awareness, previous experience influence, functional and technical quality of service, security and privacy, regulations and policies, and trustworthiness* (Alghamdi & Beloff, 2016).

However, the TAM is analogous to the EGAUM regarding the element of Perceived Usefulness and to the DOI regarding the Relative Advantages. Moreover, the Simplicity factor is similar to the element of Ease of Use in the TAM and the concept of Effort Expectancy in UTAUT (Alghamdi & Beloff, 2016).

7.4 PROPOSED PERSUASIVE TAM MODEL FOR THE UAE SMART SERVICES

7.4.1 RATIONALE

In order to explore and find the constructs that influence the acceptance and use of smart services in the UAE, this thesis will demonstrate a framework based on the TAM model and including a number of new constructs to mirror the situation in the UAE based on the qualitative study conducted for this thesis.

Based on the recent smart services' literature, there are other factors that might impact the adoption and use of smart services. Cultural and social factors might be noticed in some societies and not others but influence the public in adopting and using smart services. These can be: i) connection, ii) cultural differences, iii) face-to-face contact and iv) gender matters (AlAwadhi & Morris, 2009) v) privacy (e.g., Al-Sobhi, Weerakkody, & Kamal, 2010), vi) web usability and vii) accessibility (Alomari, Woods, & Sandhu, 2012).

Based on the empirical studies of this thesis, with the help of the user survey mechanism and results, I collected information from the present smart services' users in the UAE. Factors such as gender, age and education were taken into consideration when selecting participants. Additionally, the data for this thesis were collected in two major cities in order to explore the beliefs of the public that interacts with different government offices in offline medium, when they are comparing it to the online portal. Based on the information collected and after the findings from the descriptive and qualitative analysis, eight major challenges were identified which were mentioned by the majority of the participants, as hinders the use of smart services in the UAE. More specifically, these are the following:

- High usage for limited services

- Online and offline divergence
- Design problems
- Trust and security
- Lack of awareness and education
- Prerequisites-related problems
- Added-value challenges
- Cost issues

Nevertheless, it was noticed that users have different behaviour and different preferences when it comes to interact with the government through the available channels. Additionally, users mentioned many important comments when they were given the chance to write comments about the services, and unsurprisingly the majority of users mentioned almost the same comments about their perception of the smart government solutions offered to the public.

The TAM model has been used in different contexts either on its own combined with others or with added factors. Limitations, however have been stated such as i) its simplification and not its depth in detail (Mathieson et al., 2001), and ii) not referring to more factors that might affect the behavioural intention of a person to use a specific innovation, such as social factors. The above limitations are of great importance since they affect behavioural intention to use an innovation.

The studies that were analysed above in detail, especially in the GCC countries, gave an insight to this thesis and the proposed model for smart services in the UAE. As a result, this thesis will take into consideration four added features to the TAM framework, namely: perceived trust, computer self-efficacy, technical factors, and subjective norm. These will be named in general as *external variables* in the framework proposed below. Computer self-efficacy added in an extended TAM framework affected significantly the acceptance and use of electronic banking based on in interviews with users (Wang et al., 2003). Users' issues with security, trust and privacy of their details offered online have been taken into consideration in extended TAM frameworks in various fields, such as e-voting, yielding non consistent results (e.g. Aljarrah, et al., 2016, Kim et al. 2001; Pavlou, 2001).

Additionally the above models have not addressed and incorporated embedding behaviour change which influences the smart services but rather viewed people's motivation as a pre-requisite.

7.4.2   MODEL OVERVIEW

Based on the findings from the study conducted for this thesis, the theoretical model that I am proposing can be seen in Figure 7-1. Table 7.1 explains the notation used. It will be

analysed below in order to elaborate on the elements proposed for the adoption and use of the smart services in the UAE.
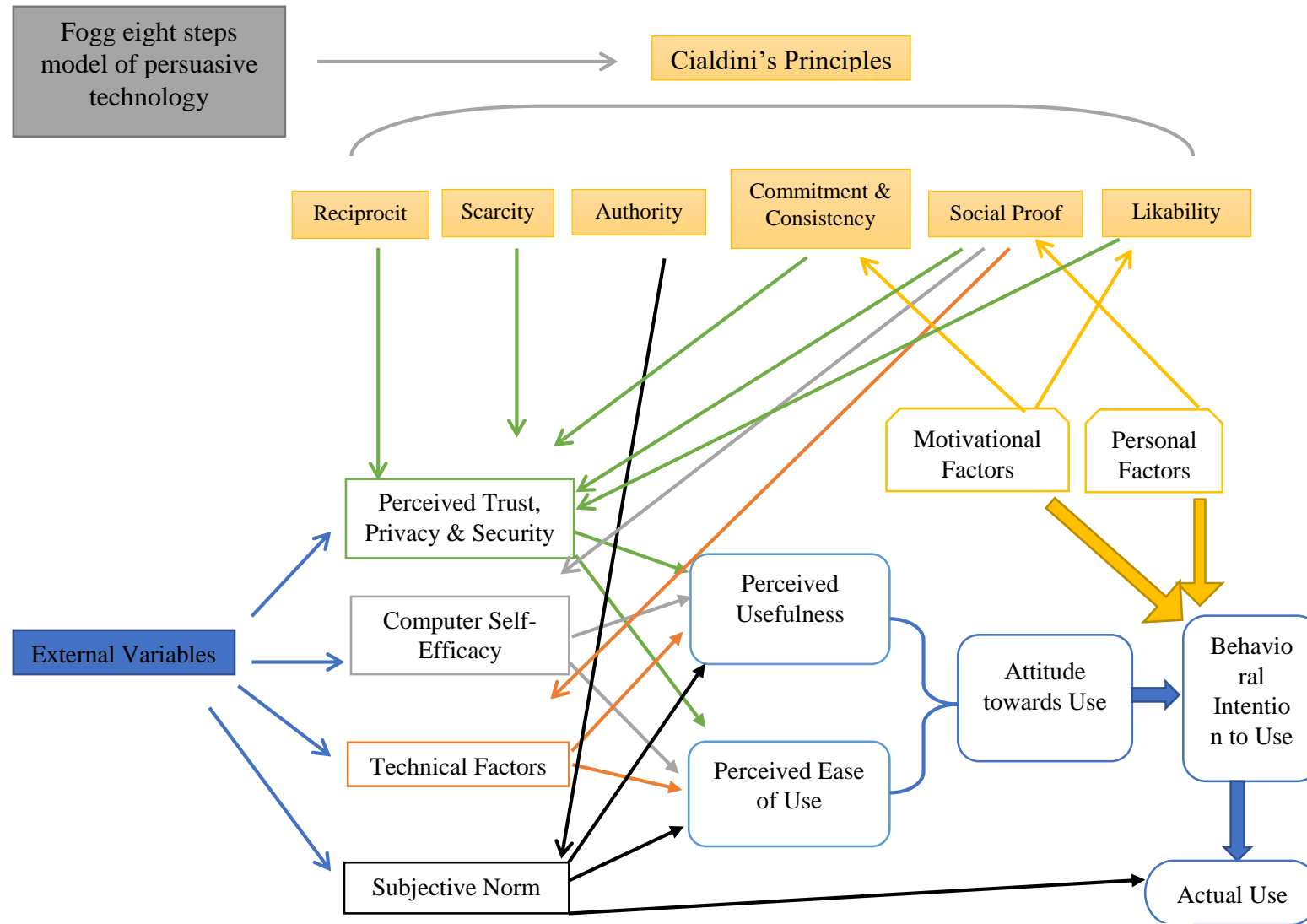
FIGURE 7-1 PROPOSED UNIFIED MODEL FOR SMART SERVICES

Shape	Meaning
→	Direct influence
▭	Basic elements of TAM model
External Virables (green, grey, red , black)	Four added elements in the TAM model
◆	Added elements outside the basic elements of the TAM model
Fogg eight steps	Software mechanisms needed to implement Cialdini's Principles
Cialdini's Principles	Cialdini's Principles

Table 7.1: Symbolisation of the Proposed Model

In Figure 7.4, the arrows state that there is a direct influence between the two elements observed in the two studies conducted for this thesis. For example reciprocity influences the perceived trust, privacy and security of the users, personal factors influence social proof and authority affects subjective norm. The blue coloured rectangles represent the basis of the TAM model. The different coloured rectangles (green, grey, orange, black) represent the four added elements to the TAM model and they have the same coloured arrows for ease of reading. The yellow boxes represent variables added to the TAM model, namely motivational and personal factors which will be analysed below. Above the model there are the Fogg eight steps of persuasive technology influencing Cialdini's six principles in the orange boxes and these affecting further the TAM based model.

7.4.3 PERSUASIVE TAM: DETAILED EXPLANATION

According to Fogg's behaviour model (Fogg, 2009), behaviour is a product of three factors: i) motivation, which is required to perform a target behaviour, ii) ability, which is required to perform the behaviour, and iii) triggers which are stimuli to perform the

behaviour. In order for an intervention to be successful, it thus has to be noticed, associated with an event and it should occur when one is both motivated and able to perform the required behaviour (Fogg, 2009).

Based on the Cialdini's six principles (2009) analysed in Chapter 5 of this thesis, reciprocity relates to a positive good, which is the expected behaviour when receiving something for the first time from a provider (e.g. I am generally cautious when I receive unsolicited special offers from service providers). In other words, the motivation is caused by a return of an action or a behavioural change, as a reaction to a previous behaviour. The analysis of the interviews highlighted some factors linked to reciprocity namely suspicion, manner, familiarity, quality, transparency, offer, trust, escalation, managed scale, experience, and market and overload.

Scarcity related to motivation through the limitation of specific offers (e.g. believe it would have been better to make a special offer freely available to clients who are willing to offer something in return: for example by recruiting additional clients through their friends, associates and family). This limitation may be time-bound, but it could also be related to a customer's performance in completing a challenge or a rewarding mechanism, e.g. game-based. Additionally, the scarcity concept and its degree of influence could vary from customer to another, depending on the perceived value of the offer which could be monetary or quality values. The experts highlighted six factors in the UAE context linked to scarcity, namely competition, social recognition, uniqueness, secondary nature, exclusivity, and negativity.

The authority element of Cialdini's motivation and persuasion model relates to the influence celebrities and public figures may have on motivation customer behaviour (e.g. I respect the opinions of leaders and authority figures in UAE and wish to follow their lead – if they approve of a service, I may also support it). More specifically, the experts indicated several factors regarding authority in the UAE context, namely effectiveness, profile, lifespan, secondary nature, age, lifetime, personalisation, vision, patriotism, and objectivity.

User can be committed to a specific provider, and as long as the service he receives is matching his expectations and quality definition, then it is likely that the user will keep using the service and will build a self-motivation towards the provider. In other words, this technique relates to the consistency for the provided service, and the expected commitment from users once the provider triggers their needs (e.g. suppose your service provider's representative is well known to you and you trust him. Would you agree with this statement: "Because of my experience with their representative, I am prepared to overlook some slight shortcomings from time to time."). The UAE experts identified several challenges regarding commitment and consistency. These are lifespan, duality, personal nature, management of change, negative impact, moral values, and escalation.

The element of social proof relates to the confirmation of impressions and perceived correct behaviour based on the observed reactions of peers (e.g. like to check up on services advertised for proof of their quality, (e.g. via social media) to see if these claims are true). The experts identified proactivity, provability, openness and frankness, similarity, age, duality, disappointment and uniqueness as factors that need to be considered in the context of the UAE.

The likeability element of the motivational and persuasion model refers to being motivated by individuals who target what customers know or like (e.g., appreciate it highly when a service provider understands our community's customs). The experts participating in the survey indicated factors influencing likability in the UAE context such as influence, respect, language, moral values, look, lifestyle, success, and geographical similarity.

More specifically, based on the experts' views, included in Chapter 6 of this thesis, not all approaches will work at the same degree in the Emirati market, with authority, reciprocity, commitment and consistency and social proof working better compared to likability and scarcity:

- Citizens prefer in person.
- Security and trust issues.
- Design related issues.

- Lack of awareness and third party involvement.

The focus of this thesis is the motivation, adoption and use of the smart services rather than the amelioration of the software and therefore the Cialdini persuasion model was applied. However, since the focus of this thesis is to identify challenges that limit the acceptance and use of the smart services, as well as offer recommendations on how to increase service engagement, the Fogg model of persuasion was adopted (see Figure 7-2). The choice of this model was based on the following reasons:

- Clarity in phases and needed work.
- Previous literature where the model was successful.
- Provide room for suggestions.

Most of the models proposed have not referred to the way to persuade the user in adopting and using smart services. That is the reason that the amended Fogg model of persuasion is proposed as a primary step for the proposed amended TAM. These steps need to be taken beforehand in order for the model to work sufficiently in order to engage the user. Nonetheless, it is expected to have some limitations while applying the Fogg model to approach challenges from the Cialdini's principles, and that is mainly due to the need of a dedicated design team to be responsible for applying the model on every known challenge, by following the defined Fogg phases. The recommendations where possible and challenges were analysed in detail in Chapter 6.

Fogg Eight Steps of Persuasive Technology

Introductory steps

- Targeted behaviour
- Audience choice
- Prevention causes

Only after Prevention causes identified

- Technology channel
- Examples of persuasive technologyl

Only after studying persuation technology

- Imitate success
- Test to prototype
- Expand on success
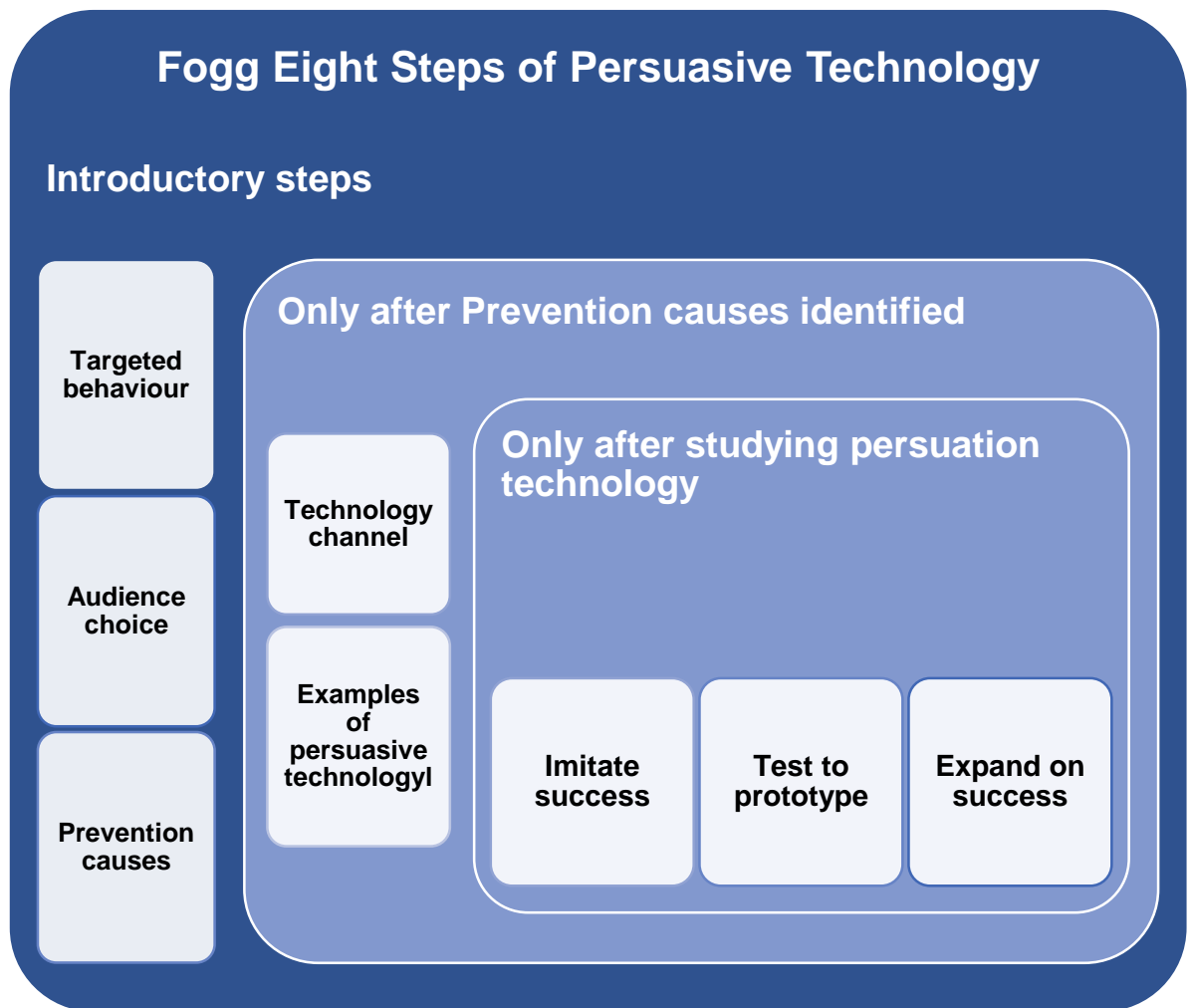
FIGURE 7-2 FOGG EIGHT STEPS OF PERSUASIVE TECHNOLOGY AND THEIR 3 CLASSES

Extending on the experts' study, based on the survey specifically designed for smart services' customers, Cialdini principles seems to have different degress of strnegths, e.g. likability may not be as effective as authority.

This offers a very important insight regarding the motivation, adoption and use of the smart services in the UAE and highlights a slightly different approach for the customers compared to the experts maintaining however all the principles important.

Most offers are carefully formulated to serve mainly the interests of the company rather than the clients (frequency 21 times).

7.4.3.1 IMPORTANCE OF THE FOGG MODEL IN THIS MODEL

The Fogg model is necessary to be addressed so as to persuade the public in using the smart services. If this does not happen then the TAM model will not be applied sufficiently since motivation has not been secured. Challenges from the Cialdini's principles need to be approached using the Fogg model in order for the Cialdini principles to be incorporated in the TAM model.

Nonetheless, as already mentioned above, there are limitations in applying the Fogg model if a dedicated team of experts is not assigned to face the challenges of the Cialdini's principles.

7.4.3.2 CIALDINI'S PRINCIPLES IN THE PROPOSED PERSUASIVE TAM

Reciprocity

After analysing the interviews with the experts, included in chapter 3 of this thesis, 12 factors that might affect the citizens of UAE where highlighted; namely suspicion, manner, familiarity, quality, transparency, offer, trust, escalation, managed scale, experience, and market and overload.

The above factors are analysed thoroughly in chapter 5. In summary, it was indicated that customers in the UAE may be suspicious towards available offers, they may not trust the underlying value of the offered good or service, complex offers might cause insecurity, the citizens wish to know the cost benefit of an offer and trust the provider offering quality service. This would mean that service providers need to consider these factors when communicating offers to a customer.

If the aforementioned factors are addressed via the application of the Fogg model then this will have an effect on the perceived trust, privacy and security of the citizens of the UAE towards the smart services. If the citizens are motivated positively towards these factors then the perceived trust, privacy and security of the citizens, the first external variable of the TAM model, which is part of the unified model above, will lead to adoption and use of these services.

Scarcity

The experts highlighted several challenges which were categorised into six factors influencing the element of scarcity in the context of UAE customer motivation. These factors are competition, social recognition, uniqueness, secondary nature, exclusivity, and negativity.

The above factors are analysed thoroughly in chapter 5. In summary, it was indicated that customers in the UAE may feel uncomfortable or omitted if they never get the chance to get an offer resulting to the rejection of a product or service. Also, the uniqueness of a good or service and the social impact may motivate customers in the UAE to adopt a good or service. On the other hand scarcity might have a negative impact, leading the users to the conclusion that the offer might be a left-over but at the same time providing a limited offer linked to exclusive rights may be appealing to UAE customers.

If the challenges of the scarcity factor are disentangled via applying the Fogg model then this will have an effect on the perceived trust, privacy and security of the citizens of the UAE towards the smart services together with reciprocity a motivating them and riding their trust regarding the services. This will be a positive factor for the adoption and use of the services.

Authority

In the expert study 10 factors were identified related to the element of authority especially relevant to the UAE context. These factors are effectiveness, profile, lifespan, secondary nature, age, lifetime, personalisation, vision, patriotism, and objectivity.

The above factors are analysed thoroughly in chapter 5. In summary, it was observed that UAE citizens would be more motivated if respected individuals with authority promoted a specific service. The age of this person promoting a good offer would be important as well as any bond they have with the community. Adding to the above, if a good service endorsed by an authority does not meet the expectations of the customers, any other products endorsed may actually be rejected too.

Authority is directly related to the subjective norm, one of the external variables in the TAM model proposed in this thesis as part of the Unified model. If any issues are resolved with the Fogg model then the authority factor will positively motivate the users and lead to the adoption and perceived usefulness and perceived ease of use of a service.

Commitment and Consistency

The experts argued that this element could work efficiently in the UAE due to UAE citizens' cultural values. However, they highlighted seven factors important in the UAE context, namely lifespan, duality, personal nature, management of change, negative impact, moral values, and escalation.

The above factors are analysed thoroughly in chapter 5. In summary, it was shown that customers in the UAE stay committed to a service or good as long as the quality is consistent and the customer expectations are met. The customers appear to expect high quality in return for their commitment and if they have experienced long lasting personal interactions with a provider's representative they stay motivated in using this service. However, the success of any IT based service is relatively linked to the commitment of the present and potential users. In addition, UAE citizens due to their strong sense of loyalty expect consistency for their loyalty and moral and religious values are of great importance.

Together with reciprocity and scarcity, commitment and consistency are very important factors in order for the users to be motivated in using the services. As a result trust issues are affected and motivational factors, such as loyalty, influence this commitment and consistency. The Fogg model needs to be applied to address any challenges.

Social Proof

Proactivity, provability, openness and frankness, similarity, age, duality, disappointment and uniqueness were highlighted in the expert survey as factors that need to be considered in the context of the UAE.

The above factors are analysed thoroughly in chapter 5. In summary, it was shown that proactivity in providing information to potential customers may be beneficial. Customers, mostly younger ones, also seek customer reviews and opinions on social media providers; however when social proof contradicts the information given by the providers, this may be detrimental to the motivation and persuasion of customers to accept an offer. Trust relationships can be extended or weakened by social proof.

As seen from the findings, social proof is influenced by personal factors (age) and affects trust, since trust can be shaped by social proof. However, since social proof derives from social media this means that the users will have ease of use leading to computer self-efficacy and reviews from social media can further motivate citizens regarding the technical factors of the services and leading them to a positive opinion about them and further to their adoption and use.

Likeability

The experts highlighted factors such as influence, respect, language, moral values, look, lifestyle, success, and geographical similarity as factors to be considered in the context of the UAE.

The above factors are analysed thoroughly in chapter 5. In summary, likability appears to be very influential in the context of UAE. It appears that customers appreciate if providers understand their customs. Additionally, providers ignoring the UAE cultural context, the language, moral values may be perceived as a negative element. The experts indicated that the likability of a lifestyle of a promoting individual is important in the context of the UAE. The success achieved by an individual promoting a good or service may motivate potential customers to adopt the promoted good or service in order to achieve a similar success. Customers in the UAE appear to prefer if goods and services are provided in offices and branches local to them. However, this may be difficult to achieve for online services.

7.4.4   EXTERNAL VARIABLES IN THE PROPOSED PERSUASIVE TAM

7.4.4.1   *PERCEIVED TRUST, PRIVACY AND SECURITY*

The two studies conducted for this thesis found that trust and security issues were of great importance to the UAE participants. More specifically, 21% of the participants felt that the online services are not safe for their money, as well as for their personal data that they used in online services. Hanudin (2007) stated that security and privacy is an important indicator of behavioural intention to use an innovative technology. The term security shows the safety of the new innovation, such as smart services, from illegal interferences or leakages from third parties. Privacy is the safety of the users' personal data when using the Internet (Hoffman et al., 1999). Oni and Ayo (2010) observed that security and privacy influence perceived ease of use, perceived usefulness and attitude in the TAM model, whereas Nysveen et al, (2005) found that they also affected intention. Finally safety of the users' personal information is vital for them to feel confident in using the smart services.

On the other hand, trust is a key element in order to make potential users feel comfortable and safe regarding any potential risk or uncertainty they might have in using online services. The citizens might not wish to share their personal information, credit or debit card details and perform online transactions via the smart services. Based on recent technology adoption literature, it has been observed that trust is of great importance but there is still room for further research on the analysis of the role of trust in the smart services' acceptance and use (Alsaghier, Ford, Nguyen, & Hexel, 2009).

However, in order to develop this trust in smart services there are some measures that need to be taken in order for the users to feel confident in using them. These might be i) email confirmations when the payments are made via the UAE smart services, ii) further safety measures when payments are made, iii) and notifying when and why the smart services might need the personal data of users asking for their authorisation (Alghamdi & Beloff, 2014). As a result, the perception of security, privacy and trust will increase smart services' use.

Based on the users' study in this thesis, suspicion was featured highly on the list and was echoed in comments for a number of other principles. Confirming the data in the experts' study, the element of suspicion featured widely, not only in the questions pertaining to reciprocity, but was also evident from the open comments, as shown in the customers'

study. There is also a trend towards being discerning - which is mirrored in the comments in many of the other sections and this is highlighted in a concern over terms and conditions, "small print" and concern for cost. The language issue (suspicion over terms and conditions issued in English as opposed to Arabic) is also repeated, in Likability, for example. Use of the Arabic language to foster trust in a service is to be taken into serious consideration.

7.4.4.2   COMPUTER SELF-EFFICACY

The user's judgment of his/her skill to organise and perform actions on a computer and perform a successful behaviour can be defined as computer self-efficacy (CSE). Both a user's individual skills and their application in order to complete a task or behaviour can de stated as efficacy (Bandura, 1986). Additionally, CSE can take into consideration a user's degree of confidence when learning how to use a new technological service (Compeau & Higgings, 1995). Namely, a user's confidence rate in using a new technology is higher when a user has a higher CSE, whereas a low CSE will result in the users feeling that they might not be able to use the technology successfully and easily (Lai, 2008). CSE can be application-specific and general (Marakas et al, 1998). The application-specific CSE is the ability of an individual to use any applications in a single generic computer domain, whereas a general CSE is the ability to perform tasks on cross-platform computers.

The lack of understanding of the flow of the services, and involved procedures of accomplishing a service, regardless of the interfaces and design, came third with 40% as a limitation to adopt and use the UAE online services. Based on the technology acceptance literature, CSE is of great importance in the adoption and use of online systems (e.g., Grandon et al., 2005). However, findings have shown that users with low CSE lost their incentive to complete their duties on the computer compared to those who had a strong CSE (Compeau & Higgins, 1995). In the study undertaken for this thesis only 6% of the participants felt that they needed much time before starting to use the services in order to learn and reach to the stage where they can use the online services with no restriction and with confidence.

As expected, CSE could affect the perceived ease of use before or after the use of a new online technology (Venkatesh & Davis, 1996. More specifically, in the TAM model there is provision for an external variable that captures the behaviour towards a new technology, for example CSE (Compeau & Higgings, 1995). In addition, the verification of the importance of computer self-efficacy with perceived ease of use can be observed through a causal analysis in Hanudin (2007) leading to a better perceived ease of use and better behaviour towards the new online system (Pikkarainen et al., 2004). Overall, a large strand of the research literature argues about the significant effect of CSE on the TAM framework (Downey, 2006; Saade & Kira, 2009).

7.4.4.3   TECHNICAL FACTORS

All information technology systems are characterized by technical aspects that are of great importance in the adoption and use of innovative systems but can act as barriers if they are not considered. In this quantitative survey study, 45% of the citizens in the UAE stated that the lack of clarity and simplicity in the design and interfaces of the online services portal, as well as explanation on how they should be used were barriers in the use of the online services. Namely, a definition provided for *simplicity* can be the aspects that make smart services easy to use. If an information system is easier to use, this will result into more users adopting and using it. This conclusion concerns smart services, since there are many potential users with a variety of technological skills and confidence, who might use them. The interface design of the smart services, namely the interaction facilitator amongst smart services and its users, such as the design and colours of the website, consistency in the design of it, language and grammar being used, clear fonts and labels, search options and a variety of languages being offered, may attract more users, especially in the culturally diverse society of the UAE. Additionally, the ease of reaching an e-service via the smart services' website and the use of hints, examples and explanations of services offered to the users will enhance the adoption and utilisation rate (Alghamdi & Beloff, 2016). Additionally, in line with the findings website design had a significant effect on the smart services' acceptance in Jordan (Alomari, 2014).

Another very important factor is the technical quality of service, namely technical features that can have a positive or negative effect on the users' intention to use smart services.

Some of these features concern people with additional and different needs, such as people with blindness, low vision, deafness, hard of hearing and physical disabilities (Abanumy, Al-Badi, & Mayhew, 2005) and the confirmation on behalf of the smart services that they are free from technical faults (Al-Nuaim, 2011). If these technical factors are not solved, then this might result in low adoption and use of the smart services.

Another important factor for the acceptance and use of smart services is *accessibility*, which is the ability to access the smart services provided by the UAE government. Although the help of mobile phones, laptops and tablets have helped the amelioration of the accessibility of smart services there are many people who do not have the same accessibility (Hung, Chang, & Kuo, 2013). As a result, the smart services can aid the access for users in remote areas, users with illnesses, elderly people or users with low computer skills enhancing their adoption and use (Becker, 2009).

7.4.4.4   *SUBJECTIVE NORM (SN)*

Based on the TPB and the UTAUT, the subjective norm (or social influence) was assumed to influence the perceived ease of use, perceived usefulness and behavioural intention. Even if a certain person is not very fond of the adoption of an idea and its outcomes, he/she might choose to follow that idea if people that they recognise as important state that they should act in a certain way (Fishbein & Ajzen, 1975; Venkatesh & Davis, 2000). Also, it has been claimed that when a colleague had believed that a new system was useful, then the other person would likely have the same opinion (Venkatesh & Davis, 2000). More importantly, after the meta-analysis of 88 studies on the correlation between subjective norm and the TAM, a significant correlation between subjective norm, perceived usefulness as well as perceived ease of use and behavioural intension was found (Schepers & Wetzels, 2007).

Based on the findings from the customers' survey in this thesis, and in line with the above literature, 94 % of the participants agreed that the actions of authority figures in the UAE's leadership are considered a factor which encourages and motivates citizens. The comments offered by the UAE citizens indicate that the majority of both young and older participants recognize the authority figures as an influencing factor in UAE.

7.4.5　PERSUASIVE TAM ACTIVITIES/STAGES

7.4.5.1　PERCEIVED USEFULNESS (PU)

The researchers define the perceived usefulness feature as 'the degree to which a person believes that using a particular system would enhance his or her job performance' (Davis, 1989, p. 320). In line with Subramanian (1994), Fu, Farn, and Chao (2006) and Norazah et al. (2008) the perceived usefulness element had a significant relationship with attitude toward usage behaviour. The significant effect of perceived usefulness on the intention to use a new system, and especially in smart services acceptance studies (e.g. Carter & Belanger, 2005), has been found by many authors (e.g. Taylor & Todd, 1995; Venkatesh & Davis, 2000). The constructs of perceived usefulness and ease of use have a significant effect on the attitude of users (Park, 2009). Other studies have also provided evidence to show that perceived usefulness has influences on attitudes and intention to use technology (Teo 2008, 2011; Yuen 2002).

7.4.5.2　PERCEIVED EASE OF USE (PEU)

Perceived ease of use can be explained as 'the degree to which a person believes that using a particular system would be free of effort' (Davis, 1989, p. 320). Findings have shown that PEU plays a positive role in the intention to use different information systems (Fagan, Wooldridge, & Neill, 2008; Hsu, Wang, & Chiu, 2009; Moon & Kim, 2001), something that has also been observed in studies about the acceptance of smart services (e.g. Carter & Belanger, 2005).

7.4.5.3　ATTITUDE TOWARDS USE (ATU)

Attitude is formed by the perceived usefulness, the perceived ease of use and the intention to use the smart services (Suki & Ramayah, 2010). Suki and Ramayah (2010, p. 399) stated that "As an innovative system, e-Government is still in its infancy. Large numbers of users simply do not exist in many countries and regions. An investigation of attitudes toward using e-Government and identification of its relationship with intention to use is more appropriate and practically valuable for predicting usage behaviour". The attitude of a potential user guides them to the behavioural intention of accepting and using of a new system (David, 1989).

Personal and Motivational Factors (PMF)

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Based on the findings from the interviews with various Emirati experts focused on the seven different aspects of Cialdini theory and after discussing with them the available areas of motivation that could be used the experts related the different efficiency of the various methods to many variables such as:

- Age & Gender

Age and gender are both important factors that can influence smart services' use and adoption and their investigation can lead to a better understanding of their connection to smart services. Two studies in Arab countries stated that that the age variable was of high importance regarding the acceptance of information systems (Baker, Al- Gahtani, & Hubona, 2007). Sciadas (2002) observed that the use of smart services tended to increase with age, whereas two studies (Al-Otaibi & Al-Zahrani, 2009; Alrawi & Sabry, 2009) indicated the opposite.

Gender is a variable of great importance when analysing the adoption and use of smart services. On the other hand, the survey questions in the user's study did not include questions in relation to age or gender as no inferential analysis was planned. It is also to respect the privacy of people being asked as the survey was done in person. Nevertheless, these questions together with a question regarding the educational level might have been considered personal and culturally obstructive, since citizens believe that these questions should not be asked in general for data collection reasons. Based on the customer's survey in this thesis, it was found that the majority of the participants under 25 years of age indicated that they rely greatly on social media for community and product/service information.

- Education

Following age and gender, the education level is a very important factor due to the fact that the educational level of a user tends to correlate with computer literacy (general knowledge offering the ability to use computers) and efficacy (Al-Sobhi, Weerakkody, & Kamal, 2010).

Apart from some personal factors there are some motivational factors that might enhance or limit the adoption and use of smart services. These might be saving time and/or cost, the suitability of completing a certain service from home without waiting in long queues. While scarcity was confirmed as a motivating force, the tendency towards being discerning ("depends on the kind of service"; "concern with cost") is another factor to be taken into account and this is echoed in the customers' interviews in this thesis. Additionally, some important reasons are due to social and cultural factors that might strongly influence the acceptance of smart services. A user can adopt a smart service based on social influence which is "normative pressure from society about intermediaries has impact on increasing awareness and forming social marketing to adopt e-government services" (Weerakkody et al., 2013, p.718). Irani, Dwivedi, and Williams (2009) highlighted that social influence by relatives, friends, and co-workers was a strong indicator of the degree of adoption of a novel tool such as smart services.

The cultural element is very important especially in the UAE. The definition that can be provided for *cultural influence* is "the values, beliefs, norms and behavioural patterns of a national group" (Leung et al., 2005, p. 357). Recent studies have shown that culture and the citizens intention to use smart services are strongly correlated (Akkaya, Wolf, & Krcmar, 2012; Alateyah, Crowder, & Wills, 2013). In this thesis the findings from the customers' survey indicates that the citizens would like the respect of service providers towards local culture and traditions in line with Cialdini's principles.

The resistance from individuals to technologies may affect the behavioural norms of the society, which can negatively influence the application of these new services. Resistance to change affects smart services just like the introduction of any new concept. A key underlying reason for this resistance is the lack of trust by the users to the new technology due to the strong influence of the face-to-face and in person culture regarding the clients' assurance and trust (Al Awadhi & Morris, 2009).

7.4.5.4   *BEHAVIOURAL INTENTION (BI)*

Behavioural intention has been found to be linked to a high degree with the actual use of an innovation (Davis, 1989). In accordance to the above, the selected behaviour of someone to accept and use innovative services, such as smart services, derives from the intention to use them, namely being "a kind of 'self-prediction' or 'behavioural expectation', indicated as one of the most accurate predictors available for an individual's future behaviour" (Lean et al., 2009, p. 461). Consequently, the higher the degree of intention to use smart services the higher the degree and behaviour in which the new services are used (Urbach & Müller, 2010).

7.5   SUMMARY

In order to investigate and analyse persuasive techniques regarding smart services in the UAE that can impact the motivation, adoption and use of these services by UAE citizens this thesis proposes a comprehensive unified model consisting of the Fogg model, the Cialdini model and an extended TAM model. The model in based on the Fogg model which addresses the challenges with the Cialdini's principles in the UAE context and as a result increasing motivation. As a result, this increase of motivation could lead to the acceptance and use of smart services. This model derived from the critical analysis of recent previous literature regarding smart services' studies.

Carter and Belanger (2005) underline that the public's readiness to accept and use new services offers the success of smart services' initiatives together with government support. More specifically this is the "demand side" of smart services, which investigates the diversity and the number of features that encourage and hinder the adoption of smart services (Reddick et al., 2012). Warkentin et al. (2002, p. 159) state that: "To adopt e-Government processes, citizens must have the intention to 'engage in e-Government', which encompasses the intentions to receive information, to provide information and to request e-Government services." Namely, without the public becoming motivated and accepting these smart services, then the proposed overall aims will not be reached.

The contribution of this model includes the incorporation of persuasive techniques in an adoption and acceptance model. This makes an encompassing conclusion regarding adoption and use models. The studies in this thesis enhance our understanding of motivation, adoption and use of citizens in the UAE context. This model has a number of

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implications for governments, managers in companies or organisations, and researchers leading to a fruitful implementation of smart services in their organizations or public sectors.

8.   CHAPTER 8: EVALUATION

In this chapter, the amended Fogg's process suggested in Chapter 6 as well as the amended TAM model proposed in Chapter 7 will be evaluated in details. On one hand, the amendments were proposed to fit the nature of smart service besides the features of UAE users behaviour. On the other hand, the main amendment to Fogg process was the set of considerations and recommendations that need to be taken into account for each of the model 8 steps, while the main amendments to the TAM model are the interlocution of four external variables, in addition to the mapping of Cialdini's principles of influence to the external variables besides the TAM steps.

In reality, the Fogg's process is meant for the sake of the design of persuasive technology, while the TAM is meant for the introduction of a new already designed technology targeting a certain population and enterprise. However, The thesis aimed to augment both models, in order to introduce a holistic approach on how to design persuasive technology besides integrating it within the smart services. Furthermore, how to introduce the integrated solution in a managed style, which itself requests the use of principles of influence, such as the ones suggested by Cialdini.

8.1   EVALUATION METHOD

The evaluation is meant to assess the usefulness of the proposed amendments to the Fogg process various steps, and the TAM model. For the extent of this thesis, the usefulness is evaluated from the perspective of senior management, who can take decisions on drawing policies, along with the ability to oversee the development and deployment process as a whole. Nevertheless, other perspectives are equally significant, but are not included in this thesis argument due to the complexity and the time constraints.

8.1.1   EVALUATION QUESTIONS.

With regards to the amendment introduced to the Fogg process the following subjects were evaluated:

- The suitability of amendments introduced to each of the steps of the original Fogg's process.
- Additional amendments, which could be needed for each of the steps of the Fogg's process.
- Contextual factors which can add further information to the way the amendments proposed to the Fogg's process can be enacted.

Concerning the amendments introduced to the TAM model, the follow questions were considered:

- The suitability of the introduced external variables to the TAM model.
- The potential for additional variables.
- The suitability of the proposed links between Cialdini principles, and the external variables as well as other activities in the TAM model.
- The contextual factors which can affect the above questions.

8.1.2   DATA SOURCE AND DATA COLLECTION

In order to answer the above questions, the used method is based on interviewing senior managers, who have witnessed a wide range of projects relevant to the smart services applications in their respective organizations. Additionally, they are able to advise on the critical management decisions and also evaluate previous strategies based on their experience. As a matter of fact, they constantly receive performance reports, and participate in outlining policies at a national level. Therefore, this kind of expertise is required to assess the proposed amendments in their wider context, and also based on the heuristics those experts managers develop through their extensive work experience. In general, 4 steps are considered within this part as explained below (Figure 8-1):

```
Selection
   ↓
Invitations
   ↓
Smart phone applications
   ↓
Models amendments introduction
```
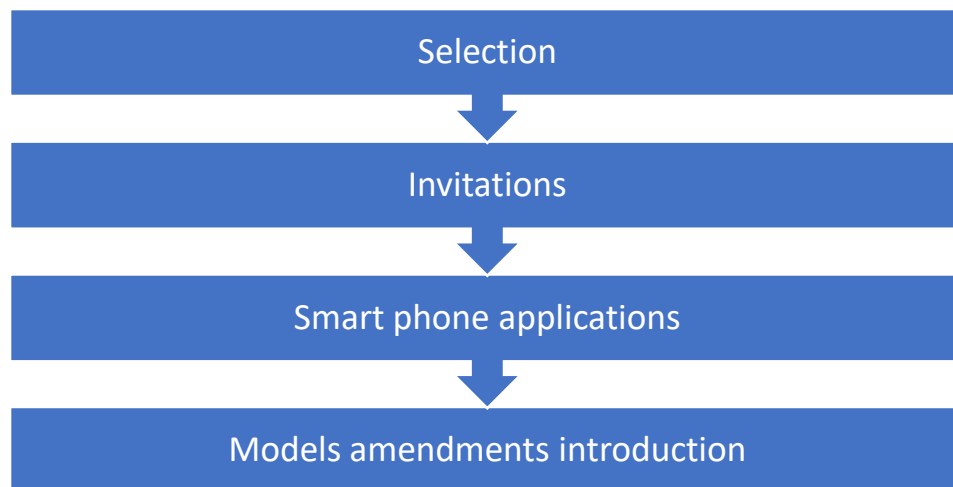
FIGURE 8-1 DATA COLLECTION STEPS

1.   The selection took into account the diversity of the organizations, and the focus of the senior manager in order to avoid bias and obtain as much diverse knowledge as possible. Besides that, in order to cover different management styles, it was aimed to have managers of different generation. Moreover, the interviewed managers and experts were also coming from dissimilar background, e.g. some of them with business background; while others are with marketing focus and policymaking background. The questions asked were aligned with the questions presented in

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the previous section. Aiming to make the questions easier to understand and to make their remit and focus clearer a number of steps and measures were taken for each participant.

2.   The second step was to invite the participants. This has taken a pragmatic approach by the means of inviting and convincing sampling contacts of the researcher, who has or still working in professional institutions to nominate experts. Subsequent to that, the experts were sent a brief communication explaining the overall purpose of the study. Furthermore, 20 experts were invited and 12 responded positively. Nonetheless, the others apologized due to their other commitments, and also due to their uncertainty whether they can contribute to this particular study or not. Consequently, the description of the research and the examples were sent to the 12 senior managers who agreed via email. Six of them apologized as they realized this falls outside their expertise sector, while two of them proposed alternative experts in their organization. In conclusion, eight senior managers have agreed to participate, which would be considered as a good total given the characteristics of this sample and the tailored level of required knowledge.

3.   Participants were walked through two different smart phone applications for smart government. The first one is for a major airline company in the country known for its success, so that they can reflect on what would make a service attractive to the end user. The second was taken from a smart government domain that serves the locals, and offers a range of applications and certificates for users. In reality, the app is known for its richness in the provided features; however, there is a need to maximize the outreach so that it covers a wider range of users. Yet, the purpose was additionally to give the participants a chance to use the app to explain where shortcomings are, and to clarify how the amended Fogg TAM models could help and make the discussion more thoughts stimulating. The researchers to explain the amendments when needed also used the apps.

4.   At first, the participants were introduced to the Fogg Process and the TAM model and were also walked through all the proposed amendments to them with explanations. Furthermore, examples were extensively given when needed to refresh thoughts and add energy to the conversation. Additionally, a graphical representation printed on a relatively large paper sheet was presented so that it was used to explain and also annotate when needed. The researcher used a whiteboard when available to reiterate the explanation. Participants were given the chance to clarify the meaning for the amended models and their additions before the question started.

By the end of the interview session's participants were asked to add further comments if they believe they missed something or wanted to cover uncovered part. Three of the participants came back to the researcher after the interview was conducted with some useful examples and

additional thoughts. On the other hand, another participant communicated with the researcher afterwards to correct part of the provided information due to a change in the policy. In general, these incidents show the interesting nature of the models and the proposed amendments. They are also an indicator of the trustworthiness of participant set and their commitment.

In the following we present the nine participants that have agreed to participate in the study.

TABLE 1: EXPERTS PROFILES

Participant	Expertise	Role	Experience
1.	Professor of management and strategic planning	Deputy Director – Major organization in UAE	25 Years
2.	Responsible for coordinating transformation to smart services at the federal government level	Director of Smart Government initiative	10 Years
3.	Master of public Administration, Member of Smart Service transformation programme.	Head of Electronic Services and Communication Department.	16 Years
4.	Professor of Quality, Author of several books on quality and planning.	Head of the Department of Administrative Science and Quality	35 Years
5.	Professor in Management, Strategic and Crisis. Author of several books related to Technology. International collaborations.	Dean of the Faculty in one Police Academy	36 Years
6.	Marketing and Market Research	Digital Marketing Manager	10 Years
7.	Lead system analysis and software engineer	Strategic planning in major software development company in UAE dealing with smart services	16 Years
8.	Happiness and Citizen Satisfaction Programmes	Executive Director for Happiness in main ministry in UAE	2 years + 14 years in Management

8.1.3   DATA ANALYSIS

As a matter of fact, all interview sessions were audio-recorded and transcribed at a later stage. However, there was also a considerable sum of notes made during the sessions especially when annotating the figure. Thereafter, the notes were transformed to textual data and appended to the produced transcript. On the other hand, the audio was not transcribed word by word but rather the

researcher focused on the evaluation part of them. Nonetheless, a major part of the conversation related to the explanation of the models, which naturally is not needed for the purpose of this chapter.

Furthermore, the data analysis was needed to answer the questions stated earlier. In other words, it is for evaluating the usefulness and suitability of the proposed amendments and in addition the contextual factors which surround them. Participants were asked to add additional facets and amendments whenever it was considered as necessary from their point of view. Hence, the data analysis was framed as an evaluation exercise rather than an exploratory study.

Throughout the analysis and when doubts were found in the collected data, the researcher was always coming back to the participants for clarifications. The reason behind that is the need for clarity in the judgement, as it is consider essential part since this is mainly an evaluation stage. Nevertheless, participants' added value during that stage was while they were asked to clarify, and they added further insights and reflection to their answer. Indeed, by the time they were asked again, they seem to have been reflecting on the topic and this added more depth and breadth to both, their already collected answers as well as the further clarifications.

Moreover, the analysis took into account the findings presented in the other chapters in order to minimize the redundancy. Despite the fact that the analysis itself is limited to the evaluation purpose in some parts of the study, yet there were additional research questions, which could be interesting to present it and get it answered. In general, the choice was to stay focused on the evaluation part due to the scale of this thesis.

8.2 EVALUATING THE AMENDED FOGG'S 8 STEPS PROCESS

8.2.1 STEP 1: CHOOSE A SIMPLE BEHAVIOUR

In general, the evaluation reflected a general conformity on the findings. Additionally, the interviewees indeed emphasized the necessity for simplicity in the behaviour in the direction of motivating people to choose. However, they also added more various considerations as explained below (Figure 8-2).
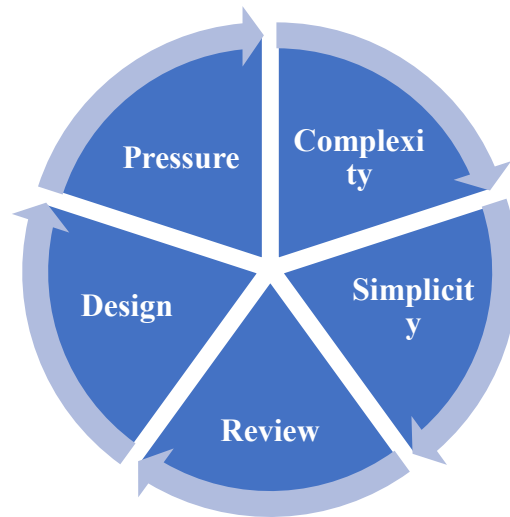
- **Complexity:** Experts 1, 2 and 3 commented that adding persuasion to a complex behaviour might make it appear like a noise, and an additional pointless complication that could result in distraction from the main purpose. Indeed, the customers may feel that the persuasion is a mechanism to work around the main issues in the service. Yet, this could work as counter-persuasion and a mechanism to misinform customers from seeing the real complexity of the issues.

- **Simplicity:** Another interesting finding was related to the simplicity in the used persuasion technique itself. As it was argued that adopting complex persuasive technology to a simple online behaviour may transform it to less simple. On that point, the experts suggested that the level of complexity in the persuasion should be proportional to the level of complexity in the online behaviour. For illustration "if the smart service is simply for paying electricity bill that takes 1 to 2 minutes in total, the persuasive techniques should last less that 20 seconds". This could be in a form of showing the users how much energy consumptions they reduced by not going to the customer service in person, in other words the technique here is simple and directly linked to the targeted service and behaviour (Harri et al 2009).

- Furthermore, experts additionally found it more sensible to classify the straightforward behaviours taken into account, not only the various degrees of digital literacy in UAE, but also the familiarity with the domain of the smart services in general. For instance, some smart services in the transport domain require taking a picture of an accident and sharing it thus the investigation can take place later. Nonetheless, this may not be a trouble-free process for some users groups. In addition, the business process flow itself

may seem to be non-classic for users who are used to instantaneously call the police when a car accident occurs. In conclusion, the simplicity is relative and segmentation of the users set should be, in order to determine which segment would possibly encounter difficulty. Knowing that will be of assistance to search out to the root of the problem before adding persuasion, and assuming simplicity in a uniform style can lead to less efficiency and counter-production persuasion.

- **Review:** *Expert 7*, suggested a review on the Complexity and simplicity of the used persuasive techniques is dynamic. He argued the need for that for two main reasons. The first is about the effect of learning that the users can develop after a period of time of performing what was perceived to be complex in an easy approach. The second is about individuals who used to find the usage simple for a period of time, until for either personal or cognitive issues, started to struggle repeating it at the same efficiency and ease. Thus, the consideration of simplicity and complexity should be periodic, as it will assure up to date strategies.

- **Design:** Moreover, it been argued to focus on the design, as some emerging design issues might make a simple behaviour appear complex. Moreover, adding a number of new features to the smart service could complicate what used to be a simple process. As a result, this necessitates assessing the behaviour being subject to persuasion after an amendment has been made to the service.

- **Pressure:** As a last remark regarding the complexity discussion, more than one senior manager expert in the governmental services sector, emphasized that there is a gentle pressure on the public towards the use of smart services. This does not require the behaviour to be extremely simple but rather slightly more complex behaviour could still be subject to persuasion. Furthermore, such proposal takes both a Nudge approach (Hansen et al, 2013) and also a more motivational approach. Application of the nudge approach could be in the form of reducing the number of customer services locations so that people feel extra the need to accomplish services online, since the waiting time will be expected to be much more taking into consideration the increase in the number of customers. While the motivational approach, could be as argued by expert 2 and 3, as they mentioned that users of smart services could be given a dedicated queue in the service canters to complete the share of the service requiring in-person final interaction. As a result, this makes people more inclined to do the online part remotely, and come for a short stage to finalize what has been started online.

8.2.2   STEP 2: CHOOSE A RECEPTIVE AUDIENCES

Majority of the participants contracted that the willingness to use the available services and to take the move to online conduct, is imperative factor but might be compromised by other contextual factors such, the infrastructure status, and the possible lack of skills. Additionally, they also approved that the cultural dimension is a significant aspect to be considered when assessing the receptiveness of the crowd. On the other hand, gender differences are of importance especially for the acceptance of the applied persuasive technique. For illustration, young male users could prefer social proofs and authority in relation to sport athletes, while young female users may prefer the social proof more in relation to singers and actors. As a finding from the interviews, expert one argued that, although we speculate that gender and age, still the culture could have an effect, that still need to be studied tin order understand its effect in a better way. A number of participants suggested the use of e-forums and to analysis the available data, for the sake of segmenting users, and assess the receptiveness when a persuasion layer is to be added to a smart service.
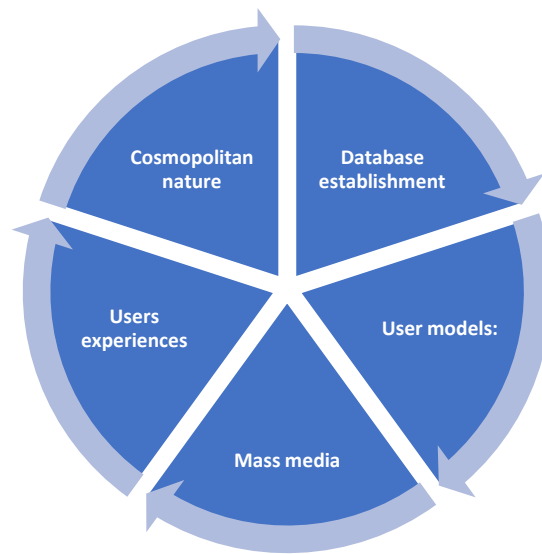
FIGURE 8-3 CHOOSE A RECEPTIVE AUDIENCES MAIN RECOMENDATIONS

- **Database establishment:** As a first recommendation, it was highly stressed on the importance of having a database to include all users preferences and their receptiveness, which can be reused when needed. Some of the participants suggested that the use of any persuasive technology should not always start from scratch since data could be already reachable. Furthermore, it is recommended to have a sort of customized database (Özsu et al, 2011), in each organization to cover the preferences of their clients towards the various persuasive techniques, and also their ability to deal with the technical and

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organizational issues in relation to the online smart service. Such information would shorten the time needed to determine whether a particular user is receptive to a change and to the persuasion itself or not. Nonetheless, the second participant commented that there is a general trend in UAE towards prosperous database serves the perspective of the usage of smart services, and therefore adding persuasion data to it would be both feasible and useful.

- **User models:** The second provided recommendation is related to building user models by the means of processing their behaviour, and feedback on the used services in the past as well as the way they were used by them. The second expert encouraged the consideration of persuasion approach as a long lasting process, which requires continuous behaviour processing and then customizing the persuasion models to the users constantly, based on their previous acceptance and receptiveness of the use of smart services in general, and also the feedback regarding particular services features. Yet, when the participants were introduced to the idea of using personas, they confirmed their appreciation, and it was clear by the second, third and fourth experts as they believe that such method will operate as a tool to communicate ideas about typical user behaviours, and styles understand ability by stakeholders from different roles and backgrounds.

- **Mass media:** As a matter of fact, the role of mass media is fundamental to create and increase the receptiveness (Curran et al, 2005). Unsurprisingly, all experts agreed that the move to smart services should be communicated in a way that users perceive it as a national program due to its public nature. As a result, the use of mass media can be here both justified and encouraged. Accordingly, it shall drive people to consider the usage and also change their perception of its difficulty. Moreover, *expert 2* mentioned that "people often reject what they feel they are unable to understand" he added that to include persuasion to a service or a feature which is already perceived to be difficult, may only attach preventable complexity and will be seen as a noise. Nevertheless, The use of mass media will prepare the public to the paradigm and apply a gentle pressure on the usage, and presumably increase receptiveness using social proofs and authorities.

- **Users experiences:** Besides the culture awareness, the development team need techniques to certainly engage with the actual users and their experience. The use of users familiarity and ethnographic studies seems to be a viable option. Expert 2 argued that stereotyping is chancy at times. He supported his idea by the example of the UAE, as it is non uncommon to think that female and elderly are more receptive to smart services with public interest nature, e.g. charities and care. However, it was commonly agreed that

the development team will need to take this just as a start, and perform their own ethnographic studies in order to evaluate actual users rather than immediately relying on things considered to be characterizing the culture.

- **Cosmopolitan nature:** Despite the obvious international mix of the UAE, yet the cosmopolitan nature of is agreed to add more complexity in the assessment of the crowd receptiveness. On the other hand, and similarly to the gender, age and technical skills, the experts suggested that cosmopolitan nature fact should be a factor when assessing the receptiveness. Additionally, Expert1 commented that although some services are intended and designed for the citizens, they could still require a serious interaction with expats and tourists. For instance, a car accident reported by a citizen would need to be communicated to the other driver who might be of a different nationality and cultural background. Furthermore, experts 1,2 and 8 also noted that judging culture by the country of origin or the background of parents may not be the right action particularly that some expats in the UAE have lived there for relatively long time, and therefore it acquired good understanding as well as well established awareness of other cultures.

8.2.3 STEP 3: CHOOSE A FAMILIAR TECHNOLOGY CHANNEL

As a matter of fact, the participants agreed on a variety of communication channels to be investigated as a part of this stage. Moreover, they agreed on the need for multi-modal channels to cater for the present diversity in the audience set. They also agreed on the need for classic communication methods to be used, such the public screen and TV, and avoid making the mistake that those users of smart services should be communicated online. Nonetheless, the purpose is furthermore bringing other customers into the alternative service channel. In relation to the choice of communication channels, the experts made different additional recommendations and considerations as explained below (Figure 8-4):
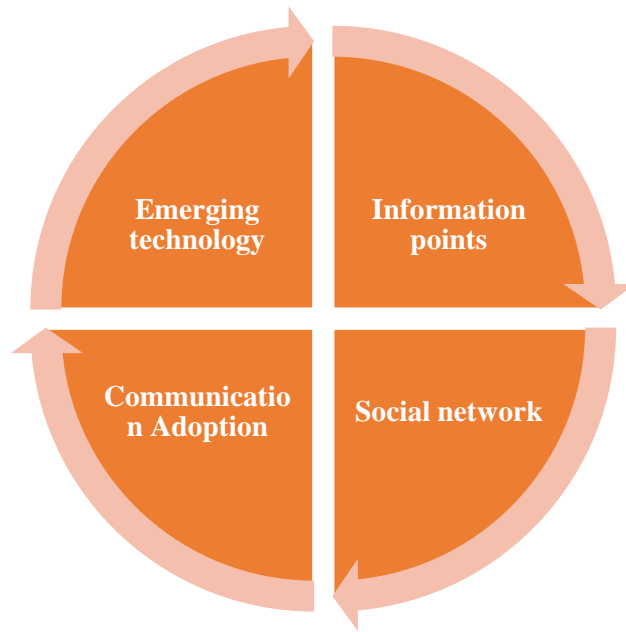
FIGURE 8-4 CHOOSE A FAMILIAR TECHNOLOGY CHANNEL MAIN RECOMMENDATIONS

- **Information points:** it was argued that there is still need for the customer services and information points. Moreover, *experts* argued about the involved high risks when adopting the online channels and the technology-based channels as a sole communication method. For illustration, *experts 1, 2 and 5* mentioned extreme cases where organization completely shut down the customer services and their information points, and alternatively asking customers to communicate online and using the smart services. As a result, that has led a not tiny segment of the customers to find mediators and proxies sacrificing their privacy and comfort.

- **Social network:** Experts noted the influential effect of the use of social networks and media. However, they warned about the exaggeration and the over possible over estimation of their effectiveness, In support of that, *experts 2 and 3* refereed to cases where the use of social media became counter-productive, as the information can be easily misplaced when circulated online. As a result, this suggests that there should be a cautious usage of this new range of communication channels. On the other hand, they encourage having authorized and authentic profiles for the organizations online so they can certify messages and recommendations directly, which should reduce the communications fraud and fake replicas.

- **Communication Adoption:** Adapting a communication channel is a need. And not an option as confirmed by experts. At the beginning users who are not using online services can be communicated via classic means, which means that there is a need to adapt such

approach when they start to use the services. In the same context, *expert 3* mentioned that the use of email might not be the best for someone who never tried a smart service, however, once they start to get familiar with the services; the electronic means of communication becomes more natural and acceptable for them.

- **Emerging technology:** Despite the various available technologies and channels, yet diverse and emerging communication technology should be always catered for, as by doing so, the communication with users will be active all the time (Cameron et al, 2005). Nevertheless, the *expert 3* focused again on this point by mentioning that young generation would prefer a more lightweight and instant communication rather than obsolete channels, as they would view email as an slow communication outdated approach.

8.2.4   STEP 4: FIND WHAT PREVENTS THE TARGETED BEHAVIOUR

All experts have agreed on the whole range of sources and presented cases, which can prevent the intended behaviour, for instance the adoption of smart services and the available features. However, they argued that the recentness of smart services and the lack of standards are hindering a unified method to figure out what are the reasons preventing adoption. Moreover, the added that this requires specialized usability inspections methods that are suitable for smart services in a public interest nature and governmental remit. Nevertheless, experts commonly agreed that the main obstacles are the perception of the ease of use, and the perception of usefulness, which will be discussed in the next section. They additionally observed that this could be easily exacerbated with design issues and poor infrastructure are, and they also argued the below (Figure 8-5):

Self-assessment	Unified access
↓	↓
Back end employees	Inter-organization integration
↓	↓
Training	Follow on previous obstacles
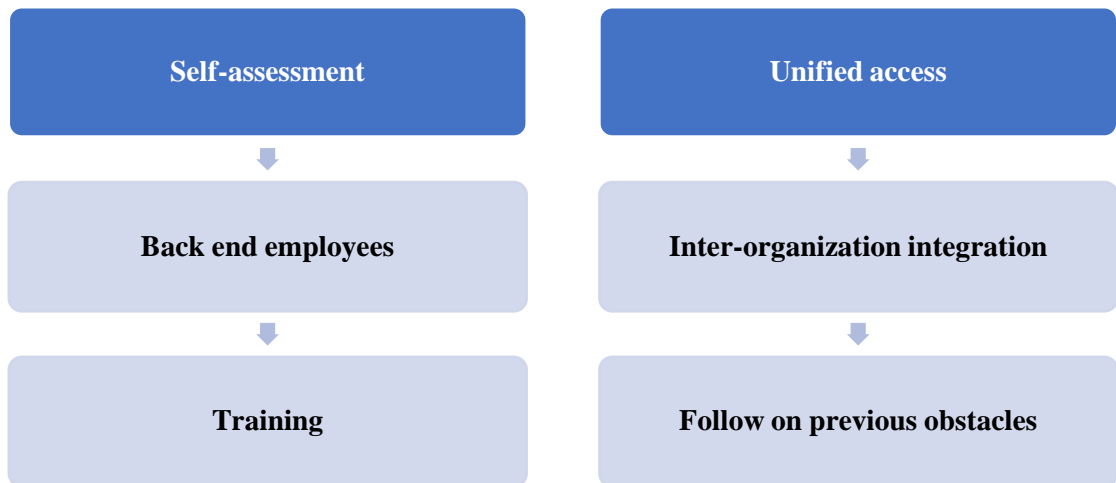
FIGURE 8-5 TARGETED BEHAVIOUR PREVENTORS MAIN RECOMMENDATIONS

- **Self-assessment:** number of experts believes that the self-assessment itself could be an assessment technique as well as persuasive technique. On one hand, it would make the organization aware of the skills and the users preferences, which will facilitate the way to expect obstacles. On the other hand, it helps users themselves to distinguish where they need alternatives and workarounds, which once clear, the rejection for the services could become less strong.

- **Back end employees:** Experts considers the back end employees as a vital actor in the smart services. They observed that smart services could be seen in a burden way on the employees, e.g. in dealing with online communication and besides learning new skills. Thus, when considering what is preventing people from using smart services, it should be also accompanied by looking at the service provider site due to the inter-related nature of the behaviour. For illustration, one of the experts 1 and 8 mentioned that the staff is now under the pressure to provide written responses to customers, and the possibility to be tracked back when faults happened much more easier in comparison to the classic approach. Therefore, this may lead to a communication mode, which is dismissive so that the customers find it less demanding, and challenging to go in person.

- **Training:** it is considered as significant aspect, as experts mentioned that instead of performing this step at the start, one would need enough attention to the basics such trainings. It has been argued that training, and making the necessary information available to the targeted audience in an easy and understandable format shall facilitate the adoption

since acquiring such knowledge is primitive and other reasons could be secondary to or results of it.

- **Unified access:** Experts mentioned that due to the nature of smart service, there could be a need for using national identity number for access. This will have impact on easing the process and providing a unified access to all users. In actuality, experts 1,2 and7 mentioned that one of the obstacles is the proliferation of the services and the need of customers to fill in over again the personal data for every usage. Therefore, it should be taken into account that the behaviour is not only about one service, but rather a collection of services sharing much of facilities.

- **Inter-organization integration:** *Expert 2,3 and 6* mentioned that governmental institutions would need to collaborate and coordinate among each other in order to figure out the main reasons that are preventing the crowd of using a particular service, since the behaviour and obstacles could relate to different parts of the business process facilitated through the smart service. Yet, each of these parts could belong to different organization. For instance, two different service providers could do the payment activity and booking appointments. Therefore, without a joint approach, discovering the source of the difficulty could be a meticulous task.

- **Follow on previous obstacles:** Experts 3 and 7 mentioned that some of the obstacles are repetitive by nature, while some others are linked to other obstacles. Accordingly, Having a model for obstacles and identification on how they relates and evolve would help their identification. For example, the obstacle in online payment relates to the obstacles of perceiving the online security of financial transaction, and how smart phone are powerful in that respect. On the other hand, the obstacle of pricing also relates to the perceived usefulness of performing the services online. Therefore, Having that network for inter-relations between various sources and nature of obstacles would help having a holistic identification of them, and hence strengthen their mitigation.

8.2.5   STEP 5: FIND RELEVANT EXAMPLES OF PERSUASIVE TECHNOLOGY

Unsurprisingly, the experts agreed on the reuse principles of persuasive techniques applied in similar domains. However, they have had reticence on the relevance to the e-Commerce models, since the remit and nature of smart services for governmental services is different. For example, it was argued that the use of coupons, vouchers and discounts might look so informal for such kind of service. As a result, the perceived image of the involved ministries and governmental

institutions would make that look both casual, and profit-making mechanisms. Nonetheless, the experts generally agreed that cultural similarities and replications of other similar experiences are good practices. However, it has been brought to the attention that since the UAE is considered advanced in technology, as well as the adoption of smart services, that might make it difficult to rely much on similar experience in similar cultures. Nevertheless, experts supported their arguments, and made the below three significant points in relation to this step of Fogg process (Figure 8-6):
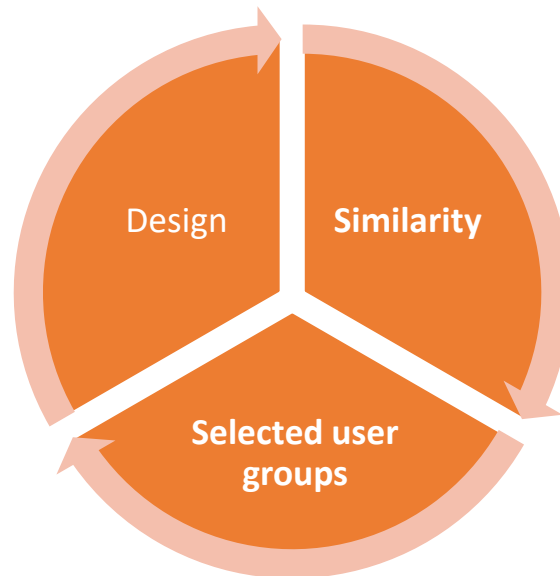
FIGURE 8-6 RELEVANT EXAMPLES OF PERSUASIVE TECHNOLOGY MAIN RECOMENDATIONS

- **Similarity:** It is essential to consider the similarity when applying persuasive techniques to any selected product or service to be promoted, since some smart services are light weighted and not costly, therefore comparing how users reacted to the attached persuasive techniques may not be the best idea in case the under developed service has a more complex and inter-connected nature.

- **Cost:** the effect of cost is undoubtedly significant, as it has been argued that the cost should be considered prior to the success of persuasion approaches (Naik et al, 2010). In that context, experts have additionally warned of the possible risk of attributing the success in other domains and services to the use of persuasive technology. Moreover, *expert 1* gave a perfect example of a successful service, which attracted more users as a direct result of the reduction in the fees by AED 50 (£10). Thus, one may think that the success is because of the employ of the used persuasive techniques with the service of a non-monetary nature, while in fact this discount was the main motivation to attract more users to utilise the service.

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- **Selected user groups:** Experts moreover warned about considering the user group when searching for successful experience. *Expert 2 and 3* mentioned that the development of certain services in the past used to be a replica from successful experience in western countries, as a result the used motivational techniques appeared unfamiliar to the society of UAE. For example, the use of lottery-based mechanisms could contradict with certain cultural values, which is an approach already successful in many different models.

- **Design:** Experts encouraged the need to consider the design of the smart process from the speed and ease of use perspectives as preliminary to judge the success of a persuasive technique, and consequently the possibility of a reuse. Thus, this means that the replication of persuasive shall not be considered as a root reason for the success. In other words, not every complex but successful persuasive technique would be suitable for the UAE society, as the ease of use and the speed reliability is major aspect for the users. For instance, an expert gave an example of a smart service by which the customer can finalize the process within only 3 steps per request, which naturally motivated users to get engaged with the service, yet this is a usability feature, which can be boosted by the use of persuasive technology.

8.2.6   STEP 6: IMITATE SUCCESSFUL EXAMPLES

In general experts commented on the set of recommendation positively and they did acknowledge the need to consider the perspective of the cultural dimension from the users point of view, as well as the service providers. Moreover, the need for standards was emphasized as well. On the other hand, certain cautions and recommendations were raised in regard to this step of Fogg process as explained below:

- **Proliferation:** The experts noted the proliferation significance of smart service, and suggested a national centre for characterizing smart services that will then allow constructive comparisons and benchmarking. Nonetheless, this also applies to the use of persuasive technology on targeted services. They also communicate that there is still a need for further research to understand what would make part of those characteristics and comparisons.

- **Imitation:** experts encouraged the consideration of the successful experiences imitation as a starting step only. In that aspect, expert 1,6 and 7 suggested the use of statistics after an imitated technology is in place as such use of statistics is very beneficial from the user satisfaction and feedback perspectives. Furthermore, the processing of such statistics should help the evolution of the services that are initially designed as an imitation of other

services. Nonetheless, the experts agreed that the imitation might be seen negative in many terms such as lack of creativity, however they also warned that the use of authority is only part of the solution. On the other hand, *experts mentioned* the branding issue, as some organizations may be fond of certain persuasive techniques, which may result in an increase of fear that the customers' base would perceive the replication in a negative sense. As a consequence to the fact that persuasive techniques follow a relatively fixed set of mechanisms, therefore similarity is inevitable. Yet, making that clear to the organizations would be a possible countermeasure as expert 3 suggested.

- **Quality check standardization:** There is a need to have standards and metrics for considering persuasive experience with smart services successful (Evans et al, 2002). In general most of experts agreed on that point, *expert 6 and 7* emphasised that by confirming that such success should not only be measured by quantitative metrics, e.g. rates and number of users, but additionally should also be qualitative through users feedback which is given in an textual or audio formats, as this will clarify which part in the design the experience was successful.

8.2.7   STEP 7: TEST AND ITERATE QUICKLY

The evaluation showed an agreement to a great extent with the recommendations made to this step of the Fogg process. Moreover, the consideration of the lifelong testing in particular was seen as needed aspect, given the different factors in this domain, e.g. communication technology and the limited lifetime of the various persuasion approaches in general. The experts made further recommendations to this step so that the development of persuasive smart services for UAE can be better, and gave the blow four main suggestions:
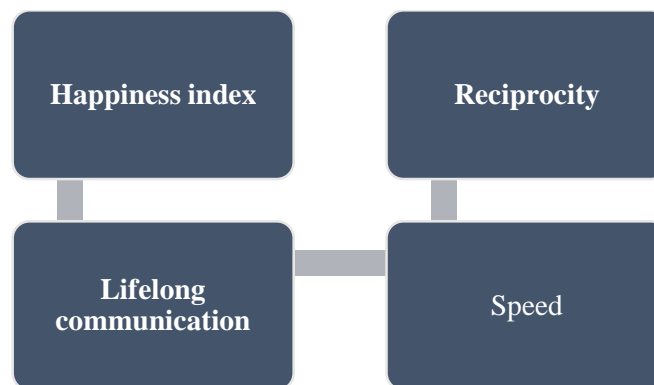
FIGURE 8-7 TEST AND ITERATE MAIN RECOMENDATIONS

- **Happiness index:** The use of happiness index would be a sensible option to use with the targeted audiences (Barameecha 2007). The reason for that is mainly because the persuasion is not seen as an intrinsic functionality to the system but rather a supplementary one meant to increase enjoyment and engagement. Additionally, the experts noted the need for a customized UAE-specific happiness meter to reflect the country socio-cultural framework.

- **Lifelong communication:** Experts agreed that enabling a lifelong communication channel with the users is a significant technique to test iteratively. In reality, *expert 2 and 5,* noted that some services started very well but then after a period of time the number of users and made transactions started to dramatically decline they added that the reason was mainly due to the limited available communication channels with the users who indeed faced issues with some of the changes made to the process, both online and in person, later.

- **Speed:** experts saw the quickness component as potentially exaggerated recommendation specially that the governmental services have a public interest nature, and the persuasion used is not for profit making additionally because there is not high competition with other providers. In other words, the persuasion is to mainly encourage people to switch to the online accomplishments of their transactions and reduce their in-person preferences. Nonetheless, one of the experts still believe that the persuasion needs to change from time to time, in alignment to the feedback given by the users and their performance.

- **Reciprocity:** In general experts accepted the reciprocity principles. However, some of them emphasized that this has to be seen within the bigger picture of the obtained gain. Moreover, designing it correctly should precede the testing and evolution of this particular persuasion technique. For instance, making users aware of the overall arrangement of using smart services and not the individual reciprocity offers made. For example, offering points and discounts should not be seen as the main reciprocity, yet the use of smart service to reduce time and effort is indeed the main ones. Therefore, the design, testing and evolution should take that into account.

8.2.8   STEP 8: EXPAND ON SUCCESS

The evaluation showed a general agreement with the suggested amendments. Indeed some of the findings in relation to the previous steps can be replicated when it comes to expansion, such as the use of national comparison centres and database in order to decide on the next steps for a persuasive techniques for a specific smart service, benefiting from the way they were applied inn

similar other services. Additionally, the use of metrics and testing is another shared findings. Similarly, the reuse of experiences in similar environment and the integrated effort are other examples from the previous findings, which could also be applied in success expansion phase. Nevertheless, experts warned about two main points:

- **Expansion pace:** experts referred to the rapid process on expansion, and argued that it may lead to negative results. For illustration, when the social and technical infrastructure in the society are not ready to cope with the pumped volume. On the other hand, *expert 7* mentioned services where the provider could not cope with the increasing number of transactions in terms of volume, as well as the diversity of users and their background.

- **Theoretical support:** The second argument is related to the lack of theories and proven metrics to facilitate the judgement on when an expansion is likely to vocation. Nevertheless, *expert 2* mentioned a case for a particular service, where the smart app in its basic version used to work to very high standards. However, when the developers tried to add additional persuasive techniques to the standard layout, users tended to provide negative feedback. Experts believe that it is most likely because of the excess of such features.

8.3   EVALUATING THE PROPOSED PERSUASIVE TAM MODEL

Within this part the amendment to TAM model is evaluated. In reality, there are two proposed extensions to the TAM model that are considered for evaluation. The first one is the proposal to consider four external variables (Figure 8-8), which are solidly linked to the adoption of smart service in UAE as mentioned below:
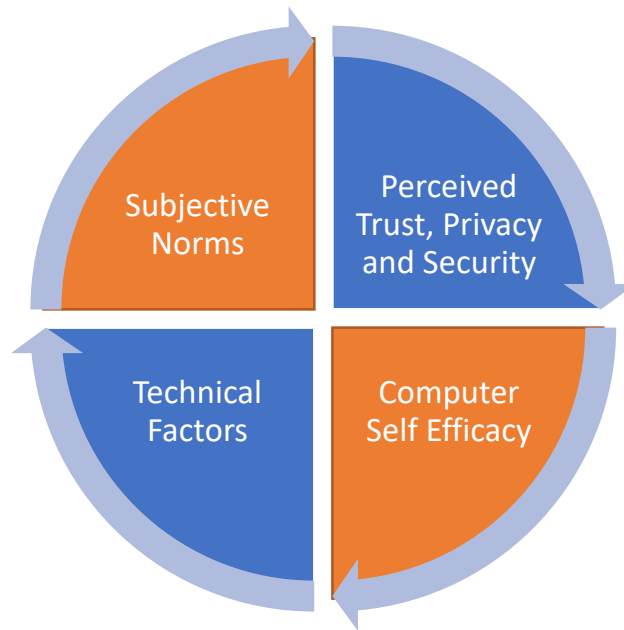
FIGURE 8-8 FOUR EXTERNAL VARIABLES OF PROPOSED TAM MODEL

On the other hand, the second amendment relates to the usage of Cialdini's principles that includes reciprocity, scarcity, social proof, commitment and Consistency, Likeability and Authority. in relation to the four external variables, in addition to the stages of the TAM model. In reality, Cialdini principles are basics and could be facilitated by the usage of persuasive technology. Moreover, these principles fit more into the deployment stage of the persuasive technology as they are of a more social and organization spirit.

8.3.1 EXTERNAL VARIABLES EVALUATION

Experts agreed on the consequence of the four variables. They also confirmed that high trust and assurance of security and privacy perception by users are indeed vital precondition to have a positive attitude towards smart services. Similarly, the technical self-efficacy with regards to the use of smart phones and their apps is an important factor to have enough confidence to use smart services among users. Nonetheless, the subjective norms can put a pressure on people with regards to using the smart services, e.g. to avoid the stigma associated with digital illiteracy. On the other hand, the technical factors in relation to the design of the smart services, such as the user friendliness and accessibility, are also undeniably important factors, even though this may be also argued to be a design issue in the first place. Despites of the general agreement, experts had some reservations and additional recommendations. The following will elaborate on each of these external variables and evaluate them in relation to TAM model (Figure 8-9).

Perceived Trust, Privacy and Security	Computer Self-Efficacy	Technical Factors	Subjective norms
Technology awareness	Human interaction with computer	Technicality and design	Technology
Reassurance	Different segments skills	Negative experience	Nationalism
Design and trust	Trust and security	Feedback	Social value
	User preparation	Users participation:	

FIGURE 8-9 EXTERNAL VARIABLES EVALUATION RESULTS

8.3.1.1   *PERCEIVED TRUST, PRIVACY AND SECURITY*

Experts commented on this point differently, and the below are their main reservations and observations with regard to this variable in relation to technology acceptance from users perspective:

- **Technology awareness:** These factors would indeed affect the perception of usefulness and ease of use mainly because of the effort needed to configure them. Moreover, this effort will compromise the perceived usefulness and ease of use. However, experts 6 and 7 suggested that this may not be the primary issue, but they expected that mainly the lack of awareness of the advances in smart phone security, and privacy, which make them more secure than the public may think, could be an issue.

- **Reassurance:** Experts 2 and 8 added that, the reassurance from the service provider would compensate the low level of trust, and the fear of making mistakes from security and privacy perspectives. For instance, one of the experts mentioned that the repayment to customers when the services are not completed to the desired level is one of the

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mechanisms to assure them. However, This uncompleted service might have been failed due to a user fault, but still the expert suggested that the customer should be treated as always being right.

- Consequently, the compensation and reassurance may not be only by the service provider. Taking the payment example, the compensation may also include other stakeholders such as the communication company and the mediator bank. For example, the telecommunication company would waive off the fees related to a transaction, which is about to finish despites of not having enough credit in the phone. Additionally, one of the experts gave a very good example about car accident reporting, which requires uploading large size images of a high quality, which may easily drain the available credit for a user with certain data package. In that situation, exempting the data transferred for the car accident reporting will be good choice to increase trust and loyalty.

- **Design and trust:** Experts mentioned a direct relation between this variable, and the computer self-efficacy variable, that makes the trust, privacy and security variable a secondary to it. Similarly, the good design of smart services would indeed moderate this variable. *Expert 2 and 6* mentioned that the trust and security variable is not static, and people may be sceptical about new things until they try them out, and test how they work. The experts suggested that we would not need to wait till the users achieve high level of trust and perception of security and privacy, but rather an acceptable level should be enough. As once users start to use the service, there will be a need to assure them and increase that level through the treatment they receive. Nonetheless, *expert 3 and 4* mentioned that the deterioration could happen as well. In other words, the level can go down very easily when mistakes happen. An expert gave an example of a banking smart app where it was subject to fraud and malicious payments. Consequently, this affected the public opinion about that bank for quite a long time and created a trauma, not only for that bank but also for any online financial transaction done via smart phones.

8.3.1.2 *COMPUTER SELF-EFFICACY*

The experts provided various comments and recommendations about computer efficiency variable in relation to different aspects, and the below are the main arguments.

- **Human interaction with computer:** In reality, self-efficacy is tightly connected to the technical factors. In that context, expert 8 mentioned that advances in the human-computer interaction could reduce the effect of that variable. However, to reach to the point where people are receptive to these new advances, a number of measures need to

be taken. For example, *experts 2, 3 and 7* mentioned that the smart service design could start with simple and easy processes in 3 steps and then evolve itself naturally in response to the interaction of the users. Thus, this would reduce the fear of difficult use, additionally would make it cost-effective for users to commence using smart services with minimal effort.

- **Different segments skills:** *Expert 2* mentioned that this variable is also tightly coupled with the subjective norms. He mentioned that there is a perceived norm that youth are generally always updated with latest technology and should be able to use it smoothly. Therefore, a pressure exists on this user group to help other users groups, e.g. the elderly. Consequently, the computer self-efficacy combined with a collectivist culture would result in additional social relations and dependencies in order to get the online services done. Nonetheless, and following the previous point, *Expert 8* warned about the need to treat this variable with care. It has been argued that people do not like to be assessed with regards to their skills in using technology. In spite of that, this affects the way training programs are designed. For example, some of the experts give a recommendation to utilize both young and elderly people at the same time, as well as male and females in the posters and marketing material across the nation of such training, whether it is online or traditional.

- **Trust and security:** Nevertheless, it also seems that computer self-efficacy may hinder the trust and perceived security as well as privacy. This is not necessarily about the use of smart services and their design but rather about the understanding of the terminology. Furthermore, *expert 6* mentioned that the Terms and Conditions make people less comfortable with the smart services, as they feel that they are agreeing on what they do not fully understand. Therefore, the experts suggested a more easy and public-friendly communication about the description of the services to avoid such a rejection that is linked to understanding.

- **User preparation:** Computer self-efficacy needs to be handled not only at the start, but also when the intended behaviour starts (Simon et al, 2000). *Expert 7* mentioned that many of their users indeed install the smart apps and start to use them but uninstall them after a while. Expert argued that this is mainly because of the difficulty they encounter which may not necessarily be because of a bad design, but rather the preparation of the users to accept that they need to be learning how it works. In other words, the expert warned against raising the expectation of the users of the ease of use and the usefulness to an extent not proportional to their computer self-efficacy. Therefore, there is a need for

a user preparation, in order to get them ready to accept that they may need to learn the process is necessary.

Following the previous point, the computer self-efficacy is argued not to replace the efficacy in understanding the business process itself. However, the users should be prepared that the learning should concern not only the smart service app, but also the underlying business process. For instance, to renew a driver licence there are a number of steps and procedure to understand at the first place, before or while using the app and regardless of the technical self-efficacy.

8.3.1.3   TECHNICAL FACTORS

The evaluation through the interviews with the experts indicated that technical factors are undeniably significant. In spite of this, experts highlighted that there are certain contextual factors and process-related factors need to be considered:

- **Technicality and design:** Technical factors are in principle a design factor, and not something to be considered entirely as an external issue. As a matter of fact, experts generally disagreed with the statement that technicality and good design are out of control. However, they also agreed that the perceived technical quality is an external variable. In other words, doing a good design is not an external variable but the public perception of how good is the design, is certainly something beyond the full control of the development.

- In general, all experts agreed that there is a public benefit arises from refreshing the society perception of the ease and usefulness of technology, and highlighting the fact that the technical factors are increasingly becoming on their side, in that aspect, experts referred to the increased usability and innovative ways of communications. Furthermore, *expert 6* mentioned that when new features are made available, they should be clearly introduced as being meant to enhance the user experience. Nonetheless, this has to be done repetitively to refresh users knowledge and improve their perception about usability and ease, as well as the usefulness of use.

- **Negative experience:** Negative experience is a major player when targeting certain behaviour, and should be considered when trying to influence specific segment of users (Brakus et al, 2009). Unsurprisingly, experts argued that the negative experience and its traumatic effect is one of the central aspects to consider when designing new services. *Expert 2* observed that there are a high number of cases where people, rightly or wrongly, had issues with the design of smart services. As a result, such experience created a

negative encounter, which makes it hard for new services to operate as good as desired, mainly because of the prejudgement made.

- **Feedback:** Experts stressed the importance of feedback collection, and they confirmed that it has to be obtained from users alongside the lifecycle of the smart services. On the other hand, experts mentioned that receiving feedback on the difficulty users encounter while using the service, and work on any needed amendments, will eventually reflect that customers feedbacks have been listened to, resulting in perception reduction of low technical quality, and also increase the feeling of membership and loyalty.

- **Users' participation:** Participatory approach to design is suggested by *Expert 5*. The expert mentioned that people when feeling part of the development team they would like the service design more, and they will feel more loyal, which will result in increase in the numbers of users and also frequent usage. Moreover, he suggested that public consultation workshops are done to elicit their requirements, give them active role in the design. Following the previous point, it seems that the participation of the users should not only be at the technical design level, but also the underlying process. Expert 8 observed that some design issues are indeed not technical at the first place, as they stem from the poor and tedious business process, which makes any design difficult to be accepted. Therefore, the proposal is to include both the redesign of the process, and the design of the smart services within the engineering lifecycle.

8.3.1.4 SUBJECTIVE NORMS

The effect of subjective norms on the perceived ease of use, in addition to the perceived usefulness is agreed to be high. All experts agreed on this effect given the cultural dimension in the UAE where social and peer pressure is relatively high. However, there were additional comments and considerations to take on board which are mentioned below:

- **Technology:** Experts mentioned the link between technology development and modern societies, and added that it can be a good idea to capitalize on the perception of technology as being a theme of modern society and utilize that when introducing smart services. One of the experts indicated that, it is commonly accepted that the use of technology would increase the efficiency, and quality of life in the case of smart services; he added that this is an already established norm in the UAE. Furthermore, *expert 1* mentioned that this has to be done in moderation, since some people still prefer to go in person in order to have a better social experience.

- **Nationalism:** In fact, there is a high nationalism trend in UAE and it is highly effective as a norm, which worth utilizing it for usability sake (Balabanis et al, 2001). Therefore, UAE citizens would like to contribute to the collective success of the country. Consequently, the use of smart services can be introduced as a way to make the country better through raising the quality of the service, and making the economy develop better and the business more sustainable.

- **Social value:** It has been argued that social and environmental values are another facet where the subjective norm could operate. The use of the smart services is generally agreed to contribute in solving the traffic problems, and less congestion, additionally it cost the society less in terms of effort and waiting time. Thus, when we emphasize that while introducing the smart services, it would add a gentle persuasion pressure for people to conform to their usage.

Nevertheless, experts also warned against the negative norms leading to less use and the need for having counter measures to mitigate them. For instance, there could be a norm that the smart services can lead to a loss of ability to negotiate with human operator, and perhaps reduce a fine or get a better service. Accordingly, this need a counter measure which would be the unification of the smart services process, with the in-person process from that perspective. On the other hand, this should be made clear so that the norm or the perception of having a better service of in person is minimized.

8.3.2   EVALUATION OF CIALDINI PRINCIPLES INTER-RELATION WITH TAM

The evaluation shows general agreement with the suggested inter-relation between, Cialdini's principles on one hand, and the external variables together with the original TAM model activities on the other. In particular, the agreement was strong on the effect of the social proof and authority given the norms in UAE and its socio-cultural framework. Despite of the agreement, the experts had reservations not only on the way these principles should be applied, but also the strengths of some of them. Additionally, the evaluations showed that the principles could be empowered by the use of persuasive technology, i.e. inside the service. Thus, this suggests integration between this stage and the design stage, which yields the actual persuasive techniques. In reality, the thesis indeed is in line with this suggestion, since the sue of the Fogg Process is meant to build the persuasive technology in the services, while the Cialdini principles and the effect of the external variables in addition to the TAM steps, will guide that and give it a perspective. The below is the recommendations given by the experts in relation to every principle separately (Figure 8-10):

Social Proof	Authority	Commitment and Consistency	Reciprocity	Scarcity	Likeability
Communication	Subjective norms	Perceived trust, security and privacy	Users practice	Scarcity and profit	
Computer self-efficacy	Technicality and Authority	Retention	Offers		
Personal differences	Behaviour change	Diversity	External variables	Scarcity at advanced stage	
		Users commitment			

FIGURE 8-10 CIALDINI PRINCIPLES AND THEIR RELATION TO TAM RESULTS

8.3.2.1 SOCIAL PROOF

Experts found the social proof to be an effective technique as suggested for handling the external variables. Certainly, the subjective norms variable itself was seen as being a sort of social proof, which can be a subject for confident actions, i.e. to correct or to boost. Nonetheless, experts observed and warned about various aspects in relation to social proof:

- **Communication:** Experts argued that the social proof could be seen as a deceptive mechanism if not explained well. For example, telling people that 95% have used the service and found it easy, does not exclude cases which could be of an extreme importance for certain user groups. For example, users with visual impairment could be amongst the 5% and the 95% of the population who had excellent experience do not relate to them. Yet, this applies to the relation between social proof to the external variables as proposed in the amended TAM model.

- Social proof may indeed lead to negative consequences as the person could underestimate the effort and the measures that should be taken by them individually. For instance, *expert 2* mentioned that the use of social proof to increase people trust and positive perception of security could be a risky choice if not implemented well. Expert gave example, by a statement saying that *"most people configured security and privacy settings correctly in less than 5 minutes"* may lead a new user to underestimate this task although for them there is a need to learn the meaning and do it properly to avoid real risks.

- **Computer self-efficacy:** In general, experts found that social proof with regards to computer self-efficacy is appealing, as many people would diminish their fear once they know that others with similar set of skills and characteristics could use the services. Similar to the previous concern, this must not give the impression that it is going to be straightforward, as it might result in leading the people to think that learning is not required. Undeniably, if implemented without that consideration on board it may lead to negative results instead of convincing users to engage. In relation to the previous point, Social Proof should be handled with care not to lower the self-esteem of people (Cialdini et al, 2001). Considering that, experts highlighted that it is recommended to let a user who is struggling to use the service, to receive a message that the design was seen by 99% of the customers to be highly usable and easy. Naturally, this particular user may then questioning the learning skills and develops a lack of skills feel.

- **Personal differences:** experts argued that is it significant for social proof to recognize the personal differences. It has been added that this is particularly genuine for the UAE society, which tends to have a collectivist culture. Consequently, this means that the messages should emphasize how the use of smart service could differ; from one user to another, and to communicate the fact that personal difference do matter. Nevertheless, social proof is also agreed to be influential in sustaining the effect, and successful in transforming potential users to actual ones. On one hand, the repetitive reminders and utilization of this technique is useful but on the other hand may lead to redundancy as *expert 8* mentioned. This means, the messages should be either creative or minimized and sent only when needed over a period of time, in other words reminders should be used wisely.

8.3.2.2   AUTHORITY

Unsurprisingly all experts recognized the significance of the authority in persuasion. Nonetheless, they gave various forms of authority and a variety of ways to introduce them into the TAM model for smart services, which are explained below:

- **Subjective norms:** During the interviews, it has been mentioned that authority main effect is on the subjective norms as suggested in the amended TAM model. The reason for that is due to the fact that, in order to change people perception of what is acceptable and what is not, the role models and the authoritative figures can construct a powerful intervention. Nevertheless, one expert gave an example of celebrities taking the metro and public transport and how this affected positively the public perception of public transports, which consequently increased the trust and the reliability on public transport. Moreover, the expert referred to the previous example as something that could be replicated in the case of smart services.

- Experts did not avoided to mention the importance of how important is the choice of the authorities, in order to fit the needed communication message is. For instance, in the case of the subjective norm that elderly may struggle using the smart services, an authority of that age group may prove or say the opposite. On the other hand, some services may discourage users with family commitments due to their processes that require heavy interaction and perhaps a completion in person. Consequently, when the online version is in place, an authoritative figure of that user group could interact to show how the smart service could solve the problem, which shall motivate users to engage more.

- **Technicality and Authority:** Experts mentioned that that authority would need to be handled with extra care when used with the technical factors, the computer self-efficacy and perceived trust, security and privacy. Experts highlighted that the reason is that these three factors can be extremely subject to individual differences, and also the service design and its nuances. Consequently, authorities may lose credibility if they advocate certain usages and benefits. Moreover, the expert agreed that it should not be considered as a main technique, and they recommended the idea of not considering it in the amended model. However, they still think it can play a good influential role but as a secondary option rather than primary technique.

- Following the previous point, authority can play indirect role in advocating the paradigm of smart services itself in general, rather than the individual smart services. Thus, this will avoid the risk of losing credibility as argued by experts.

- **Behaviour change:** Experts clearly mentioned that authority is also useful to boost the change in behaviour, and to enhance the behavioural intention to use the smart services. Furthermore, this could be served through the iterative communication of the messages with users, and the disclosure of how the use of the services is developing over a period of time.

On the other hand, one expert recommended that the users could choose specific authorities to follow with regards to their usage preferences of a particular service, which shall create an opportunity to reinforce their intention from time to time. Additionally, the expert also noted that this might put pressure on the authorities to compromise their privacy practice.

8.3.2.3   COMMITMENT AND CONSISTENCY

The experts agreed on the power of commitment and consistency in relation to TAM activities, besides that they also suggested external variables. Nevertheless, the evaluation resutsa showed that, commitment and consistency can be used in both ways. Experts 3,4 and 8 added that service providers could commit to their customers about the quality of service, and the redesign to fit the users feedback which shall persuade the customers to start and use smart services, as will as sustaining the use intention. On the other hand, the users may experience that they have to be consistent with their usage of smart services, as a comeback to the commitment the service provider has made.   The evaluations showed various observations and recommendations concerning the commitment and consistency principles, which are explained below:

- **Perceived trust, security and privacy:** Experts argued that in relation to trust, security and privacy, the principle would need to be initiated by the service provider directly. Experts gave an example of that by mentioning that the service provider need to commit that the security and the privacy are going to be first priority, and be consistent about it, so that the users feel the trust and the motivation to start and keep using the service. Furthermore, consistency could be found in the form of a continuous improvement to these properties, and also compensating any negative experiences faced by the users, whenever it happens.

- **Retention:** The commitment and consistency is a vital principle to the practice of users retention, and the various users experience as suggested in the amended model. On the other hand, expert 1,2 and 7 noted that choosing the right time to show the consistency is also imperative, since it may appear that the service providers need to continuously defend themselves when they repeat their commitment to users, and this may be perceived as a negative sign from the perspective of users.

- **Diversity:** Naturally, diversity is significant aspect; therefore the diversity in the commitment could be needed as time passes. Moreover, one of the experts mentioned that undeniable flaw is in the process, and the smart services could emerge after putting the service in use, which would then require a new set of commitments from the service

provider perspective towards users, to confirm that this is being handled and will be taken into account in the next release.

- **Users commitment:** The commitment from the user side is also a central factor as it helps in the application of smooth and successful behaviour change (Malhotra et al, 2003). Additionally it is facilitation whether in relation to the external variables, or the steps of TAM model. Nonetheless, users may easily feel they are being driven to make commitment. Therefore, experts suggested that the commitment from users side should be always voluntary and informal. This excludes contractual parts, e.g. when the service fees have to be paid on a monthly basis and the like.

8.3.2.4 RECIPROCITY

The expert saw reciprocity more closely to the principle of commitment and consistency in the context of this thesis. They supported their opinion mainly because of the non-profit nature of governmental smart services that are available to the users. Consequently, reciprocity here means that users commit to the use of the service as long as they are getting the highest standard in security and privacy. Nonetheless, experts added few comments on that which are explained below:

- **Users practice:** Experts highlighted the need that users would require to commit that in return to the high security and privacy, they are willing to take care of managing the same aspect from their side as well, by following the good practice of cyber hygiene. A simple example of that could be those practices in relation to their password and the usage of public WiFI, etc. In other words, the reciprocity here is in the sense that users should follow the instructions in relation to privacy and security, while the providers commits to do the best in protecting the users data as well as offering the highest standards of security protection.

- **Offers:** Unsurprisingly, experts mentioned that reciprocity could be used at the level of offers, in such a form of discounts but to a limited extent for two main reasons as argued. Firstly, the focus here is on the non-profit governmental services that hinder the excessive use of discounts approach. Secondly, such kind of offers is part of the persuasive techniques inside the service design itself, and therefore no need to reuse much. On the other hand, TAM is meant to introduce the smart service to the public, and manage its acceptance till the point where potential users convert to be existing users of the services. Once users start using it; the persuasive reciprocity can be in the design and enforce the adoption thereafter.

- **External variables:** Experts agreed on the limited effect of reciprocity on the other external variables, the subjective norms, the computer self-efficacy and the technical factors. However, they did agree that if the design has issues or the person has limited technical skills, a reciprocity offer would not appeal as desired, especially that the smart services are of a non-profit nature, and one would not expect to observe main focus on the monetary offers.
- **Reciprocity** can be used together with scarcity as one of the experts noted. The expert illustrated that by giving an example that an offer could be to give to a user in the form of having a priority in having access to scarce advanced features such as the online instant chat with a customer service, if they use the smart service for more than 80% of the transactions or something similar.

8.3.2.5   SCARCITY

In general, scarcity and similar to reciprocity, has been agreed by experts to have a limited usage. Moreover, the reason is similar since the smart services under discussion are governmental and of a public interest nature. Nonetheless, the scarcity can be secondary to other principles such as the commitment and consistency as well as the social proof. Yet, experts indeed agreed on the limited usage and warned about few points as explained below:

- **Scarcity and profit:** Experts warned that scarcity may give a sense of profit making and undesired competition. Therefore, they recommended using it for non-monetary offers only. They supported their opinion by giving example that scarcity could be for a given social recognition to the users who successfully managed to invite others, e.g. is giving those users a badge which represents a special status that are achievable only by a limited number of users.
- **Scarcity at advanced stage:** Experts mentioned that it is preferable to use scarcity at the advanced stages of using the smart service, as a way to motivate the use of advanced feature such as giving the users the opportunity to feel distinguished to be offered those features due to their importance and previous performance.

8.3.2.6   LIKEABILITY

Unsurprisingly, likeability is additionally similar to reciprocity and scarcity in its limited effect on the external variables. Experts believe that it is similar to the social proof in this context where people would accept a social proof in relation to a specific user groups similar to them. Therefore, the comments, which were given in relation to the social proof, applies on likeability as well, e.g. the comparison to similar people with similar context of use.

8.4   DISCUSSION

In reality, the evaluation results showed a number of positive contributions, on the contrary also a number of limitations that make it necessary to have a future work. Furthermore, most of the weaknesses accompanied the ease of use of the proposed framework and the ability to apply it with a reasonable effort. In the following, the list of strengths is discussed and the limitations in their applicability and ease are then elaborated further.

It was argued by the experts that the proposed frameworks informative of the concerns that may be omitted. In other words, the application of Fogg's process and TAM model for the UAE socio-cultural framework for smart services exhibits a number of subtle areas where generic solutions need to take into account, the localization requirements so they fit this domain. Moreover, experts found it enlightening to have these concerns and they also confirmed that they may be easily overlooked but they additionally expressed concerns about:

- Measurable approach: The need to have them in a more measureable way and more tractable approach: For example, applying a leader board or a badge as a persuasive technique would need metrics to link it to scarcity and reciprocity, in addition to social recognition motivational elements so that we can also know what concerns that need to be aware of. This is because the concerns are linked to the principles of Cialdini not the concrete persuasive technique.

- Automated assistance: Experts highlighted the need to have more automated assistance in calculating these risks and detecting them, as they may be hard to detect by a human observer. For example, when applying reciprocity to a service that includes cooperation for a critical service, it may at certain point in reality hinder the cooperation especially when the reward involves stakeholders coming from different cultural backgrounds. Furthermore, the study showed that the local of UAE generally sees reciprocity in a negative light, i.e. as a conditional offer and often complicated to understand. Yet, when the team include other cultures, it may be complicated to estimate the conflicts and the diverse views of the same persuasion.

- Areas of investigations: Experts confirmed the need to clarify areas, which are debatable and subject to further investigation. Furthermore, the experts noted that some of the statements can be either generic or subject to further studies, and this means they should be only taken as a start rather than confirmed statements. For instance, social proof and authority got a consensus of being effective and they were linked to a certain stages of the TAM model at a definite degree of certainty. However, other principles like

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Commitment and Consistency as well as likeability did not enjoy that level of consensus, and therefore putting them in the same model could be seen as misleading argument. Nonetheless, a possible solution here is to add weights to the links in order to indicate their influence and certainty.

- Culture awareness: Experts mentioned the need for culture awareness in the development team and to provide training on the issue. Additionally, experts thought the principles and the guidelines would not replace the need to train the development team, and to increase their awareness of the cultural dimension. As a future work, the results of this thesis would need to be translated to teaching material, and also to bring up to date the design process in a form of educational process.

On the other hand, it seems to be a general acceptance of the benefits of integrating Fogg and TAM as Fogg would relate to the technology-assisted version of motivation to be added to the smart services, while TAM model more concerns the process of introducing the service altogether to the public. Nonetheless, the addition of Cialdini principles to TAM was also seen as yet another supportive addition. However, there are also costs and complications when this is not managed properly.

- Consistency of persuasion: It was argued that persuasion in the service has to be consistent in regards to the persuasion followed while introducing the service. For example, if offers are made as part of introducing the service through augmented TAM, these offers shall be consistent with those offered through the service itself after that.
- Teams communication: the need for an intense communication between the team who develops the service and the team, which introduce it to the public need to be focused, with the aim to avoid such mismatch mentioned in the previous point.
- Further work: There is a need for further steps in the augmented TAM model since the links between Cialdini principles and the stages together with the external variables are complex and need themselves processes to have them clarified, and to guide the smart service management and design teams on how they could be determined.

Nonetheless, the previous comments are also applicable but to a less extent, to the considerations and additions proposed to the Fogg's process. For illustration, the given comments on the aspect of building on previous success, that it needs measures and further assistance on how to make the comparison especially, when the domain is new seeing that it is the case with smart services.

Additionally, the evaluation showed as well a critical need to clarify the stakeholders' roles in the entire process. Although the steps and principles proposed enlighten to a good extent that set, yet

it is always better to have it concertized and specified in a clearer form. This also means their decision rights in the process and their coordination.

Taken as a whole, the evaluation showed a general acceptance and support to the proposed models, other than warned of the additional costs of applying it in terms of time, and further checks along with the need for more concreteness in it to identify the roles and decision right clearly and, finally of the require for automated support to make these decision easier and less faulty.

8.5   SUMMARY

In this Chapter, the evaluation of the amended Fogg process and the amended TAM model was presented based on the findings from the interviews with highly experienced experts in the area of users support and technology in general, and smart services in particular. Undeniably, the results show a promising usability and usefulness of the two amended models. In particular, they demonstrated to be useful for senior management in administering smart services development. They were seen first of all as useful conceptualization and rational models for the way to manage the development and deployment of smart services. On the other hand, they were also seen as frameworks for initiating discussions with the various stakeholders in the development process, which is essential for the success of the smart services. Indeed, the peculiarities of the proposed amendments could be debated, but the evaluation showed that this is itself a useful factor to clarify thoughts and give support to decision-making process. In conclusion, this suggests that rather of presenting the two amended processes in a confirmatory style, one would think of them as frameworks for thinking and investigation.

9. CONCLUSIONS AND FUTURE WORK

This thesis tackled the recent technology of smart services utilized for public and governmental services in a non-profit context. It has taken the case of UAE given the advances in the adoption of this service paradigm and the state strategic agenda towards consolidating it. The researcher belongs to the UAE society and has a deep understanding of the socio-cultural framework there. This has added to the efficiency of the studies design and also to the quality and comprehensiveness of the analysis. Hence, the research was motivated by the recentness of the phenomenon, the need for further research to increase its adoption and efficiency and, also, the position of the researchers in terms of responsibility to tackle societal and economic challenges in his home country of the UAE.

The research started with an observation made the by the researcher on the wide spread of the smart services and the wide interest from the government and authorities and the high investment in this particular technology. Still, the researcher observed that the high adoption of smart services is being limited to a number of services while another range of services are not widely used. This suggests that there could be a need to change the way we design these services and manage their introduction to their social and technical context. Given the background of the researcher in management and training and his work in one of the main ministries in providing smart services, the Ministry of Interior, he tackled the problem from the perspective of human factors in computing and motivational design and technology acceptance where his main interests and skills reside.

The proliferation of smart services required further narrowing down of the domain of the problem. The researcher decided to start with the non-profit governmental services where the main goal is to increase citizens' satisfaction and increase the wealth in a collective style. The adoption of smart services is advocated to decrease the need for various resources and decrease the problems in relation to services provided in person and those requiring stationary access. For example, this includes traffic jams, employee efforts, energy consumption, slow process, lack of real-time reporting, e.g. accidents, etc. This focus had an influence on the design of the studies and the development of the proposed framework. For example, monetary profit was not a main focus for the development and the deployment of the smart services by itself but rather the indirect profit this would lead to in a collective style. Risks and obstacles are seen in a more organizational and system scope rather than a software development scope.

9.1 REFLECTIONS ON METHODOLOGY

The thesis started with the observation of the researcher on the high adoption but only for certain kind of smart services in the UAE. This motivated to start with a user study in order to confirm whether this observation is valid. The user studies asked the participants to list the smart services they use in their comments in order to assess the range of services indeed used by the public. The study confirmed a wide awareness and usage of smart services but again for only a portion of them. It also indicated various issues, both technical and process-related, which would need to be tackled to improve even more the acceptance and efficiency of these services. Central to those issues is the need to see the added value of smart services and also what a user perceives to be losing while using them.

As a reflection this study, the researcher believes that this phase of the thesis enabled him to have a direct contact with the users and direct understanding of their issues although a more qualitative approach would have enabled him to do that to a further depth. However, even though this was a relatively simple quantitative approach, survey-based, it was evident that the problem is indeed in using more services not in using smart services all together. It became also evident that there are issues which affect the motivation of people to use smart services including the pricing, the need to be in person in certain stages of the process, trust issues, etc. The researcher could have added questions in order to draw more complex findings but this was not indeed the core reason of this study. Overall, it allowed knowing the main issues in a lightweight style and paved the way towards more in-depth studies in the rest of the thesis.

In order to see the problem in a more holistic style, the researcher decided to involve also the policy and strategy makers. The motivation for this decision was to differentiate between what is essential and what could be subject to change. For example, some of the requirements of the users may not be simply attained due to legislations which are ultimately meant to make the service more robust and less vulnerable to threats and process problems. Some of the users' requirements may be not fully attained due to the constraints of the organizations; however, we may still be able to moderate the effect. For example, the need for learning the smart services could be made less demanding through making the learning process more engaging than the approach relying on static and relatively hard to read content.

As a reflection of this study, the research believes that having a direct contact with the policy and strategy makers enabled him expand his view of the problem and achieve a balanced set of ideas for the solution. This unbiased view is critical in order to achieve a solution accepted by the wide majority of stakeholders and feasible and realistic enough. The number of experts was enough for the purpose of this study as it enabled identifying key issues in relation to people motivations and

attitude as well as other non-user factors. The researcher believes that the study could have been more focused so that the motivation ad persuasion aspect would start earlier in the thesis. The expert studies which followed the user study indeed was broad in focus but on the same time predicting with high certainty that users motivation is centric and important to the various issues would not be possible. In other words, the exploration of the range of challenges allowed more certainty and confidence that motivation, acceptance and persuasions are indeed potential aspects to handle and moderate and tackle more than one of the challenges.

The third study done in this thesis was more holistic and involved both experts and users. This was a good option given the centric importance of motivation and persuasion in this thesis. The strategy of having both perspectives and concluding results on the efficiency and suitability of influence and motivation principles is key for the credibility and the trustworthiness of the proposed solution. The study focused on the case of UAE knowing that motivation and influence have a heavy cultural aspect. For example the effect of social proof differs amongst different cultures and this was indeed noted in the answers of the experts and also the users.

As a reflection on this study, the researcher believes it yielded rich information and confirmed certain influences and she light on some of the debatable and context-dependent ones. To confirm those debatable, a more experimental approach would have been more powerful. However, given the timescale of this thesis and the need for a wide range of those experiments, the researcher decided to leave that as one of the tasks to do while developing and test motivational techniques. In other words, the findings should be informative to the development team and the organization to check the effectiveness of some motivational techniques on their users' base. The number of participants of the user study was not a high one. The researcher believe that the lengthy and heavy nature of the survey made it difficult to complete but at the same time the researcher believe that it could be seen as a structured interviews yielding trustworthy and deep data. In other words, the research went through the questions one by one with the participants and explained and discussed each question with them. The average time to complete one survey in this style was around one hour approximately. This adds to the quality of answers and comments given. Such a trade-off between the high number and the quality answers were in the opinion of the research managed well.

The amendments proposed to the Fogg process followed the findings obtained through the previous studies in general and the one on the motivation in particular. The amendments to the

Fogg process were motivated by various categories of the challenges obtained through the first user study and the second expert study. The amendments themselves were conducted based on the findings of the mixed-method third study on motivation. This provided a solid background for the new process and increased its theoretical merit.

As a reflection on this study, the researcher believes that it provides a number of guidelines on contextualizing the Fogg eight steps process to the case of Smart Services in the UAE. At the same time, the researcher believes that some of the findings are indeed useful as enrichments to the Fogg process itself when dealing with new computing paradigms, e.g. ubiquitous and pervasive computing. They share similar nature with smart services and may be faced with similar set of concerns. Proposing amendments to an established process is a challenging task and requires solid validation. The researcher could achieve some of that during this PhD and still more to do in order to assess the extent to which this amended process is to be applied.

The amendments prosed to the TAM model followed the results of previous chapters in a style similar to that applied on amending Fogg process. As a reflection, the researcher is convinced that the separation between the design of the persuasive technology itself through the amended Fogg process and the introduction of this technology through the amended TAM model, was a good idea. This separation of concerns makes the whole process clearer and more manageable. As a result, a part of the team can focus on the technology that produces motivation while the other can focus on the introduction of the entire package, i.e. the smart services augmented with persuasive techniques, to their socio-cultural framework in an accepted and adoptable style.

The evaluation of both proposed processes, i.e. the amended Fogg and TAM process, relied on key informants and experts in the areas of smart services. As a reflection on it, the researcher recognizes the need for further evaluation with systems implemented according to this proposed process. However, to mitigate the effect, the researcher presented interfaces of popular smart services applications to the experts interviewed which mimicked a real-world reduction of such services to some extent. Such supplementary material and the length of the study enabled deep insights and evaluation results to emerge. The researchers took the results of the evaluation on board and incorporated further amendments to what he came up initially with. Still, more evaluation with users and through actual services, especially new services, would make the evaluation stronger. This is left for a future work given the scale of this PhD project.

9.2　　　REFLECTIONS ON THE ACHIEVEMENT OF THE OBJECTIVES

This section will contain an appraisal of the achievement of the objectives outlined the introduction of this thesis:

> ***Objective 1:*** *To explore the users perception of smart services in general, their usage in terms of engagement, benefits and obstacles faces or acquired by users. This objective will explore the status of smart services adoption in breadth.*

This objective was achieved through a survey study involving a hundred participants. The objective was not to investigate in depth the reasons of the issues and the status of the usage but rather to get from them a basic understanding of their issues and current adoption of smart services. The study included comments section which indeed allowed getting some insights beyond the listed issues and the current status. This objective was driven by the observation fo the researcher through his work and living in the UAE and the purpose of this study was to see the extent of the problem he observed. In total, this objective was achieved enabling the detection of issues and the lightweight reporting of the adoption and usage of smart services in UAE from users' perspective.

> ***Objective 2:*** *To explore the other players in form of experts and service providers perspective of smart services, their status, restrictions and obstacles from their point of views. Similarly to Objective 1, this objective will explore the landscape and the status of smart services from providers and experts' perspective.*

This objective was achieved through qualitative approach invaliding an in-depth analysis of a set fo interviews with experts and strategy and policy makers. Indeed, the results shed light on the other side of the issues not necessarily seen by the users themselves. This helped the researcher to have a holistic view of the problem and understand what could be a subject for change and what could require moderation. It also allowed the researcher to understand the set of objective constraints which are not a matter of limitations but rather chosen strategies for collective benefits. This objective has been achieved and a panoramic view of the set of challenges and issues in relation to the design of smart services in their back-end was drawn. Although some of the findings of this study did not relate directly to motivation and persuasion, however they indeed provided a context and a wider understanding of where these solutions and process proposed in the later objectives are going to operate.

> ***Objective 3:*** *To explore the potential and constraints for various motivational strategies to increase the adoption of smart services, both from users and experts perspectives. Starting from this objective, the focus of the thesis will be on the human factor in relation to the adoption of smart services.*

Cialdini's principles for influence were used to structure the interview questions with experts and also the analysis. To maximize the range of views and to cater for the users perspective, another study with the users though survey, conducted as a structured interview to a large extent, was done. Indeed, both studies together allowed a deep understanding of which of the Cialdini's principles would work for the UAE society with special focus on smart services in the domain of the application. As expected, Cialdini's principles are all effective mechanisms world-wide as they were not intended to a certain cultural context. However, the study conducted here revealed different degrees of strength of these principles and different contextual factors to take into account when applied in UAE for smart services. In this sense, this objective was indeed achieved and paved the way towards proposing amendments to Fogg's process and TAM in the next chapters.

> ***Objective 4:*** *To enrich a mainstream design method for persuasive technology in order to accommodate the peculiarities of smart services applied for e-government, and within the socio-cultural framework of UAE. The chosen method was the Fogg's eight steps process (Fogg, 2003).*

Fogg's process for designing persuasive technology and introducing it was chosen due to its popularity and establishment. It provides the software counterpart of the influence and motivation theories. In other words, it enables the design of technology that enacts those principles established in psychology and sociology. Since smart services are themselves software-based solutions in the first place, it made more sense to think of embedding the influence and persuasion principles in their designing hence the choice of persuasive technology and its common design principles of Fogg. The steps of the Fogg process were thoroughly studied in light of the findings of the previous objectives. As a result, the researcher produced a detailed description of the considerations to take on board, the sub-steps to introduce, the risks to be aware of and the contextual factors to judge the appropriateness and the different stakeholders to involve in each step. This objective was achieved and a level of confidence of the validity of the proposal is also obtained since the proposal follows empirical studies done in previous objectives.

> ***Objective 5:*** *To augment a mainstream framework for enhancing the adoption of new technology to embed persuasion and the influence in general, that fit the smart services applied for e-government and within the socio-cultural framework of UAE. The proposed and chosen framework was the Technology Acceptance Model (TAM) (Venkatesh, 2000).*

Similar to the approach of amending Fogg's process, the findings in the objectives 1, 2 and 3 were utilized to propose considerations and set of external variables to the classic TAM model. The

proposed TAM is meant to introduce Smart Services augmented with Persuasive Techniques into their social and technical context. The external variables introduced and the inter-relations between TAM classic steps and Cialdini's principles followed the findings of those objectives. This allowed the proposed model to have a degree of confidence before doing the final evaluation.

> **Objective 6:** To validate the proposed amendments and enrichments proposed in Objectives 4 and 5 and refine them accordingly.

The final objective was achieved to an extent which would suit the scale and timeframe of this PhD thesis. The evaluation was concerned with one set of stakeholders who are the experts in the domain of smart services and how they are produced and introduced to the public. This is a partial evaluation as a holistic and more solid evaluation would need other set of stakeholders such as users and service designers. The fact that the amended Fogg's process and TAM were themselves based on findings coming from different stakeholders would add credibility to the proposed framework. The future work will need to consolidate the evaluation further.

9.3 EVALUATION OF CONTRIBUTION TO KNOWLEDGE

In this section, an evaluation of the extent to which this thesis met the contribution to the knowledge established in the introduction section will be discussed.

Increasing the understanding of the landscape of people usage of smart services in the UAE and the main reasons of the shortcomings in using a wide spectrum of these services.

As a matter of fact, a survey study with room for open comments was conducted. The number of participants was one hundred of UAE residents. In reality, the survey results reflected quite interesting results as it showed that a high number of respondents indeed use smart services applications. However, the further analysis of the responses revealed that the range of services used is very narrow, which raised a number of questions whether it is feasible to implement certain services in the form of smart services or not. On the other hand, an analysis of the comments provided by the participants revealed a number of practical, pricing and usability issues, which hinder their adoption of smart service as a first option. Nonetheless, the survey had limitations mainly because of the nature of the collectable data. This data could have been followed by more qualitative research in order to clarify some of the findings. However, this was not possible due to the anonymous nature of participation. The fact that the researcher conducted the data collection in person compensated this as it enabled a certain degree of understanding of their sentiments and their general attitude towards the smart services. Moreover, motivation and the added value of using some of the smart services were amongst the prominent themes. The results

of this study were presented in Chapter 3, which would provide an initial step to further users studies to go to a deeper level of depth in relation to the understanding of citizens' behaviour and attitude towards new technologies in general.

Increasing the understanding of the logistics, practical and managerial challenges that hinder the success of the wide and sustainable adoption of the smart services.

A qualitative study based on semi-structured interview with eight experts in the various aspects of the smart services in UAE was conducted. Resulted in in-depth analysis of the background of certain managerial and technical settings of the smart services in question. In fact, it allowed an understanding of the rationale for certain decisions and allowed the research, and the researcher to figure out the range of possibilities for enhancement, as well as areas which may need to be restricted for legal and pragmatic reasons. Most importantly, the thesis in this regard allows a holistic view on the various perspectives and put them together in one analysis report. For instance, marketing, pricing and legal perspectives are intermingled and the analysis allowed for a detailed view of the areas that required their integration. Indeed, the fact that some of the analysis of the interviews was conducted before the other interviews started, allowed for discussions enrichment in those remaining interviews. It also showed the research the need for integrating these views and challenges together with the opportunities. The results of this study, reported in Chapter 4, would be a valuable start towards that end.

Increasing the understanding of the feasibility and suitability of various persuasion and influence techniques for the population of UAE. This understanding will pave the way to better-designed persuasion-assisted smart services applications that are capable to suit the cultural and social framework of UAE.

Since motivation was deemed to be one of the key aspects of adopting new technology, the researcher choice was to focus on it and to be a point of study more in depth. Nonetheless, a mixed-method study was conducted to evaluate the perception and suitability of various persuasion techniques for the social framework of the UAE. This study started with interviewing experts in the various aspects of customer motivation including marketing, security, and assurance. Moreover, the theoretical framework that was used as a baseline for the discussion was the one of Cialdini on influence. Additionally, the results obtained from the experts allowed a rich start to the next phase, which was conducted as a user study in a form of a survey. However, the survey was relatively complex to cover all the aspects emphasized by the experts. For this reason, the researcher chose to conduct it in person and in an approach that is closer to a structured

interview. Therefore, the results of the this study would be a novel contribution of the thesis as to the best of the knowledge of the researcher, since there have been no previous studies looking at the social and cultural framework in the UAE and its potential effect on the acceptance and efficiency of each of the motivation principles.

Chapter 5, which summarized the result, would be a significant contribution to the knowledge aspect. However, deeper and more focused studies could stem from the findings to refine them further and elaborate them more.

- *Proposing a process to design the layer of persuasive technology to augment the smart services with digital motivation techniques. This method is based on the Fogg's eight steps method.*

For the research purposes, the Fogg's eight steps process was augmented with recommendations and guidelines to make them contextualized to fit the perception and attitude of UAE population towards smart services and persuasion principles. Nonetheless, the contribution to knowledge here is more into the customization of this process to a particular context. It is hoped that by doing that, the software systems analysis and design team will have better understanding, and be more capable of filtering out certain options and focusing on more applicable options. As a result, this would reduce the time and effort and increase the potential for more acceptable persuasion techniques to be added to smart services. The proposal of the amended Fogg's process utilized the findings of the users and expert studies performed in Chapter 3, 4 and 5. Hence, the limitations of those findings will be naturally propagated to this proposal. This means we can take it as an attempt towards a more refined and consolidated process, as well as a starting point.

- *Proposing a model to introduce smart services in a way that maximize their acceptance in the UAE. This takes as a baseline the TAM model and augments it with external variables that are detected through various empirical studies in the UAE and the influence principles as shown to be suitable for the concerned society.*

As you would expect, TAM model is a general model for technology acceptance. Therefore, and to get the most of it, it would need further customization to fit a certain domain and certain cultural aspects. In fact, the thesis contributed to that end by utilizing the findings of Chapters 3, 4 and 5 to augment TAM model in two ways. Firstly, it was in the consideration of external variables, which affect the perception of the public towards the ease of use and the usefulness of use, e.g. the trust, the technical factors and subjective norms. Secondly, it was in the augmentation through the influence principles on each of the stages of TAM model. Resulted in a model that becomes more persuasive itself. In spite of this, the assumption of the thesis was that by designing and

introducing technology assisted by persuasion, again by making the steps themselves persuasive, the overall acceptance and positive attitude towards them would boost. Moreover, the thesis provides knowledge, which would help achieving those objectives. The claim here is that the proposed model shall paves the way towards a discussion amongst the development team as well as other stakeholders about the imperative facets to consider.

9.4   BENEFICIARIES

One of the main expected contributions of this thesis is meant to inform the development as well as the management team of smart services in two steps.

1- The process of augmenting the smart service with persuasive technique.
2- The introduction of these services to the public in a way that make them more accepted and motivational.

Given the nature of these two steps and the task this thesis is supporting, it was chosen to remain on the borderline between computing and management. In spite of that, the step of introducing smart services to the public is more management than software engineering, and therefore the stage of augmenting smart services with persuasive techniques not only require design expertise, but also management and sociology as well as psychology expertise.

Naturally, there are various parties that are expected to benefit from this research, in the following, the list of the main beneficiaries of this thesis and the type of on the involved benefits are elaborated:

- Public sector aiming to increase quality of service: The thesis is meant mainly to non-profit smart services and the nature of the recommendations is considerably aligned with that spirit. Since, the study is concerned mainly with non-monetary and less tangible rewards in the first place, the public sector will be able to assess through the results of this thesis their current processes, and whether they are considering the peculiarities highlighted in this thesis in relation to UAE culture and user group.

- Software design team: As a result of the research, the thesis concluded that design teams of the current smart services in UAE may not be necessarily aware of the nuances of the culture there, and indeed proposed persuasive techniques which are hard to integrate and hard to get accepted. The steps and the warnings and recommendations proposed via this thesis can inform such teams and make their product more suitable to the targeted environment. Moreover, it will also reduce the risks of delaying the project due to lengthy testing and refinement processes.

- Smart services management team: Since smart services are highly accessed by the public and in an intense interactive style, they indeed require a continuous management practice. While this is a known challenge, the thesis adds to it with claiming that these services should further include additional persuasion and motivational techniques. In spite of this, the thesis still provides a set of guidelines and models to make that manageable. Moreover, as persuasion and motivation are inherently volatile and changing, the management of this aspect is as critical as other usability and acceptance aspect of smart services systems.

- Policy makers: The thesis shed the light on a number of areas where policy needs to be introduced. For instance, it was highlighted that smart services need better alignment with their underlying business processes. Moreover, in certain cases, the online process and the in-person process follow different flows, which affect the usability of smart services. While this discrepancy is sometimes needed, yet the decision about it and managing it need to be clear and well managed.

- Telecommunication sector: As a matter of fact, smart services are built on the online connectivity on the move; therefore, telecommunication sector has a major role in the entire process. Furthermore, the persuasion techniques and the optimized introduction of the services is only one part and would be easily compromised, if the quality of infrastructure and pricing as well as customer services were low. The thesis came with a number of pre-requisite for the success of persuasion, and naturally the telecommunication sector had the biggest part of it.

Finally, the thesis contributes to the research in software localization by particularly studying how persuasion can be certainly culture dependent and open the door for further studies in the region, that are not necessarily for smart services. Therefore, that part of the thesis can be argued as a starting point for persuasion in general in that region of the world. While the thesis was not experimental and it followed a qualitative approach, the findings can still be taken as a set off point for more focused and confirmatory approach.

9.5   FUTURE WORK

There are three future work directions which stems from this thesis:

- The first direction will be in relation to the application and the refinement of the amended Fogg's process and TAM. The researcher, through his professional work, will be in direct

contact in authorities and organizations implementing smart services. This will give him the chance to propose the framework for the use in the design time and also deployment time. Further customization of the proposed frameworks could be done by the organisations themselves to fit their localized needs. Such localization could be an interesting aspect to look at and see how the proposal could appear in different organizational settings and contexts.

- The second direction will be towards a more active role of the users in the two amended models. The evaluation results suggest that ultimately it is indeed key to get people adopt the vision and the paradigm itself. This could be expanded to cover also the development process in its various phases. The research speculates a participatory approach to the design in which the motivational techniques and the rewards as well as influence principles are used as a start for users themselves to customize and propos. In other words, they become an integral part of the design team.

- The third direction is to look at the viability and sustainability of the influence and motivational techniques for smart services and the UAE. It is known that motivation needs sustainment at least up the point when users see the benefits of the service and break the fear of using it. Still, it may be challenging to get the users motivated up to that stage. The researcher plans to study the ways to change motivation so that we increase the retention of the users till the adoption of smart services is achieved.

9.6   SUMMARY

This chapter concluded the thesis and provided an appraisal of the achievement of the objectives. A set of challenges and limitations to face in future work was also discussed. This chapter served as a reflection chapter on the way this thesis was conducted and its findings.

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10.   APPENDICES

10.1   APPENDIX 1 SURVEY QUESTIONNAIRE

Name (Optional)	Date:

Age:

Younger than 21	
21-25	
26-35	
36-45	
46-55	
56-60	
61-70	
70 and older	

Education:

No schooling completed	
Some high school completed	
High school diploma	
Trade/Technical/Vocational Diploma	
Bachelor's Degree	
Master's Degree	
Doctorate	
Other – please specify:	

Current Occupation:

Student	
Home maker	
Retired	
Military	
Professional (Please specify job title):	
Medical (Please specify job title):	
Technical (Please specify job title):	
Commercial (Please specify job title):	
Self Employed (Please specify Industry):	
Other (Please specify):	

Online Media used:

	Computer/Laptop	Mobile Phone	Tablet
Facebook			
Whatsapp			
Twitter			
Internet Banking			
Mobile Banking			
Other 1 (Please specify):			
Other 2 (Please specify):			
Other 3 (Please specify):			

eService1: (Please specify):			
eService 2:			
eService 3:			
Other (Please specify):			

TOPIC: SMART SERVICES
We would appreciate your assistance!

Background: In UAE's Vision 2021, Smart Services came in the as point number 1 in the National Agenda.

As UAE citizens, to move in line with the nation's vision, we all have a responsibility to align ourselves with its success.

To this end, we are doing research on various matters relating to Smart Services.

Please assist us by completing the following Questionnaire as thoroughly and transparently as possible.

We will sincerely appreciate your efforts.

Culturally-Aware Motivation for Smart Services: An Exploratory Study of the UAE

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Abdelrahman Alnaqbi is a PhD postgraduate research student at the Department of Computing and Informatics, Faculty of Science and Technology, Bournemouth University. He is investigating the management and design of culturally-sensitive persuasive technology to improve users' experience and engagement in smart government services in the UAE.

Tips and Guidelines:

- This is a long questionnaire. Please bear with us.

- Please take a break after each section or do it in intervals. This will ensure you don't become tired and this will enhance the accuracy of the outcome.

- If you feel strongly about a certain point or statement, please let us know your views! The comments section is there for your use.

- Each statement has 5 possible responses: Disagree Strongly/ Disagree/Neither Agree Nor Disagree/ Agree/ Agree Strongly. Please select the one most suited to your response.

	Statement	1. Disagree Strongly	2. Disagree	3. Neither Agree nor Disagree	4. Agree	5. Agree Strongly	Your Comments:
Reciprocity Verifying Suspicion	1. I am generally cautious when I receive unsolicited special offers from service providers						
	2. I feel suspicious when a service provider offers me a good deal or special offer that has conditions attached						
Reciprocity Verifying Manner	3. I believe the following to be a fair statement: "If a service provider offers me special services or a special offer, I should be happy to return the favour and comply with their conditions"						
	4. I don't like bargaining for services – if a special offer sets conditions for me, I						

	feel insulted and am likely to decline						
Reciprocity Verifying Familiarity	5. Complicated offers make me nervous, even if they seem generous						
Reciprocity Verifying Quality	6. Before even looking at any special offer, I always investigate the services being provided to verify they have a reasonable quality						
	7. If I have even the slightest suspicion that services may not be of the highest quality, I will not even look at any special offers related to them						
Reciprocity Transparency	8. Offers that are vague about the total cost or savings to me make me shy away from the product or service offered						

Reciprocity Verifying Offer and Trust	9. I am willing to try special offers or deals from service (or goods) providers that have proven faithful in honouring previous offers and deals						
Reciprocity Escalation	10. When I respond to a special offer, I expect the provider to show loyalty to me – and continue to offer me an even greater benefit and special deal with the passage of time						
Reciprocity Verifying Managed Scale	11. Conversely, if an offer seems "too good to be true" with rapidly increasing benefits, I may become suspicious and avoid the offer						
Reciprocity Verifying Experience	12. I am happy to engage with service/goods providers who offer meaningful deals						

leading to a better experience, even if it does not involve a direct financial benefit						
13. I am not interested in special offers and deals that do not offer me a direct financial benefit or savings, even if the provider offers interesting and exciting benefits						
14. When I look for special deals and offers, I am especially attracted to offers that are tailored to suit my lifestyle and culture						
15. I get overwhelmed by the volume of special offers and deals on the market – to the extent that I ignore special offers and deals which						

Reciprocity

Verifying the Market / Overload

	may be similar to others					
Scarcity Competition	16. A company has just completed a fantastic offer – but it was limited to a very small number of clients. I feel highly offended that I was not given a fair chance to take part					
Scarcity Social Recognition	17. I believe in offers that give me recognition in my community, for example being listed in the pioneers of doing certain roles.					
	18. I would also include my social circle more in the service when I am recognized for a role that is only available to a limited number of people					
Scarcity Uniqueness	19. I hear news of a special offer to gain services which would					

make me unique and its scarce supply. If they are of a reasonable quality, I will be very interested to take.						
20. I have no special interest in becoming unique by using the limited amount of goods and services offered– they come and go...						
21. If I hear of a service or item being in short supply, I am keen to find out more about it and get it before it's too late						
22. I may hear of an item, service or special offer being in short supply, but this doesn't really have much impact on me or motivate me to get it unless it is of a great quality						

Scarcity

Secondary Nature

Scarcity Exclusivity	23. I would consider taking a special offer which is in short supply, if the services are prestigious and exclusive to certain sector of users						
	24. Even if services are highly exclusive and prestigious, I am generally not interested in looking at limited offers as a main motivator						
Scarcity Negativity	25. When I look at special offers for goods or services which are in short supply, I wonder whether they are being discontinued or are end-of-range items						
Authority Effectiveness	26. I respect the opinions of leaders and authority figures in UAE and wish to follow their lead – if they approve of a service, I may also support it						

Authority Profile	27. Even if these respected men and women of the UAE are not directly involved with the service offered, the fact that they endorse it is good enough.						
Authority Age	28. I have definitely been influenced by different Authority figures in the UAE at different ages throughout my life						
Authority Lifetime	29. If one of these authorities I look up to in the UAE, associated with the service being offered, transfers to another field, I may change my mind about future loyalty to this service						
Authority Personalization	30. I believe that we, the community of UAE						

	Nationals also contribute to the growth of the UAE - as such, service providers must show me due respect by taking this into account when marketing their services						
Authority Vision	31. I agree with the following: " If a service provider's vision is supported by an authority figure I respect, I shall definitely agree to support the service"						
Authority Objectivity	32. I expect services offered to be truthful and of high quality – if they do not meet my						

	expectations, I will not support them or their services in the future.					
Commitment and Consistency Lifespan	33. When I find a good service, which meets my expectations, I shall definitely be committed to it and continue using it.					
Commitment and Consistency Duality	34. I expect service providers I have supported to help me grow by continuing to upgrade and improve their services to me					
Commitment and Consistency Personal Nature	35. Suppose your service provider's representative is well known to you and you trust him. Would you agree with this statement: "Because of my experience with their representative, I am prepared to					

	overlook some slight shortcomings from time to time."						
Commitment and Consistency Management of Change	36. When I have committed to using a good service, changes to the service may affect me and may lead me to stop using the service						
	37. However, I may continue to use the service if the providers have introduced the changes to me properly and I am happy with the way such changes are being managed						
Commitment and Consistency Negative Impact	38. Where I have committed to a service, I expect consistency from the service provider, in exchange for my loyalty.						
	39. If consistency is not provided, I shall no longer feel I owe the service provider any						

	loyalty – and may cease to use the service					
Commitment and Consistency Moral Values	40. My loyalty will also be tested if a service provider does not display the moral and spiritual values held by the UAE community. I will not support a service where the provider's values go against the values of my culture and community.					
Commitment and Consistency Escalation	41. I also expect loyalty and commitment from a provider whose service I have continued to use. I expect the service to continue improving in my favour over time and increase the level of quality					
Social Proof Proactivity	42. I expect a service provider to keep me up to date with					

	information and facts about how others see the service I am using						
	43. It is totally my responsibility to get facts and information and keep up to date on how others see a service I am using – I do not expect the service provider to keep me up to date						
Social Proof Provability	44. I like to check up on services advertised for proof of their quality, (e.g. via social media) to see if these claims are true						
Social Proof Openness and Frankness	45. If a service has any shortcomings raised by other users, I may still go ahead and use it, provided the service provider has						

	been open and honest about it up front						
	46. If the social medium a service provider is using fails to cater to my own social community and does not provide feedback, it makes me feel left out and may affect my decision to use the service						
Social Proof Age	47. I rely a lot on social media for information – and consequently, a lot of information I obtain about a service - including proof about its claims						
Social Proof Duality	48. The information I obtain on social media can either reinforce my decision to support a service – or						

	make me avoid it completely						
Social Proof Uniqueness	49. The fact that a vast number of citizens already use a feature or a service may be good proof of its quality – but this may put it at risk of becoming so popular to the point where I may feel lack of excitement to use						
Social Proof Disappointment	50. I shall feel great disappointment if the service does not match my expectations, despite good reports about it on the social media I follow						
Likability Influence	51. I appreciate it highly when a service provider understands our community's customs						

Likability Respect	52. I view service providers who disregard our culture as being disrespectful						
Likability Language	53. Service providers who respect our culture also respect our language and include it in the services						
Likability Moral Values	54. I am more likely to use a service if I can see that the service provider respects our communities moral values						
Likability Looks	55. The outward appearance of a service provider's staff and representatives does make any difference						

	56. I prefer to deal with staff and representatives who are very presentable and look good						
Likability Lifestyle	57. Similarity to the lifestyle and background of the person/s promoting a service is important to me and may influence my use of a service						
Likability Success	58. The success achieved by a person promoting a service will definitely influence my decision to use the service too						
Likability Geographical Similarity	59. I prefer it if a service provider has local headquarters or an office in my region						