



**The Creation of Public Value through E-government in the  
Sultanate of Oman**

By

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Doctoral Thesis

Submitted in partial fulfilment of the requirements

for the award of

Doctor of Philosophy of Loughborough University

August 2019

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## **Abstract**

Public value (PV) is a debatable topic with different definitions across the public administration literature and e-government literature. Public value is seen as the last paradigm of both public administration and e-government studies, redefining the definition of e-government, its aims, success indicators and evaluation frameworks. Existing implementations are typically biased towards the realisation of efficiency and service effectiveness, with far less attention being paid to the delivery of PV. In addition, PV-related e-government studies have not presented a comprehensive and holistic framework to investigate e-government PV. This study seeks to address this gap by investigating how e-government facilitates the creation of PV.

A qualitative approach was used using theme analysis of interviews and focus groups along with archived documents. The study is an analysis of a PV-based e-government initiative undertaken in Oman. The majority of PV research and models have been developed from established democracies with PV research in emerging democracies lacking. This bias leave PV creation model unchallenged or understudied, and does not explain how e-government can create PV in less established democracies. The findings of this study resulted in a new e-government PV creation model which presents the creation process as an iterative and continuous learning process that aims to align citizen PV perceptions with an organisation's operational capabilities using an appropriate authorising environment.

This thesis contributes insights into the mechanism by which e-government can produce PV in an emerging democracy. The study adds a new perspective on the nature of the authorising environment to advance PV theory. The findings from the study also provide guidance to improve the operational capabilities necessary to enhance PV creation.

**Keywords:** E-government Public Value, Public Value Creation, Public Engagement, Value Co-Creation, Duality of Technology, Technology Enactment Model

## **Acknowledgements**

I thank God every day for everything that happens to me. I thank Him for giving me the strength and guidance to complete this research journey.

The Prophet, peace be upon him, said: 'Whoever does not thank people for their favour has not thanked God properly.' The list of those without whom this work would not have come to fruition is longer than can be included here.

I am grateful to my first supervisor, Dr Crispin Coombs, for his continuous help and support since day one, and for allowing my learning to go beyond the research aspects. His much-needed feedback was always inspiring and constructive. I am also grateful to my second supervisor, Prof M.N. Ravishankar, who joined the supervisory team during my second year. Many thanks for his valuable insights and guidance. I am thankful, too, to Prof Neil Doherty, who passed away at the beginning of my second year. He was not only a supervisor, he was a mentor, and I am fortunate to have had the opportunity to learn from such a renowned scholar. I also seize this opportunity to thank Prof Donald Hislop and all the staff at the School of Business and Economics Administration Office.

I am grateful to every single one of my family members, above all my parents, my wife, my kids, my brothers and sisters, and my mother-in-law (Asia) and her family for their prayers, assistance and support.

Many thanks to my friends and colleagues at Loughborough University. Special thanks to Araz, Bader, Fatihah, Majd, and Saeed, who continuously offered help, encouragement

and advice. Many thanks to Dr Hamid Al Hinai and Dr Qassim Al Mamari for their support throughout the study and specifically during the pilot data collection stage.

I would like to thank my employer, the Oman Ministry of Defence, for its financial support. I would also like to express my thanks to the Higher Education Admission Centre (HEAC) and other higher education institutes (HEIs) for allowing me access to its staff and documents to undertake this case study. Last, but not least, many thanks to those individuals who participated in the empirical study and to those who arranged the interviews and focus groups

## Dedication

This thesis is dedicated to those great people who have influenced my life and made me who I am today.

*To the memory of my father Hamood, who wished to witness this achievement in his lifetime. He passed away in 1995 when I was in the eleventh grade. I pray that God showers him with His mercy and blessing and rewards him for his upbringing. I am indebted to all the sacrifices you made to raise and educate me and my siblings. Your continuous support and encouragement to excel at school will always be remembered.*

*To my beloved mother Fatima for her immeasurable support and sacrifice. She endured a lot of stress while I was away, and every time she saw me off at the airport. Many thanks for your patience and endless prayers for me and my siblings. I ask God to protect you and I wish you a long, healthy life, full of happiness.*

*To my beloved wife Maimuna, who always stands by me, through thick and thin. I appreciate your continuous patience and support and for taking care of my kids while I am abroad. I wish you a long and healthy life, full of happiness and success.*

*To my daughters Thuwiba and Rufida and my son Ali, who have waited patiently throughout this research with their question, 'Dad, when will you finish your study?' I pray for God to protect you, and I hope this inspires you to continue and excel in your lifelong learning journey.*

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## Acronyms and Abbreviations

|      |   |
|------|---|
| ANT  | Actor Network Theory                        |
| CAST | Colleges of Applied Science and Technology  |
| EAS  | Electronic Admission System                 |
| DEG  | Digital Era Governance                      |
| FG   | Focus Group                                 |
| GED  | General Education Diploma                   |
| GM   | General Manager                             |
| HEAC | Higher Education Admission Centre           |
| HEIs | Higher Education Institutes                 |
| ICT  | Information and Communication Technologies  |
| IS   | Information System                          |
| IT   | Information Technology                      |
| ITA  | Information Technology Authority            |
| NITC | National Information Technology Committee   |
| NGEC | New Public Governance                       |
| NPM  | New Public Management                       |
| NPS  | New Public Service                          |
| NPV  | New Public Value                            |
| MHE  | Ministry of Higher Education                |
| PA   | Public Administration                       |
| PV   | Public Value                                |
| UCAS | Universities and Colleges Admission Service |
| UN   | United Nation                               |
| WSA  | World Summit Award                          |

## 1. Introduction

Recent United Nations (UN) reports (2014 and 2018) on e-government call for the maximisation of benefits for all stakeholders. The advancement of technology and the development of Big Data, Semantic Web, Social Media, Business Intelligence and Analytics has opened the door for an innovative and collaborative approach to creating public value (PV) through e-government advanced technologies (Zhang et al., 2015). Unfortunately, literature reviews on e-government value show that existing e-government implementations are typically biased towards efficiency and service effectiveness, with far less attention being paid to the PV creation process (Parvez, 2006; Karkin and Janssen, 2014; Rose et al., 2015). E-government development is still not mature with regard to public administration reform, and the existing PV-related e-government studies do not present a comprehensive and holistic framework to investigate e-government PV (Ha, 2016).

Public value is becoming in the primary concern of e-government investments (United Nations, 2014; 2018). The maturity level of e-government research positions PV as the focus of e-government value where it redefines e-government success indicators and evaluation frameworks (Cordella and Bonina, 2012; Rose et al., 2015). Yet, the idea of PV is still a relatively fuzzy concept which has been the focus of much debate in academic circles (Moore, 1995; Williams and Shearer, 2011; Rutgers, 2015; Luna-Reyes et al., 2016). Research on governments PV creation and the PV creation process is immature (Meynhardt and Bartholomes, 2011), with both topics needing more empirical research (Meynhardt, 2009; Osborne et al., 2016; Bryson et al., 2017; Hartley et al., 2017; Hartley et al., 2019). Nonetheless, three themes can be observed from the existing literature,

namely: 1) PV as an assessment tool for public services performance; 2) PV is co-produced by governments and user communities, and 3) PV requires the expansion of public services to include democratic and political values. Public value is, therefore, a cornerstone for the balancing of benefits across all stakeholders, and it redefines the understanding of e-government quality, performance and success. It is important to note that existing PV frameworks are typically found in democratic countries (Moore, 1995; Kelly et al., 2002; Jogensen and Bozeman 2007). Therefore, insights from different contexts can enrich the understanding of the role and applicability of e-government in promoting the creation of PV.

To explore how PV is produced through the complex relationship between the authorising environment, the operational capability, e-government technology, and citizens' perceptions of PV, this research integrates the strategic public value triangle (Moore, 1995) with the sociotechnical perspective as an IS theoretical underpinning lens (Orlikowski, 1992). More specifically, this complex relationship is investigated through an exploratory qualitative approach by addressing the following research question in an emerging democracy context: ***how can e-government facilitate public value creation?***

## **1.1 Research Background**

The evolution of e-government and public administration (PA) research has followed broadly parallel paths. PA has undergone multiple maturity stages: with traditional public administration (PA), New Public Management (NPM), and, most recently, New Public Value (NPV) (Williams and Shearer, 2011; Rutgers, 2015). The transformation is seen with the change in the value position of each stage. While traditional PA and NPM focus



on professionalism and efficiency, respectively, NPV is centralised around engagement and utilising government services toward the public good (Rose et al., 2015).

Savoldelli et al. (2014) investigation of the e-government paradox identifies three different ages for e-government development: 1994–2004; 2005–2009; and 2010–2013. With respect to this transformation, the value position of e-government moved in the following directions: “a) technological–operational; b) managerial–organisational; and c) political–institutional”, respectively (Savoldelli et al., 2014). This transformation of e-government coincided with PA evolution, and led to the evolution of a definition of e-government to mean a sociotechnical innovation which utilises Information and Communication Technologies (ICT) to increase efficiency, transparency, accessibility and responsiveness to citizens (Cavalheiro et al., 2014). Thus, the e-government role moved from professionalism and efficiency to engagement and co-creation of value with citizens (Rose et al., 2015).

Public value is considered the latest paradigm within PA. The paradigm has expanded the definition of e-government and altered its evaluation and success models to go beyond limited economic gains. Indeed, e-government PV is the answer to the UN report (United Nations, 2014) for maximising benefits for all stakeholders. Moore’s PV Strategic Triangle introduces the main players in PV creation (Moore, 1995), and his inclusive definition of PV balances economic, social and political gains. Public value is believed to bring more depth to the existing narrow economic view of e-government projects and enriches e-government research (Bozeman, 2007).

E-government touches upon different subjects, which adds a level of complexity to e-government research, potentially leading to the field not having the depth of knowledge illustrated by other research fields (Savoldelli et al., 2014). This explains why most recent studies are trying to measure e-government success rather than explain it (Meijer and Bekkers, 2015). Investigating e-government creation of PV adds another layer of complexity. Therefore, a comprehensive framework is required to have a better understanding of the complexity of the phenomenon and capture all dimensions related to PV creation (Ha, 2016). Consequently, the theoretical underpinning lens uses a sociotechnical framework which integrates the PV Strategic Triangle (Moore, 1995) with the duality of technology (Orlikowski, 1992) to understand the interplay between service providers, technology and PV as an outcome.

## **1.2 Research Context**

The Sultanate of Oman can be described as an emerging democracy. It has an elected consultative council and appointed Ministerial and State Councils. Public administration in Oman is categorised as a centralised system where national culture plays an important role in shaping PA practices (Common, 2008). In 1998, the government established the Information Technology Authority (ITA) that acts on its behalf in promoting and supporting the national digitisation strategy (ITA, 2012). ITA supervises all government agencies implementation of ICT technologies through the adoption of e-government and transformation of their processes. The UN e-government report ranked Oman among the top 50 countries in e-participation (United Nations, 2014). However, to date, e-government studies in Oman have focused on the adoption and diffusion of e-government,

and have not, as yet, explored the role of e-government in the creation of PV. Insights from emerging democracy contexts are valuable as existing PV research examines established democracies, which may not explain the use of e-government services to create PV in other democratic contexts.

As the study aims to understand how e-government enables PV creation, an e-government based educational reform was selected as the case study for this research. The educational reform was selected because of its maturity and engagement with the public. The educational reform aims to centralise all public admission services for higher education in Oman using an electronic admission service (EAS). The EAS has won many international awards and gained a good reputation among Omani citizens.

### **1.3 Research Gaps and Aims**

As previously mentioned in the research background, the following knowledge gaps have been identified: 1) the lack of empirical research investigating the creation of PV and, specifically, how e-government enables PV creation, 2) lack of investigation of existing PV frameworks in alternative democratic contexts, 3) lack of research in e-government PV in Oman. Consequently, there is a need for more in-depth studies of e-government-enabled PV creation to better understand the relationship between organisational structures, technology, and stakeholders (Rose et al., 2014; Ha, 2016). Therefore, the research aims to investigate how e-government facilitates PV creation in an emerging democracy.

## **1.4 Research Method**

To gain an in-depth understanding of how e-government facilitates the creation of PV, an exploratory qualitative single case is utilised in this study. A case study strategy is recommended for the research question type “how and why”, which aims to conduct an in-depth investigation of contemporary topics where the researcher has no control on the behavioural event (Yin, 2013). This allows the research to build a rich and insightful picture of this highly complex subject (Gable 1994). The study employs multiple qualitative methods to facilitate the collection of a wide variety of context-dependent data. Semi-structured interviews are used with public service managers, operational teams, and the IT team. This is triangulated with archived documents related to laws, processes, procedures, and software design. Focus groups are used to capture end-users’ perceptions of the created PV and their experience with the electronic services. This allows the researcher to compare PV perceptions between the service providers and service beneficiaries.

## **1.5 Contributions of the Study**

The goal of any research is to advance knowledge in a chosen research domain (Remenyi and Williams, 1996). This study contributes to the Information System (IS) and public administration (PA) research fields from a theoretical and practical perspective as follows.

### **1.5.1 Theoretical Contributions**

The study is believed to potentially contribute to the e-government PV research by exploring how e-government may enable PV creation in a context which is different from

the known established democracies where most PV creation models were developed. The context dimension is significant as it sheds light on how PV creation process unfolds in an emerging democracy with different political structure and authorising environment. It will also contribute to the limited literature on e-government PV in the Sultanate of Oman.

In addition, the findings of this study should yield information which explains the bidirectional relationships between key dimensions identified by Moore (1995). More specifically, the findings should explain how the organisation should manage its operational capabilities toward the creation of PV through e-government. This should contribute to the shortcoming of the PV Strategic Triangle highlighted by the literature reviews on PV creation models.

Furthermore, the study should bring new insight into how technology can enable PV creation. In doing so, the findings are believed to highlight key technological artefacts which improve the creation of PV through e-government. It is also believed that the findings are expected to explain how these technological artefacts are enacted into an e-government based PV design. This should contribute to the limited studies explaining how technology enhances PV creation.

### **1.5.2 Implications for Practice**

From the practitioner perspective, this study primarily should help public service managers and strategists better understand how e-government can facilitate PV creation. The e-government Creation Model developed in this study can guide public sector reform strategies and e-government project implementations. In addition, e-government

designers and solution implementers can better understand how the different technology artefacts and features can contribute toward PV creation. In doing so, they use the PV creation model to assess their development methodologies, software selection criteria, and the individual technical dimensions which they should focus on when drafting e-government technical designs.

## **1.6 Thesis Structure**

The thesis consists of eight chapters. This section describes the thesis structure highlighting the content of each chapter as follows:

**Chapter One:** This chapter provides an introduction to the thesis followed by the research background, research aims and research significance, and thesis structure.

**Chapter Two:** This chapter reviews the existing literature on PV and its position within e-government, and how it is created through the interplay between different actors. The research is cross-disciplinary as it touches on both public administration and Information System research. This chapter positions PV within e-government research and identifies the knowledge gaps in the field.

**Chapter Three:** This chapter develops a theoretical framework to use as the theoretical lens to investigate the creation of PV through e-government. In this chapter, known theoretical approaches are analysed in relation to the philosophical research stand and the research questions. The research is based on a key framework from the public administration field integrated with an IS framework. Understanding the creation process requires a theory which can consider technology, organisation, and all actors in the

creation process. Therefore, IS structural perspectives were also reviewed in this chapter. Finally, the chapter develops and extends Moore's Public Value Strategic Triangle with Orlikowski's Duality of Technology Model. The developed model takes into consideration the authorising environment, the organisation, the human actors, and e-government technologies as key dimensions in the creation process.

**Chapter Four:** The research method is described in this chapter including the research epistemology, methodology and methods. The chapter also discusses the adopted data analysis approach and the rationale for the approach choice. In addition, the sampling techniques and description of the selected single case study are discussed and linked to the research objectives and framework.

**Chapter Five:** Case study background information is provided in this chapter. This includes: 1) a summary of the Sultanate of Oman's political and public administration conditions, 2) a description of e-government undertakings in Oman, and 3) a review of higher education reforms. The chapter concludes with a section about the selected case study.

**Chapter Six:** The chapter presents the findings of this case study. The chapter starts with background information about the history of the educational reform. This is followed by findings related to the state authority, the organisation public value-based vision, the organisation business changes, the organisation business enablers, and the technological dimensions of the electronic service. The chapter also presents the findings related to focus groups with end-users examining their interpretation of their experience with the electronic system and their perceptions of the created public values.

**Chapter Seven:** This chapter answer the overarching research question through discussion of the results and the public creation process. The chapter discusses these issues in five subsections: 1) PV authorising environment in Oman (RQ1), 2) the Key Arbiter of PV in Oman (RQ1), 3) the mechanisms of operational organisational capabilities toward PV creation (RQ2), 4) the enactment of PV into a Technological Design (RQ3), and, 5) the overarching research question is answered by presenting an e-government PV Creation Model in the last subsection.

**Chapter Eight:** This chapter concludes the thesis by discussing the research questions, objectives and answering the overarching question about the creation of PV through e-government. The chapter also addresses the research contributions at the theoretical and practical levels. Finally, the chapter highlights the research strengths and limitations including future research and final remarks.



## **2. Literature Review**

This chapter presents a description of the field of e-government public value (PV) research. It explores relevant definitions of e-government PV and the relevant theoretical themes underpinning research in the area. The chapter starts by reviewing e-government definitions and its evolution. Then, the literature review explores PV definitions and its evolution by mapping e-government and public administration paradigms. Through existing empirical studies, the research identifies current trends within e-government PV research. Finally, e-government PV creation models are reviewed and summarised followed by a review of e-government studies in Oman and identification of possible knowledge gaps in the field.

The literature review carried out in this study used relevant search terms such as public value, public value creation, e-government, e-service, e-gov, and electronic services. Searching using combination of these terms in known electronic search engines (Loughborough University Library, Google Scholar, Web of Science, and Scopus) allowed the researcher to identify relevant studies.

### **2.1 E-government Evolution**

Over the past 20 years, the adoption and complexity of e-government technologies have increased greatly. Indeed, e-government designs now include a wide variety of systems which support internal government processes as well as other systems that allow governments to communicate with their citizens and other stakeholders (Huang and Benyoucef, 2014; Zhang et al., 2015). However, those government agencies, which have already achieved advanced implementation of e-government, tend to have followed a

similar evolutionary journey, which is typically composed of four stages (Janowski, 2015), as shown in Table 2.1. In the ‘*digitisation*’ stage, the governmental agency implements and experiments with the technology. In the ‘*transformation*’ stage, the focus on technology is used to re-engineer and streamline business processes. As the agency is transformed in the ‘*engagement*’ stage, they seek to expand the scope of their ICT infrastructure so that it can be used to engage with external stakeholders. Lastly, during the ‘*customisation*’ stage, e-government services are tailored to the requirements and needs of specific communities, organisations or even individual citizens. Their scope has expanded beyond the organisational boundaries and shifted to serve the communities and societies by providing a government-to-citizens type of e-government solution.

| <b>Stage</b>      | <b>Application Context</b> | <b>Internal Transformation</b> | <b>External Transformation</b> | <b>Context Specific Transformation</b> |
|-------------------|----------------------------|--------------------------------|--------------------------------|--|
| Digitization      | Technology                 | No                             | No                             | No                                     |
| Transformation    | Government                 | Yes                            | No                             | No                                     |
| Engagement        | Stakeholders               | Yes                            | Yes                            | No                                     |
| Contextualization | Communities                | Yes                            | Yes                            | Yes                                    |

While the adoption and application of e-government technologies appear to follow a standard evolutionary journey, there also seems to be an obvious pattern in the literature, which appears to resonate with Janowski’s (2015) maturity model. In their review of the e-government literature, Savoldelli et al. (2014) noted that the existing literature can be generally divided into three periods (1994–2004; 2005–2009; and 2010–2013), each of which had a distinctive focal point. In the first, “*technological–operational*”, era, the focus was on the identification and deployment of technological solutions. This was followed by

the “*managerial–organisational*” era, in which the emphasis shifted towards the service impact of e-government, predominantly in terms of its effectiveness and efficiency. In the current “*political–institutional*” era, Savoldelli et al. (2014, p. 65) have detected an emphasis on democratic and social values, through which it might be possible to allow citizens and businesses to co-create value.

It is also interesting to note that researchers’ definitions of e-government have been refined, over time, and they tend to resonate with the four stages identified in Table 2.1. As can be seen from the definitions presented in Table 2.2, e-government has moved from a technological definition in the early 2000s, towards more value and outcome-based definitions in 2006 and 2007. In the latest definitions, the focus has shifted to facilitating wider stakeholder engagement, and in so doing, the promotion of social and democratic values. Overall, the scope of e-government has significantly broadened from a “department and service orientation to comprehensive all-of-government approaches” (Larsson and Grönlund, 2014, p.137). Bannister and Connolly’s (2014) theoretical review also suggests that e-government has gone through three transformational stages: duty-oriented, service-oriented, and social-oriented. E-government has shifted ‘e-government’ to ‘we-government’, and one of the reasons behind this change is the advance of technology which allows citizens to do more (Linders, 2012). Regardless of the naming of these categorisations, e-government has witnessed a transformation in its objectives, definition, and success indicators as shown below.

Over the past 20 years, the transformation of e-government has progressed rapidly to the extent that modern digital, public services now have the capabilities to engage with

citizens and be tailored to their needs (Nograšek and Vintar, 2014). This research is in line with the e-government definitions presented by Gil-Garcia (2012) and Meijer and Bekkers (2015) shown in Table 2.2. Adoption of this definition enables the researcher to have a comprehensive and dynamic understanding of e-government, investigating it as a socio-technical phenomenon. In so doing, e-government now has a real opportunity to facilitate the delivery of social and democratic values. These values usually come under the label of public value (Moore, 1995; Bozeman, 2007), as will be discussed in later sections.

| Table 2.2: E-government Definitions  |                                    |
|--|------------------------------------|
| Definition   | Reference                          |
| “E-Government refers to the delivery of information and services online through the Internet or other digital means.”  | Muir and Oppenheim (2002, p. 175)  |
| “The perspective impact associated with e-government affects working practice and procedures; overall organisational efficiency and effectiveness.”  | Heeks (2006, p. 43)                |
| “ICTs are depicted as enabling government and citizens to communicate with each other and to enable the delivery of services in a customer-friendly way.”  | Bekkers and Homburg (2007, p. 380) |
| “The selection, design, implementation and use of ICTS in government to provide public services, improve managerial effectiveness, and promote democratic values and participation mechanism, as well as the development of a legal and regulatory framework that facilitates information intensive initiative and fosters the knowledge society.” | Gil-Garcia (2012, p. 7)            |
| “E-government as a practice can be described as the use of ICT to achieve a better government, especially in the field of electronic service delivery to companies and citizens ..... and the promotion of democratic values and mechanisms.”  | Meijer and Bekkers (2015, p. 237)  |

## 2.2 Public Value

There has been a noticeable surge in both academic and practitioner interest in PV since the 1990s (Williams and Shearer, 2011). It has been described as the most famous field

of study within the discipline of public administration (PA) (Bozeman, 2007; Rutgers, 2015). This section presents a review of PA paradigms, an overview of the meaning of PV and its creation process, before critically reviewing its relevance to the study of e-government.

### **2.2.1 Public Administration Paradigms**

Because public value sits in the heart of public administration (PA), it is relevant to recognise its position in the evolution of PA. Existing research shows that PA has embarked on a transformation journey in the last three decades (Bourgon, 2009). The literature shows three key paradigms within PA: traditional, new public management (NPM), and new public value (NPV) (Alford and O'Flynn, 2009; Karkin and Janssen, 2014). While traditional and NPM paradigms focus on professionalism and efficiency, respectively, NPV focuses on '*citizens-centricity*' which addresses a wider scale of values (Rose et al. 2015). Similar themes were also noted by Bourgon (2009) through his taxonomy of public management paradigms: New Public Management (NPM), New Public Governance (NGC), Digital Era Governance (DEG), and Public Value Management (PVM). Bourgon's (2009) definition of NGC is similar to the traditional Alford and O'Flynn (2009) definition which focuses on inter-organisation collaboration to achieve service outcomes according to the organisational objectives. The definition of NPM in both studies has the same focus on efficiency and effectiveness as performance measurements.

NPM's value position is inherited from the private sector, and hence, it adopts a similar business model to increase efficiency and effectiveness (Alford and O'Flynn, 2009).

However, Alford and O'Flynn (2009) do not position the digital era as a separate paradigm. Although ICT has transformed PA (Bourgon, 2009), digitisation existed during NPM, and hence, it is difficult to treat digitisation as a separate era. Alford and O'Flynn's discussion of the paradigm presents a clear border between the three paradigms and put more emphasis on the organisation goals (Alford and O'Flynn, 2009). Lastly, both studies again present the same definition of NPV with a slightly different name. Public value as a theme and a paradigm within PA focuses on the concept of participation and co-creating value by engaging and exchanging ideas between government and all stakeholders including citizens (Alford and O'Flynn, 2009; Bourgon, 2009).

Governments change their position of the delivered values to improve citizens' satisfaction and increase government trust (Grimsley and Meehan, 2007). NPV expands government focus from the narrow economic position to a broader definition which includes economic, social and political values (Alford and O'Flynn, 2009). This evolution in PA moved the value position from the professionalism ideal to the efficiency ideal, and recently to the 'service ideal' and 'engagement ideal' (Rose et al., 2015). Rose et al. (2015) mapped these value ideals to the known PA paradigms and added a new paradigm named New Public Service (NPS), as shown in Table 2.3. This last paradigm redefined public manager duties around the co-creation of value. Public value paradigms may have started with moving away from the narrow economic position and creating PV; the NPS paradigm introduced an era of how this PV is created.

Table 2.3: Value Ideals Mapped to PA Paradigms (adapted from Rose et al. 2015)

|                 | <b>Bureaucracy</b> | <b>New Public Management</b>        | <b>Public Value Management</b>                      | <b>New Public Service</b>                        |
|-----------------|--------------------|-------------------------------------|---|--|
| Professionalism | Central focus      | Taken for Granted                   | Taken for Granted                                   | Not in focus                                     |
| Efficiency      | End product        | Focus in economic terms             | Enabler for public value provisioning               | Rejected when it means focus organisation values |
| Service         | Not in focus       | Provision as to the customer choice | The ultimate goal of the public manager             | Redefine the service around co-creation          |
| Engagement      | Not in focus       | Not in focus                        | Limited to the facilitation of networked governance | Ideal engagement as kernel of democracy          |

**2.2.2 Public Value Definition**

It has been argued that PV is a fuzzy concept as researchers typically choose to present their own, somewhat different definitions and descriptions of PV (Williams and Shearer, 2011; Fukumoto and Bozeman, 2018). It is not clear what type of concept it is. It can be interpreted as a management paradigm, rhetoric, a narrative, or even a performance management tool, as shown in Table 2.4 (Alford and O'Flynn, 2009).

Table 2.4: Public Value Meanings (adapted from Alford and O'Flynn, 2009)

| <b>PV Meaning</b> | <b>Description</b>  |
|-------------------|---|
| Paradigm          | It is an emergent management paradigm that replaces NPM     |
| Rhetoric          | It argues that PV is found to protect bureaucrats' interest |
| Narrative         | It is a belief about public services transformation.        |
| Performance       | It is an approach to measure public services performance.   |

When it comes to the scholarly PV definition, there are various PV definitions in the literature, as shown in Table 2.5. Kelly et al. (2002, p. 4) define PV as the value created by the government through services, laws, regulations, and other actions”. Benington (2009, p. 233) referenced PV using two statements; “what the public values” and “what adds value to the public sphere”. For this study, the following definition is chosen, by Rose et al. (2014, p. 539): “*maximising the utility of government to civil society by providing services directed towards the public good*”.

| Table 2.5: Public Value Definitions from the Literature  |                                 |
|--|---------------------------------|
| PV definition  | Source                          |
| Public Value is the value that is consumed collectively by the citizenry.  | Moore (1995)                    |
| “The value created by the government through services, laws, regulation and other action.”   | Kelly et al. (2002, p. 4)       |
| “public value is value that is consumed collectively by the citizenry rather than individually by clients.”                              | Alford and Hughes (2008, p.131) |
| “what the public values” and “what adds value to the public sphere.”   | Benington (2009, p.233)         |
| “The product of governmentally-produced benefits, produced when market mechanisms are unable to guarantee their equitable distribution.” | Harrison et al. (2012, p.90)    |
| “Maximising the utility of government to civil society by providing services directed towards the public good.”                          | Rose et al. (2014, p.539)       |
| “public value refers to an appraisal of what is created and sustained by government on behalf of the public.”                            | Nabatchi (2018, p.60)           |

Moreover, research has used the terms public value, public values, and public interest interchangeably (Bozeman, 2002; Bozeman 2007; Jogensen and Bozeman 2007; and O'Flynn, 2007). However, Alford and O'Flynn (2009, p. 176) argued that public interest is slightly different as it means; public interest is “one of the reasons or reference points for which people value things.” There is no generally accepted definition for PV (Rutgers, 2015). This research uses public value to reference the concept and the theory, and public



values to reference a list of public values. This study recognises that PV can be used as a performance framework to measure the quality of government services. The study sees that the creation process is far more crucial, as highlighted in the next section.

### **2.2.3 Public Value Benefits**

Different benefits have been cited for the consideration of the PV concept. Public value is believed to deepen democratic practices and tackle the democratic deficit (Benington and Moore, 2011; Horner and Hutton, 2011). “Creating public value frameworks advances managerial prescriptions that are quite democratic” (Dahl et al., 2014, p. 500). The decision to incorporate PV rather than traditional economic value definitions is associated with the following rationale adapted from Bozeman (2007, p. 64): 1) that PV is “more than collective private value”; 2) PV introduces more depth which is missing in the narrow economic view; and, 3) the difficulty to measure PV does not eliminate its importance for enriching e-government studies.

### **2.2.4 Public Value Creation**

The previous section summarises how PV has been defined in the literature and why it is important. The dominant definition of PV is often used as a measurement framework of government services (Kelly et al., 2002; Alford and O'Flynn, 2009). It might be the term value that draws researchers' attention to “results or outcome” and “ignore process and input” (Alford and Hughes, 2008, p. 132). Unlike other performance frameworks, PV should not be investigated only as an outcome, but also on the process throughout which

it is created (Moore, 1995; O'Flynn, 2007; Benington, 2009). This section reviews the PV creation process.

Spano (2009, p. 343) argued that the creation process “requires a systematic vision of institutional, political and corporate dimensions and management control.” The management controls are the organisation mission, objectives, goals, rewards, evaluation and progress review, and measurement system (Spano, 2009). Moreover, Kelly et al. (2002) argue that PV can be created through laws, policies, public service delivery, and any action or interaction. This interaction can be through direct or indirect involvement service beneficiaries to define and deliver PV (Moore, 1995; Benington, 2009). Direct involvement can be seen through co-creation, which is explained in the next subsection, whereas indirect involvement can take place through the elected representatives. The new public service paradigm redefined the idea of public service delivery around the concept of co-creation (see section 2.2.1) (Rose et al. 2015). The co-creation of value introduced a new concept in public service delivery, such as engagement and participation. These terms are further explained below.

### ***PV Co-creation***

Co-creation is one of the cornerstones of public service reform around the globe (Osborne et al., 2016). Co-creation and co-production terms in public service delivery are used to broadly describe the concept of “active involvement of end-users in various stages of the production process” (Voorberg et al., 2015, p. 1335). Osborne et al. (2016, p. 641) present a more detailed definition: “the voluntary or involuntary involvements of public service users in any of the designed, management, delivery and/or evaluation of public service”.

Voorberg et al.'s (2015) systematic review on co-creation highlighted that the existing literature did not distinguish between co-creation and co-production; the terms have been used interchangeably to describe different types of co-creation initiatives. Hence, in this study, these terms are used interchangeably. Voorberg et al. (2015) argue that these terms are used to describe different co-creation concepts: citizens as a co-implementer, citizens as a co-designer, and citizens as an initiator.

Osborne et al. (2016) present other categorisations of co-creation: co-construction, and co-innovation. While co-construction represents involuntary co-creation approach, co-innovation is a voluntary co-creation approach. Existing literature shows a focus on co-creation influential factors on both sides: organisation and citizens (Voorberg et al., 2015). Key factors related to the organisational culture are their attitude toward participation and co-creation infrastructure readiness, such as engagement technologies and tools (Voorberg et al., 2015). Citizens-related factors are mostly related to willingness to participate, educational level, personal characteristics, and ability to influence public services (Voorberg et al., 2015). However, their study argues that the success of the co-creation process is the responsibility of the public service organisation because the organisation needs to take further action to influence citizens' participation level.

A recent study noted that the co-creation concept is associated with different topics and applications domains: development of new goods and services, collaboration with users, the participatory role of consumers, multiple firm's partnerships, and knowledge and learning solutions within business networks (Ramaswamy and Ozcan, 2018). Regardless of its diversity, the important question is "how can co-production processes be used to

create public value?” (Bryson et al., 2017, p. 648). The creation process of PV is an important element PV research, and it needs more empirical work (Meynhardt, 2009; Osborne et al., 2016; Bryson et al., 2017; Hartley et al., 2017; Hartley et al., 2019). Thus, the multi-actors’ theory of PV co-creation is an attempt to answer Bryson et al.’s (2017) question. The theory is based on Moore’s Public Value Strategic Triangle (Moore, 1995), and it attempts to adapt the strategic triangle to multi-actor, multi-sector, and multi-organisational contexts.

The co-creation concept sits at the heart of PV creation. Creating a PV is seen as a redistribution of power among professionals and citizens, and thus, understanding of differences actors and sectors have (Bryson et al., 2017). The authors note the importance of an engagement process to facilitate the co-creation process. They further explain this by suggesting the creation of innovative public spaces within which government organisations and citizens can negotiate their differences to reach a common purpose. The advancement of e-government created an opportunity for new ways for the government to create PV. The advancement of ICT has influenced how governments run their business processes and deliver their services to their citizens (Margetts, 1998). Citizens interact with governments through electronic services and social media. The front-end is no longer the operational staff; it is the electronic application or social media platforms. In fact, technology is considered part of the organisation assets which enable PV creation (Moore, 1995). The new value position for e-government is in line with the idea of co-creation of PV, as explained in the next section.

## 2.3 E-government Value Position

The evolution of public administration and the shift in value position has redefined the role of e-government. This is because the management of e-government is a “specialised form of public administration” (Rose et al. 2015, p. 538). Hence, the development of these paradigms is in line with the e-government evolution model, as shown by Rose et al. (2015) in Table 2.6. Cordella and Bonina (2012) suggest that IS research must go further than the value proposition of efficiency and effectiveness encapsulated in NPM. The NPV paradigm shapes the expected value and hence, positions the role of e-government toward PVs such as engagement, participation, and dialogue. The role of e-government and hence ICT, shifted from infrastructural support and automation to service enabling and recently, networking facilitation, as shown in Table 2.6.

| Value Position            | Professionalism                            | Efficiency                                    | Service   | Engagement  |
|---------------------------|--|---|---|---|
| Value representation      | Legality, accountability                   | Cost reduction, time optimisation             | Public service, citizen-centricity                        | Democracy, deliberation and participation           |
| Role of e-government      | Provide secure digital records and support | Streamline and transform PA around technology | Improve service accessibility, availability and usability | Support co-creation and interaction with the public |
| Technological Frame of IT | Infrastructural support                    | Automation                                    | Service enabling  | Networking Facilitation                             |

Consequently, this transformation has shifted the e-government focus of professionalism and efficiency to engagement to co-create PV. The idea of PV creation through e-government has attracted many academic researchers. These studies are reviewed and summarised in section 2.4 below.

## 2.4 E-government Public Value Studies Trends

One of the first studies which investigated the role of e-government in using PV as a concept was done by Ian Kearns in 2004. Kearns applied the work of Kelly et al. (2002) to evaluate e-government. More studies have since been carried out (see Appendix 10.8).

In the context of PA paradigms, Rose et al. (2014) suggest that the key role for e-government should be service-enabling, and its value should be measured in terms of the quality of public service and its degree of 'citizen-centricity'. A study of the users of the top five government portals in the USA, supports this view, as it found that citizens are usually more interested in the extent to which e-government delivers public values (informedness, participation, trust), than they are in the technology's ease and efficiency (Scott et al., 2015).

While citizens may wish PV to be delivered through their electronic services, in practice, the effects of e-government initiatives are rather different. The evaluation of e-government services fails to provide evidence for policymakers on the importance of PV creation through e-government (Kearns, 2004; Karunasena and Dengs, 2011). Parvez (2006) notes that e-democracy has a low impact on democracy in three UK public establishments. A study which reviews Turkish local government websites shows a low level of support toward PV creation, in the form of poor responsiveness and engagement (Karkin and Janssen, 2014). Another study in the Netherlands shows that e-government technologies tend to be biased towards the satisfaction of administrative targets, ignoring democratic values (Rose et al., 2015). The rather unbalanced impacts of e-government initiatives can be explained by the fact that public service managers find it easier to explain their

investment decisions based on efficiency and cost reductions (Rose et al., 2015) than in terms of greater citizen engagement.

Even those studies which suggest that e-government services may have a positive impact on PV (improving governmental transparency and fairness), can be criticised for using cross-sectional analyses which do not facilitate in-depth investigation (Linde and Karlsson, 2013). Indeed, a United Nation report shows that Bahrain has a better e-participation index than established democracies, such as France (United Nations, 2014). However, does this mean that e-government is delivering greater PV in Bahrain than it does in France? Moreover, e-government PV studies show narrow research views, which focus on a particular component of e-government. As shown in Table 2.7, most of the studies aim to PVs and develop evaluation frameworks (Omar et al., 2011; Karunasena and Deng, 2011; Karunasena and Deng, 2012; Bai, 2013; Barbosa et al., 2013; Scott et al., 2016; Venkatesh et al., 2016; Luna-Reyes et al., 2016; Pereira et al., 2017) leaving the creation process unvisited. Other studies focus on the role of the organisation and, more specifically, public service managers (Harrison et al., 2012; Pang et al., 2014; Rose et al., 2015; Cook and Harrison, 2015). Few studies have addressed the role of technology in e-government PV creation (Grimsley and Meehan 2007; Hossain et al., 2011; Karkin and Janssen 2014; Luna-Reyes et al., 2016).

| Research Focus  | Description   | Sources  |
|-----------------|---|--|
| Technology      | Investigated the creation process of e-government public value                    | Grimsley and Meehan (2007); Hossain et al. (2011); Karkin and Janssen (2014); Luna-Reyes et al. (2016)   |
| Outcome         | Aimed to identify or measures public values as a performance framework.           | Omar et al. (2011); Karunasena and Deng (2012); Bai (2013); Barbosa et al. (2013); Scott et al. (2016); Venkatesh et al. (2016); Pereira et al. (2017) |
| Organisation    | Investigated the role of the organisation in E-government PV creation.            | Cordella and Bonina (2012); Harrison et al. (2012); Pang et al. (2014); Rose et al. (2015); Cook and Harrison (2015)                                   |
| Service Quality | Assessed the relationship between service quality dimensions and e-government PV. | Kearns (2004); Omar et al. (2011); Karunasena and Deng (2012); Scott et al. (2016)   |

Moreover, the majority of the reviewed studies on e-government PV use native public administration theories (Karunasena and Deng, 2012; Pang et al., 2014; Cook and Harrison, 2015; Rose et al., 2015; Venkatesh et al., 2016; Luna-Reyes et al., 2017; Pereira et al., 2017) which do not examine the role of technology. The few studies which used IS and PA models mostly focus on service quality and performance. For example, Omar et al. (2011) used a quantitative study to investigate citizens' perceptions of what influenced PV creation through e-government. A similar study by Scott et al. (2016) integrated Moore's PV Strategic Triangle (1995) with the Mclean IS Success Model to measure the success of e-government using PV. Barbosa et al. (2013) used the duality of technology to develop a performance assessment by focusing on the social actors' interpretation of how to measure PV. As stated before, these studies focused on measuring the success of e-government from a PV perspective. This is not a surprise as researchers tend to associate value with the outcome rather than the process (Alford and Hughes, 2008).



This section presented the importance of PV in e-government projects. However, it shows that these projects still face challenges to deliver PV. E-government projects may be challenged by the lack of PV-oriented design as highlighted by Karkin and Janssen (2014), or the easiness in justifying investment in terms of numbers rather than subjective values as suggested by Rose et al. (2015). The majority of e-government studies focus on using PV as an evaluation framework, and rarely investigate the role of technology in the e-government PV creation process. A few studies have attempted to investigate the technology relationship with PV. These studies are reviewed in section 2.5 below.

## **2.5 Technology Related Public Value Models/Studies**

Technology can enable PV creation because it improves the processes by which the government can improve their service-delivery to citizens (Grimsley and Meehan, 2007; Luna-Reyes et al., 2017, Valle-Cruz, 2019). Section 2.4 showed few studies investigated the PV creation process using e-government. Very few papers also attempted to understand how PV is created through technology (Grimsley and Meehan, 2007; Hossain et al., 2011; Karkin and Janssen, 2014; Luna-Reyes et al., 2017). The rest of the studies presented in Table 2.7 focus on the organisational dimension or outcome. This section presents a summary of these studies listed in Table 2.8.

| Study                      | Significance  | focus  | Theory/Framework                                      |
|----------------------------|---|--|---|
| Grimsley and Meehan (2007) | The framework identified technological artefacts categorisation that lead to PV creation: well informedness, personal control, and influence.   | Technology and outcome   | Moore (1995) and Kelly et al. (2002)                  |
| Hossain et al. (2011)      | This paper developed a causality framework using the structures identified by the structuration theory. This was linked to assimilation variable (top management support, users competency, IT sophistication, User support, security , and service efficiency) to enable public value creation   | Assimilation variables with relation to PV as an outcome       | Structuration and I assimilation literature           |
| Karkin and Janssen (2014)  | Evaluated website design using PV and It also introduced PV measurement framework using six PV categories: accessibility, citizen engagement, transparency, responsiveness, dialogue, and balancing of interests  | technological features: Content, usability and system quality. | Website Analysis using PV theory and usability model. |
| Pang et al. (2014)         | Presented a conceptual model which mediate relationship between IT and PV creation  | Organisation   | Moore 1(995)  |
| Luna-Reyes et al. (2017)   | Presented a structured casualty model based on a quantitative survey to assess the relationships between organisational factors (resource availability, infrastructure readiness, presence of laws), technology (ease of use, usefulness, and satisfaction, security, and public value (productivity, cost reduction, effectiveness, and transparency). | Organisation , technology and PV                               | Marketing Behaviour Model                             |

Grimsley and Meehan (2007) attempted to understand the PV creation process. They extended the PV framework of Kelly (2002), which depicts PV creation as an end result for four key components: Service provision, service outcome, satisfaction, and trust. The framework was developed and validated based on two UK case studies. The study found that e-government can mediate the relationship between service provision and outcome on one side and satisfaction and trust on the other side. They concluded with an experience management matrix which explains how “e-government systems may be designed to promote trust and satisfaction by developing information, control, and

influence, and negotiation strategies that promote the client’s sense of well-informedness, personal control, and ability to influence” (2007, p.146). Information allows clients to be well-informed through information availability, consistency, and timely feedback. The study argues that control is achieved by introducing multiple ways to achieve the same end, and timely feedback can help the clients achieve a sense of influence. The matrix can be used to analyse the requirements of e-government systems using a PV perspective. However, the study focuses on clients’ user experiences and does not drill down to the role of the organisation and its properties in the creation process. Moreover, the framework correlates trust as PV with satisfaction, as shown in Figure 2.1. This is different from those studies which used trust as a source in PV creation (Kelly et al., 2002; Karunasena and Deng, 2012).

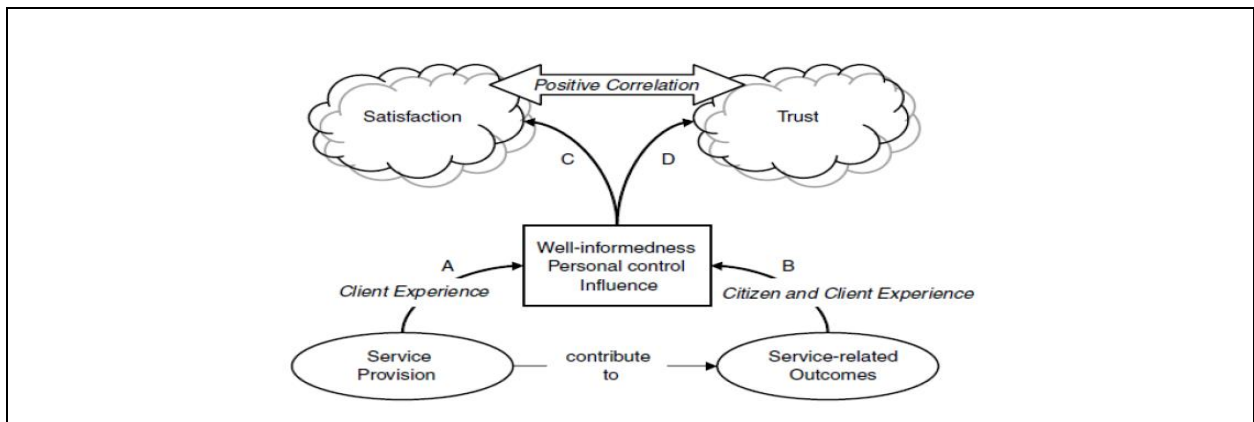


Figure 2.1: Public Value Production (Grimsley and Meehan, 2007, p. 140)

Hossain et al. (2011) focused on users’ level of assimilation using structuration theory. It investigates the relationship between the organisation metadata (top management support, users support, security, IT sophistication, users’ acceptance, and system standards), system assimilation, and business value (efficiency, transparency, and

satisfaction). Likewise, Pang et al. (2014) presented a conceptual model based on the existing literature which presented five organisational capabilities that mediate the relationship between IT and PV creation (service delivery, engagement, innovation, co-production, resource-building. The paper argues that IT resources can enable IT managers to advance public creation by “cultivating these five organisational capabilities (Pang et al., 2014, p.187).

Karkin and Janssen (2014) investigated the role of the e-government portal in the creation of PV. Their study focused on how the e-government portal creates users experience, which consequently generates PV perceptions, as shown in Figure 2.2. Reviewing previous studies, the paper created a theoretical meta-analysis website evaluation criteria using commonly known website evaluation criteria (content, usability, quality, and privacy/security), and PV-related evaluation criteria (accessibility, engagement support, dialogue support, responsiveness and transparency). The findings show that Turkish public service agencies focused on the common website evaluation criteria: content, usability, quality, and security/privacy. Karkin and Janssen (2014, p. 360) argue that the reason for their findings is that “the overall objectives and PVs are not taken into account when designing the websites, and the design process does not include how to realise value creation mechanisms.”

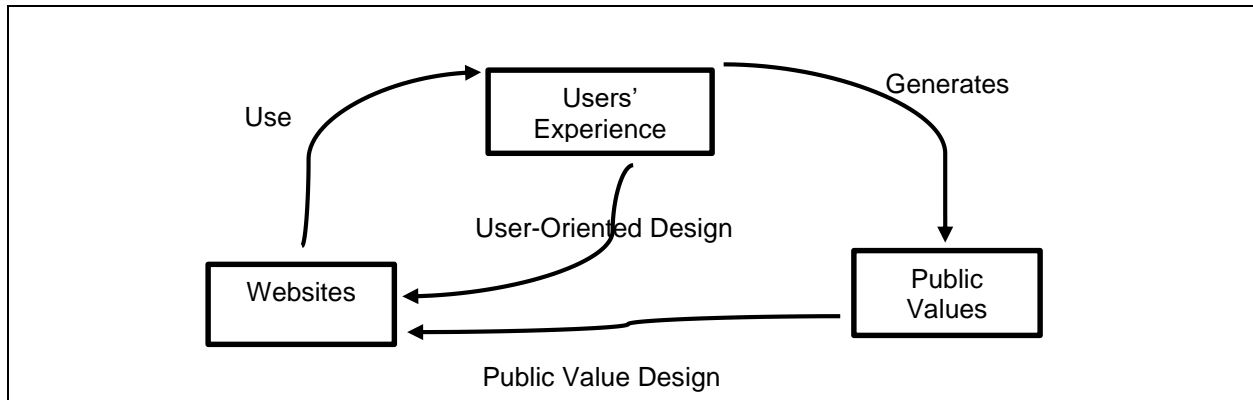


Figure 2.2 : Websites, Users and Public Value Relations (Karkin and Janssen, 2014)

Although the study presents a good attempt to link PV creation to e-government portal design and features, the evaluation criteria are based on the interpretation of the authors; the study uses the website evaluation criteria to assess the public service agencies in Turkey. The study presents a deterministic technology view of e-government and does not assess the PV creation process within an organisational context. The study bypasses the factors which influence how PV design is enacted into websites design where the development of these websites is actioned and implemented by the service delivery teams. Although it studies the role of technology, it only uses meta-analysis of websites as an evaluation framework for users' experience with relation to PV. Websites are only one component of e-government and e-government refers to the use of ICT technologies in public service delivery, as shown in section 2.1.

The last study which attempted to analyse how e-government enables PV creation was conducted by Luna-Reyes et al. (2017). They presented a structured casualty model based on a quantitative survey to assess the relationships between organisational factors (resource availability, infrastructure readiness, presence of laws), technology (ease of use, usefulness, and satisfaction, security, and public value (productivity, cost reduction,

effectiveness, and transparency). The study makes an important contribution to e-government PV studies, and concluded that technology through organisation collaboration is an effective way to create PV. However, the quantitative study does not take into account the perceptions and meanings of these values; it only measures the influence of organisational and technological impact on PV as an outcome. It tests linear hypotheses such as “better institutional arrangement has a positive effect on the technology” or “better institutional arrangements have a positive effect on public value” (Luna-Reyes et al., 2017, p. 2843). It does not list those arrangements nor explain how they impact technology. The study also calls for more research to explore a different form of collaboration to find those arrangements which have a better impact on the generated value.

The complexity of stakeholders involved in the creation process may require a holistic investigation which attempts to determine how service provider actors perceive e-government can deliver PV as a service provider and how citizens realise these values through the same technology as a service beneficiary. Rose et al. (2015) and Ha (2016) call for an all-rounded and comprehensive framework to better understand the complexity of the phenomenon and capture all dimensions related to PV creation. Therefore, holistic, in-depth research of e-government-enabled PV creation is required to better understand the link between e-government as technology, organisational dimensions and citizens. Having discussed e-government and PV research, the next section reviews the e-government and PV research in the Sultanate of Oman.

## 2.6 Oman E-government Research

Few studies have published research on Oman e-government. Using searches of Scopus, Science Direct and Google Scholar databases with variations of e-government keywords (e-gov, e-service, e-government, digitisation, electronic services, digital transformation), in the context of Oman, 23 publications were retrieved as shown in Table 2.9. The analysis concentrated on publications related specifically to e-government in the public sector. Hence, e-commerce and e-banking publications were beyond the analysis scope. Four of the studies investigated e-government quality in Oman (Abanumy et al. 2009; Sharma et al., 2013; Sharma et al., 2014; Sharma 2015) while 16 publications focused on e-government implementation, adoption, and success factors for project implementation. Clearly, PV has received little attention. Hence, literature reviews show that there is a lack of e-government studies in Oman and more specifically, in e-government PV; existing studies still focus on e-government adoption and diffusion.

| Subjects                                   | Number of publications | References  |
|--|------------------------|---|
| E-service Quality and Delivery             | 5                      | Abanumy et al. (2009); Chatfield and Alhujran (2009); Sharma et al. (2013); Sharma et al. (2014); Sharma (2015)   |
| E-government implementation and adoption   | 16                     | Reffat (2003); Al-Adawi et al. (2005); AlShihi (2005); Albusaidy and Weerakkody (2008); Naqvi and Al-Shihi (2009); Al-Busaidy and Weerakkody (2009); Abri et al. (2009); Al-Gharbi and Al-Kindi (2010); Al-Azri et al. (2010); Al-Busaidy and Weerakkody (2010); Al-Busaidy (2010); Al-Busaidy and Weerakkody (2011); Al-Busaidy and El-Haddadeh (2011); Omari (2013); Al-Mamari et al. (2013); Sarrayrih and Sriram (2015) |
| Government Strategy & Knowledge Management | 1                      | Deakins et al. (2010)   |
| M-Government                               | 1                      | Naqvi et al. (2011)   |

## 2.7 Chapter Summary

The literature review has explored the position of e-government value and its alignment with public administration evolution. Public value is seen as a shift in the e-government paradigm, which balances the benefits realised by all stakeholders; introduces new benefits, especially public benefits, such as transparency and fairness. Although the PV definition is a debatable topic, it has redefined e-government definition, quality, and performance measures leading to more comprehensive success definitions. The success of e-government is not limited to economic gains, such as time and cost saving; it also includes citizens' PV. However, empirical studies reveal that creating PV through e-government is still under-researched. The literature still lacks conceptual frameworks for explaining PV created from e-government. Existing studies concentrate on PV as a performance framework to assess service quality. These studies have, therefore, failed to provide a comprehensive framework to understand how an organisation can create PV. In addition, most of the existing studies adopt a native public administration framework without attempting to explore the role of technology as a separate dimension. It does not explain how technology can specifically enable PV creation. To fill some of the knowledge gaps in the e-government literature, this study aims to understand the creation process of PV through e-government. Chapter 3 explores the existing PV frameworks and investigates how to integrate the technology dimension with the most suitable theoretical lens to understand how e-government enable PV creation.



### **3. Theoretical Framework**

Chapter 2 presented an overview of public administration (PA) and e-government research domains. The evolution of PA and e-government coincides because e-government is an electronic form of PA. Public value (PV), as the latest paradigm, brings more depth to both research domains. Having reviewed the literature on e-government and PV paradigms and how the evolution of these two research domains have affected each other, this chapter reviews relevant theoretical frameworks and presents the conceptual model appropriate for the objectives of this study. The chapter starts by reviewing existing frameworks in the field of PV and e-government PVs. The chapter then presents the rationale for the chosen theoretical lens and explains how this framework is suitable to answer the research questions.

#### **3.1 PV Models**

This section highlights pioneer frameworks developed for PV. Most PV and e-government PV studies and frameworks are rooted in Moore (1995), Kelly et al. (2002), or Jørgensen and Bozeman (2007) as noted by Williams and Shearer (2011). Literature reviews of these foundation PV frameworks are presented in subsections 3.1.1 to 3.1.3 below.

##### **3.1.1 PV Strategic Triangle**

When it comes to understanding how PV might be created, Moore's (1995) triangle is perhaps the most famous framework for understanding PV creation (Williams and Shearer, 2011). Many other studies base their PV theory on the strategic triangle (e.g. Benington, 2011; Bannister and Connolly, 2014; Zhang et al., 2015).

Moore's idea of PV was an attempt to address gaps in strategic management research (Williams and Shearer, 2011). Moore found that the existing strategic management research was highly influenced by private sector concepts such as customer orientation and the use of private sector performance measurement frameworks (Moore, 1995). Thus, Moore (1995) positioned PV as a strategic management concept. The strategic PV triangle explains how decision-making processes in the public sector can facilitate the creation of PV through the interaction of three dimensions: the authorising environment, the operational capabilities, and the PV outcomes (Benington and Moore, 2011). The triangle is developed to ensure that decision-makers can answer three key questions relating to public service initiatives: 1) is it legitimate and politically acceptable?, 2) is it operationally feasible?, and, perhaps most importantly, 3) is its purpose publicly valuable? In so doing, the framework helps to ensure that the lines of accountability between all stakeholders are understood: *"upwards through institutional and political structures, downwards through management and operational lines, and outwards to the public"* (Williams and Shearer, 2011, p. 1372). The framework should support public managers in assessing their strategies for the creation of PV from the three dimensions described below:

- 1- Legitimacy and Support: The strategy should consider sourcing the legitimacy and support primarily from individuals and groups involved in the formal decision making (politician, senior public manager and the electorate who represent society in democratic states).
- 2- Operational Capability: describes the means that the organisation can provide to achieve and enhance public values.
- 3- Public Value: The strategy should aim to achieve values which are considered valuable by the citizens and society in general and not only the organisation.

If, as argued earlier, the aim of PV is “providing services directed towards the public good” (Rose et al. 2014, p. 539), then a fundamental question to be asked is who should be the judge and arbiter of what services the public need (Williams and Shearer, 2011). In his initial analysis, Moore (1995) argued that public service managers are the judge for PV because they are responsible for the provision of the services. He reasoned this to the fact that “political decision-making is vulnerable to many different kinds of corruption” (Moore, 1995, p. 54). This is criticised for casting the public managers as the “platonic guardians and arbiters of the public interest” (Rhodes and Wanna, 2007, p. 412), and thus it disturbs the norms of democratic societies (Rhodes and Wanna, 2009). They criticise Moore’s framework for inventing roles for public servants for which they are not appointed, are ill-suited, inadequately prepared and, more importantly, not protected if things go wrong” (Rhodes and Wanna, 2009, p. 161). In a later work, Moore admitted that “the proper arbiter of public value is society” (Benington and Moore, 2011, p. 10). Moore also recognises that it was inappropriate for public services providers to make assumptions, on behalf of the citizens, about the PV inherent in the services that they receive (Moore, 2014). Consequently, Moore (2014, p. 465) argues the best adjudicator of the success of this endeavour is the collective public who are the multitude of individuals who constitute society, and in democratic societies, the electorate.

The key arbiter of PV creation critique is about administration and politics dichotomy and specifically, public managers’ involvement in politics (Dahl et al., 2014; Hartley et al., 2015). Dahl et al. (2014) believe that Moore and others were right to give accountability to public managers because the creation of PV depends on how they engage the political process. Moreover, Hartley et al. (2015, p. 195) concluded from their empirical research

in Australia, New Zealand, and the UK that *political astuteness* is a required characteristic for public service managers to be able to create PV because they need to “maintain allegiance to democratic principles.” That is, public service managers need *political astuteness* to be able to influence external decision-makers, shape key priorities within the organisation, influence politicians, allocate required resources, and manage risks. Thus, these authors see assigning the accountability of creating PV to public managers as an opportunity “to be doubly adept in dealing with their political environment engaging in politics, but simultaneously not crossing the line too far into overtly partisan behaviour” (Hartley et al., 2015, p. 209). A recent publication also sided with the critics highlighting that using the term *public* as a whole is wrong and does not advance the theory of PV because of two concerns: 1) “introduces a mysterious and incoherent basis for public decision making”, and 2) “forecloses exploration of the limits to policy that arise from the reactions of a heterogeneous public” (Prebble, 2018, p. 104).

Moore’s framework has been criticised for being abstract and unclear. Rhodes and Wanna (2007) pointed out the issue of diverse interpretation within PV; normative or an empirical theory. Meynhardt (2009, p. 195) argued that “Moore is unclear whether he offers a theoretical framework, a concept, a heuristic device, or an operational tool of management”. Alford and O’Flynn (2009, p. 175) noted that “Moore has never focused on just being empirical or just being normative: he has clearly stated that he is attempting to do both.” Moore’s strategic triangle was aimed at public managers and was not meant to be for academic researchers (Alford and O’Flynn, 2009). Colebatch (2010) also argues that Moore’s definition of public servants did not necessarily refer to the public managers.

Moreover, Moore's approach has been criticised for its unsuitability in a parliamentary system. Rhodes and Wanna (2007) argue that Moore's framework could work in an American government but not in other political systems which have dominant hierarchies of control. They argue that the framework is "less relevant in parliamentary systems with dominant hierarchies of control, the stronger role of ministers and tight authorising regimes underpinned by the disciplined two-party system (Rhodes and Wanna 2007, p. 407). Interestingly, Moore's PV approach was mostly seen as a success in Australia, New Zealand and the UK than in the US (O'Flynn, 2007; Alford and O'Flynn, 2009). These findings are in line with Smith's argument that Moore's framework "could apply in Westminster as well as Washington" (Smith, 2004, p.79). Colebatch (2010) argues that Rhodes and Wanna criticisms are centred around their misunderstanding of Moore's framework and were influenced by their argument about public service managers playing the role of platonic guardians of PV. However, Jacobs (2014) finds this too idealistic in the US context; he argues that PV is not adequate in the context of the US where achieving legitimacy and support is challenged by competition for political power. In his defence, he reasoned that challenges to the organised groups and government fragmentation favour narrow interests and discourage the social benefits expected by Moore. He also argues that the multiple and competing opinions and beliefs disrupt the societal consensus around PVs.

Lastly, the framework is considered a significant contribution to the theory of management (Grimsley and Meehan, 2007; O'Flynn, 2007; Alford and O'Flynn, 2009; Colebatch, 2010; Williams and Shearer, 2011; Bryson et al., 2017). Bryson et al. (2017) argue that the strategic triangle has proven to be effective and useful as a heuristic guide to highlight

the missing part of value generation and refocusing on public benefits and interest in both the public and business sectors. However, few empirical studies have been conducted on its accuracy and effectiveness in practice (Williams and Shearer, 2011; Hartley et al., 2015; Bryson et al., 2017).

### **3.1.2 UK Work Foundation PV**

Another PVs framework was introduced by Kelly et al. in 2002 by the UK's Work Foundation. Kelly et al. (2002) define PV as what the public values and hence is willing to make sacrifices in terms of money or freedom to achieve. The framework differs from Moore's dimensions for PV (Grimsley and Meehan, 2007; Williams and Shearer, 2011). They suggest three dimensions which are more related to service quality and outcome: Service, Outcome, and Trust.

- 1- Service: Grimsley and Meehan (2007) define service as meeting what clients need, and does not directly engage all citizens as the benefits are realised by those clients who directly seek the service.
- 2- Outcome: Differs from service as it has a broad definition and its impact reaches clients as well as citizens. Examples of direct outcome are high employment, health, wellbeing.
- 3- Trust: One of the most challenging definitions as it is a bi-directional dimension that is influenced by other factors, such as economic condition and political stability, and it can always impact PVs creation (Williams and Shearer, 2011). Trust is seen as an important measure of PV (Kelly et al., 2002; Bannister and Connolly, 2011; Harrison et al., 2012).

This framework aims to measure the benefits which result from government action (Alford and O'Flynn, 2009). Mahdon (2006) notes that the UK Work Foundation enhanced the framework by adding the phases through which PV gets produced: creation, authorisation, and measurement. The modified framework emphasises citizens as “a key part of the authorising environment and must be engaged in the public value process” (Mahdon, 2006, p. 9). Nevertheless, Williams and Shearer (2011, p. 1372) criticise this framework for being “reductive” because it overshadows the decision-making process. The framework is also criticised for not highlighting the societal influence and position of the “public as either passive recipients of public goods or consumers in a quasi-market” (Williams and Shearer, 2011, p. 1374). In addition, the framework “focuses on the way in which factors may be mutually reinforcing or in tension” as described by Grimsley and Meehan (2007, p. 138), hence, it does not show how the creation process takes place. E-government PV studies show this framework is widely used in e-government PV research, but mostly as a performance measurement framework (Kearns, 2004; Grimsley and Meehan 2007; Omar et al., 2011; Bai, 2013).

### **3.1.3 Public Values Inventory**

Jørgensen and Bozeman (2007) developed a set of broader values which resulted in seven ‘constellations’ structured around the framework of ‘*public values universe*’: the society, politicians, public administration, internal functions, the environment, citizens as users and customers. The inventory presents 72 PVs which show the “overall impression of the scope of public values”, which is an advantage in the authors opinion (Jørgensen

and Bozeman, 2007). Moreover, they claim that having a set of values makes it easier to understand perceptions and identify new PVs related to the prime values. The constellation of citizens can be taken as an example to explain this inventory structure. Public values, such as legality and equity, are considered 'nodal values' for citizen's PVs. Reasonableness, fairness, and professionalism are considered sub-branches of equity as they are closely related. The authors also list professionalism as part of the accountability set, which is positioned around the public employees. Hence, these values can exist in more than one set.

Public value inventory is based on a specific context: USA, UK, and Scandinavian countries (Van der Wal et al., 2013). Jørgensen and Bozeman (2007) admit that stripping these values out of its context and history can be a disadvantage as their weights might vary contextually. The study presented a bank of PVs which can be used as a reference when evaluating citizens' perceptions of PV. However, the inventory is only informative once it is contextualised as Bozeman himself argues: "The problem is not finding public values but understanding them in some analytical useful form" (Bozeman, 2007, p. 142). Moreover, other studies have different classifications and hierarchies, such as Kernaghan (2003) who presented four main categories for PVs: ethical, democratic, professional, and people. Thus, a hierarchy of the identified PVs is drawn based on the meaning and perception human actors associate with them. In addition, these classifications tend to duplicate the values within different categories, such as fairness being placed under ethical and people values. While this can be true, it can create duplication when analysing these values at the prime level (Williams and Shearer, 2011).



### **3.2 Model Selection Rationale**

Before presenting the best model to assess how e-government creates PV, it is important to recall the major challenges and gaps in e-government PV research. Chapter 2 highlighted the focus on using PV as a performance measurement framework (Kearn, 2004; Omar et al., 2011; Karunasena and Deng, 2012) and the lack of research investigating how e-government PV is created as a process. It also highlighted the narrow perspective of most studies, which usually focus on one dimension of e-government. Another gap was the lack of studies addressing the role of technology in the creation process. To fill this void, this research aims to understand how e-government enables PV creation.

The three known PV models focus on different domains as shown in Table 3.1. While Moore's (1995) model aims to explain how the creation of PV takes place, the models of Kelly et al. (2002) and Jørgensen and Bozeman (2007) pay less attention to the actual creation process. The model of Kelly et al. places more emphasis on service quality and trust, which influence the creation process. The emphasis of the Public Values Inventory model is on identifying the list of PVs and the relationships between these values. The researcher finds Moore's framework closely linked with the research objective. Hence, Moore's PV Strategic Triangle is chosen because of its focus on the PV creation process and being inclusive of both utilitarian and deontological values. It allows the researcher to examine the stakeholders involved in the creation process. Moore presents a balanced framework which combines both inputs, output and outcome in one model. Hence, it allows the researcher to investigate the PV creation process across all dimensions and

not only focus on one aspect of e-government (input, output, or outcome). Moore's (1995) model is relevant to the study of e-government PV creation, as it can help the researcher understand the key dimensions in the creation process. However, Moore's model buries technology and ICT dimensions within the operational capability dimension (Moore, 1995). This could justify the rare investigation of the role of technological features and designs in e-government PV research. To have a better understanding of the role of ICT in the creation process, Moore's Strategic Triangle is extended by positioning the technology dimension of e-government as a separate dimension, as explained in section 3.3 below.

| Model                   | Key dimensions  | Focus  | Source                       |
|-------------------------|---|--|------------------------------|
| PV Strategic Triangle   | Authorising Environment, Operational Capability, and Public Value                                 | Focus on the key input of the PV creation process.                               | Moore (1995, 2013)           |
| UK Work Foundation PV   | Service, Outcome, and Trust   | Focus on service quality as a mean to create PV                                  | Kelly et al., (2002)         |
| Public Values Inventory | Seven categorisation of different types of public values (Ethical, professional, legal, and etc.) | Focus on identifying the individual list of public values and categorising them. | Jørgensen and Bozeman (2007) |

### 3.3 Extending the PV Strategic Triangle

While Moore and Benington (2011) identify technology as an integral part of operational capability, existing research tends to ignore the technological components. Most review studies on e-government PV use native public administration theory (Grimsley and Meehan, 2007; Karunasena and Deng, 2012; Karkin and Janssen, 2014; Rose et al.,

2015) with the exception of Omar et al. (2011) who integrated the PV framework of Kelly et al. (2002) and the IS Success Model and only focuses on service quality dimensions and outcomes. These studies do not explain the role of technology in the e-government PV creation process. Therefore, this research aims to uncover the role of technology in the PV creation process and overcome the narrow, one-sided analysis shown in the literature review.

E-government processes are represented by human actors and institutional properties while their outputs can be observed through e-government portals and websites. E-government outcomes are analysed by examining its benefits and values as perceived by citizens. Hence, it is important to use a model which enables a more sophisticated understanding of the role of e-government in the creation of PV across all stakeholders. The research framework needs to be broad enough to encompass all actors involved in PV creation, especially human and technology actors. Therefore, Moore's PV Strategic Triangle is extended by positioning the ICT dimensions of e-government as a separate dimension. In doing so, an e-government PV model is developed with four main dimensions: authorising environment, operational capability, e-government technological design and features, and public value. These dimensions are presented in subsection 3.3.1 below.

### **3.3.1 E-government PV Triangle**

As mentioned earlier, Moore's PV Strategic Triangle (Moore, 1995; 2011; 2014) contains three components as shown in Figure 3.1. The triangle is an attempt to align three interdependent processes (Benington and Moore, 2011) and therefore, shows

bidirectional arrows between the three components. The abstraction criticism of the framework was discussed in Section 3.1.1, but this study considers the abstraction as an opportunity to better understand the individual tasks within each component. The high level of abstraction allows the data to tell the story and explore the individual activities which take place to create e-government PV. Therefore, the developed model at the end of this section is used to synthesise and analyse how e-government can create PV in a context different to developed countries. It is also envisaged that the developed model allows the study to identify the appropriate research methodology and methods for data collection, as explained in more detail in Chapter 4. Benington and Moore (2011) have elaborated and presented different approaches to PV creation in different PA fields, for example, education, health, social policy, and finance. Moore (2013) presented a list of details of each dimension and a general form of *Public Value Scorecard*, where “each of the particular categories would have to be examined for relevance in a particular circumstance, and concrete measures would have to be developed” (Moore, 2013, p. 109). These detailed components of each dimension varied from one case to another (Moore, 2013). These dimensions are discussed in more detail below.

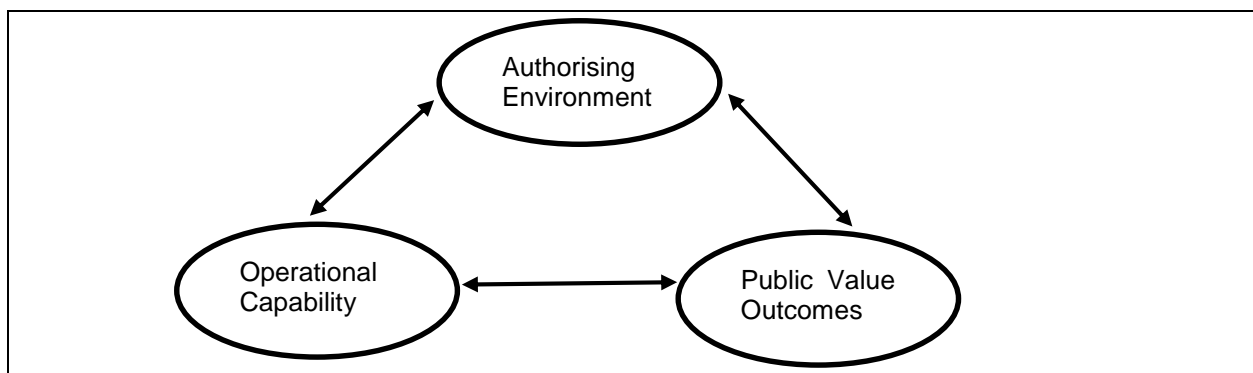


Figure 3.1: Moore's PV Strategic Triangle (Moore, 1995)

## ***Authorising Environment***

Moore (2013) defines the authorising environment as what gives legitimacy and support to the creation of PV. Moore (2013) also highlights the source of the legitimacy and support which public managers rely on and the sustainability of these sources. Two strategic principles are critical when creating PV. The first is legitimation which creates PV by aiming “convincingly at creating publicly valuable value” (Benington and Moore, 2011, p. 5). The second strategic principle of the authorising environment is that it should have “sufficient authorisation and be politically sustainable” (Benington and Moore, 2011, p. 5).

The framework focuses specifically on the human agents who enact these organisational processes and activities, particularly the authorising environment and operational capability. The authorising environment is run by different actors, including politicians, chief executives, lawyers, and public service managers, who are tasked with enforcing laws, policies, and regulations, relating to the delivery of PV. These actors play different roles throughout the service lifecycle, as presented in Table 3.2. They collectively make the authorising environment for PV creation in a democratic context (Moore, 2013).

Table 3.2: Authorising Environment Groups (adapted from Moore, 2013, p. 115)

| <b>Actor Group</b> | <b>Definition</b>   | <b>Involvement</b>                  |
|--------------------|---|-------------------------------------|
| Public Managers    | Chief elected executive, Political appointee, Senior civil servants | Implementation/ post-implementation |
| Formal Overseers   | Courts, Legislators, Budget Office, Personnel Office                | Implementation/ post-implementation |
| Informal Overseers | Interest Groups, Media  | Implementation/ post-implementation |
| Citizens           | Voters and Tax Payers   | Implementation                      |
| Clients            | Beneficiaries Obligates   | post-implementation                 |

The literature review on the PV authorising environment presents three challenges related to the authorising environment: authorising environment complexity, applicability in the political system, and the key arbiter of PV creation. The authorising environment is a complex dimension because of the different agents involved in the accountability of the PV creation, as shown in Table 3.1 (Moore, 2013, Bryson et al., 2017). Moore (2013) also argues that authorising environment complexity is due to the difficulty of having a common public interest for all the PV authorisers. It gets more complicated with changes in political and social conditions throughout time or *dynamism*, which could lead to value shift over time (Moore, 2013; Rosenbloom, 2017; Fukumoto and Bozeman, 2018). However, this description of the authorising environment is mostly adapted to established democracies which have different political and social characteristics from emerging or no democratic contexts. There is also a debate about the suitability of the strategic triangle in established democracies. While O’Flynn (2007), Alford and O’Flynn (2009), and Colebatch (2010) find it suitable, Rhodes and Wanna (2007) find it irrelevant in Westminster Government. Hence, it is important to understand how an authorising environment for PV creation is achieved in different contexts, as suggested by Bryson et al. (2015; 2017). The third

debate is about who is best to judge what constitutes a PV. There are two schools of thought where the first school recommends that public managers make the call (Moore, 1995; Dahl et al., 2014; Hartley et al., 2015; Prebble, 2018). The second school argue that giving public managers such tasks is against democratic practices, and this should be left to the public (Rhodes and Wanna, 2009; Benington and Moore 2011; Moore, 2013; Moore, 2014).

Giving the ongoing debate on the three elements related to the authorising environment for PV creation, and the focus of the debate in established democracies, PV research can benefit from studying how PV is created in a different context. Hence, understanding how the authorising environment is constructed and achieved in an emerging democracy with a different political system may contribute to the ongoing debate.

### ***Operational Capability***

The operational capability is also managed and operationalised by a wide variety of governmental managers, service operatives, software designers and technicians, who are tasked with delivering PV through the effective operation of e-governmental systems, and who influence the different perceptions of the created PVs. Moore's definition of the operational capability refers to the policies, procedures, programmes which are used to create PV (Moore, 2013). In his PV balance scorecard, he argues that the link between the authorising environment is made using public policies and engagement with citizens to co-produce PV. Moore (2013) presented different practical examples of cases where the PV was created. In those examples, different operational capacities were observed. They were mainly related to the flow of resources to enterprise, human resources,

operational policies, programmes, procedures, quality of outputs, and media coverage. In an attempt to operationalise PV creation, Moore (2013) presented a PV chain, as shown in Figure 3.2. In this model, the authorising environment is represented by public authority, public money and public spirit. The authorising environment influences the organisation capabilities and co-production (organised and individual). Through services, obligation, and social pressure, clients would compose a level of satisfaction, which would influence the created PV as an outcome.

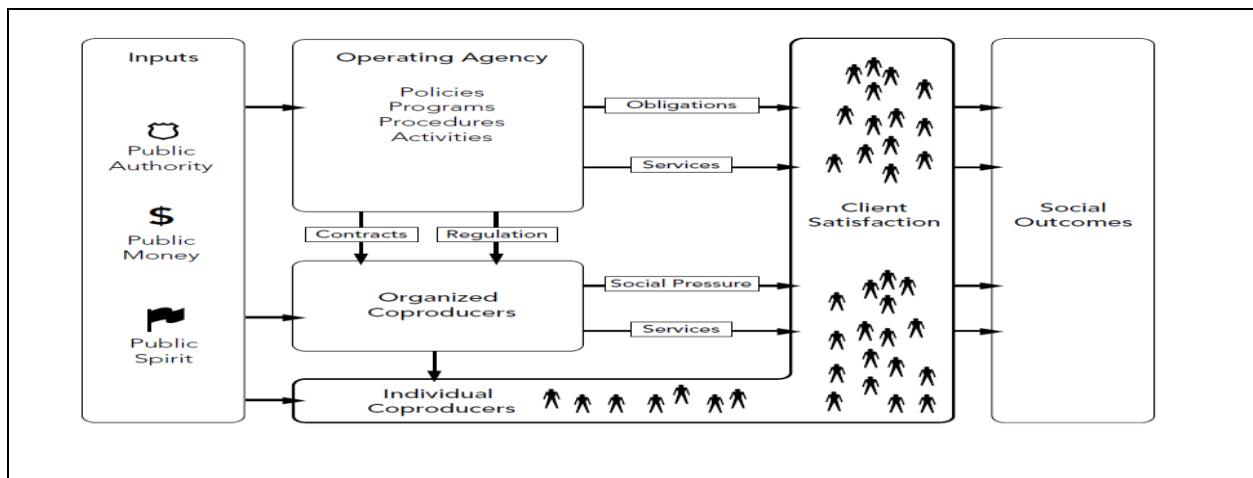


Figure 3.2: Public Value Chain with Individuals (Moore, 2013, p. 266)

Strategic PV publications focus on listing and identifying the operational capabilities which enable the organisation to co-create PV, e.g. policies, processes, procedures, human and financial resources, and organisational outputs (Moore, 1995; 2013). Engagement is recognised as the link between the operational capability and citizens to develop the role of citizens as a co-producer in the creation process (Moore, 2013). Organisational culture is also seen as one of the critical capacities which enable PV creation. Moore (2013) argues that creating an organisational culture turns the organisation into a learning organisation which fosters continuous improvement. Identifying these capacities is



needed, but one of the recent strategic triangle critics argues that the triangle is silent on the kinds of practices required to produce PV (Bryson et al., 2017). Their study presents an extended model for the PV triangle where the operational capability is extended to two dimensions, practices and capabilities, as shown in Figure 3.3.

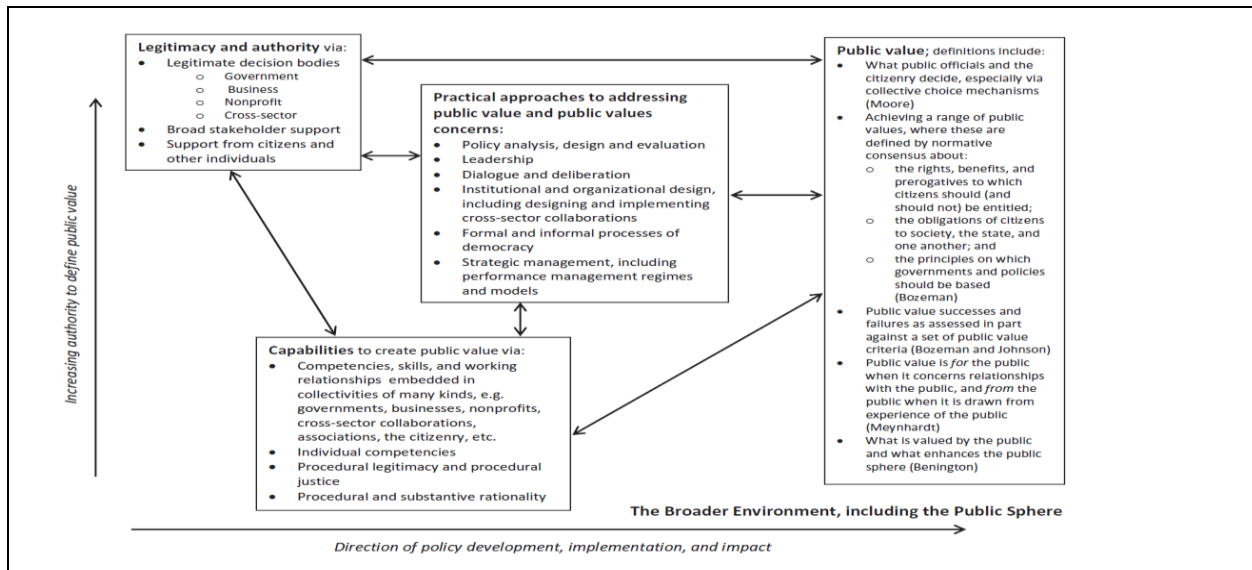


Figure 3.3: Public Value Governance Triangle (Bryson et al., 2017, p. 644)

Existing studies call for alignment of these capabilities with other dimensions to maximise the creation of PV (Moore, 1995; 2013; Bryson et al., 2017). They do not explain how these organisation capabilities are managed to produce PV. Having these capabilities does not guarantee its positive impact in the creation process. Therefore, the study of Bryson et al. (2017) concludes with a few questions for future research to advance the understanding of the role of operational capabilities and practices of PV creation:

- 1- *How best can the elements of the expanded strategic triangle be operationalised?*
- 2- *What is the best mechanism to map public value processes?*
- 3- *How can the co-production process be used to create public value?*

These questions suggest that future research needs to enable public service managers to understand how to align their operational capabilities. This study considers the above questions an important enquiry to advance PV creation, and hence it aims to investigate how the organisational practices and capabilities can be managed and operationalised to produce PV in an emerging democracy context.

### ***E-government Technological Design and Functions***

The review of e-government PV studies shows that the role of technology in the creation process is understudied. Although a few studies have investigated the role of technology in the PV creation process (Grimsley and Meehan, 2007; Karkin and Janssen, 2014, Luna-Reyes et al., 2017), they still do not explain how technology enables PV creation or how PV is incorporated into a technical design. This study aims to understand the role of technology in the creation process and will focus on the role of technology as an enabler in the creation process.

While Benington and Moore (2011) identify technology as an integral part of operational capability, this research intends to extract the technological capabilities, and treat e-government services as a standalone dimension to emphasise the influential role of technology. As most reviewed studies on e-government PV use native public administration theory (e.g. Grimsley and Meehan, 2007; Karunasena and Deng, 2012; Karkin and Janssen, 2014; Rose et al., 2015), this research aims to utilise another theory which uncovers the role of technology in the PV creation process and overcomes the narrow, one-sided analysis shown in the literature review.

As well as enabling the delivery of PV, the human agency elements of the authorising environment and operational capability elements are also in a recursive relationship with the e-government technologies. During their development, the design of the electronic services is likely to be shaped by the decisions and actions of human actors who are charged with ensuring that the technology is legitimate and politically acceptable, and also by those who are responsible for ensuring its operational feasibility, and ultimately its delivery. The changes in the design and features of these technological artefacts may influence e-government PV perceptions. Tracing the interplay between the authorising environment, the operational capabilities, and available technology artefacts enables a better understanding of what shapes the created e-government PVs.

Human actors and institutional properties represent e-government processes while their outputs can be observed through e-government portals and website designs and features. E-government outcomes are analysed by examining its benefits and values as perceived by citizens. Hence, it is important to use a theory which enables a more sophisticated understanding of the role of e-government in the creation of PV. The research framework needs to be broad enough to encompass all actors involved in PV creation, especially human and technology actors. Thus, it is important to position the researcher view on existing ontologies for technology, human, and organisation studies, as explained in the next subsection.

### ***IS Theories Schools***

It has been agreed that Information Technology (IT) is the great agent of change in the last century (Iyamu and Roode, 2010; Heeks and Stanforth, 2015). However, there is

debate about “the nature of the relationship” (Doherty et al., 2006, p. 570). Table 3.3 summarises the major perspectives on technology impact and organisational change. Orlikowski (2009) summarises these schools into four views: absent presence, exogenous force, emergent process, and entanglement in practice. The first three views represent the three schools introduced by DeSanctis and Poole (1994). *Absent presence* is similar to the institutional school which treats technology as a black box, and hence, it has been criticised for ignoring the role of technology (DeSanctis and Poole, 1994; Orlikowski, 2009). Similar to the decision-making school, *exogenous force* uses the technology determinism approach to investigate the role of technology and ignoring the role of human, history and social context (DeSanctis and Poole, 1994; Orlikowski, 2009). The social technology school referred to as *emergent process* by Orlikowski (2009) believes in the importance of both technology and social structure in shaping the outcome which aims to understand how “work practices and social structures mediate and are mediated by engagement with the new technology” (Orlikowski, 2009, p. 132). Nonetheless, this view was criticised by Orlikowski (2009, p. 133) for giving “ontological priority” to humans, which can lead to “side-lining of the physical characteristics and capabilities” within technology.

The last school is relatively new, and was influenced by the development of actor-network theory (ANT), which was introduced in 1986 by the sociologist Michel Callon (Greenhalgh and Stones, 2010). It is considered the most influential theory in establishing the ‘*sociomateriality*’ school (Orlikowski, 2009). The theory treats humans and technology as an equal entity and focuses on merged results from having people and things as actors. It recognises the role of non-human actors and focuses on how people and things can

dissolve and form a new product using a process of ‘*translation*’ (Orlikowski, 2009; Greenhalgh and Stones, 2010). Besides establishing the role of non-human agents, ANT introduces a lens for studying the unintended outcomes of technology projects (Greenhalgh and Stones, 2010). However, the theory does not emphasise the importance of social structure because its “flat ontology” rejects the sources of institutional power and gives equal weight to all actors (Greenhalgh and Stones, 2010, p. 1287). Thus, ‘*sociomateriality*’ does not fit the objectives of the research because of its flat ontology on the role of human and technology.

It is clear that technology is overplayed in a decision-making school and underplayed in an institutional school. Consequently, the social technology school was chosen for this research because it is rooted in the importance of social structure and acknowledges the role of human agents which is critical in the creation of PV (Moore, 1995; 2014). This research also seeks to assess the PV created through e-government, and Barbosa et al. (2013) note that failure to consider the social context of e-government can lead to limited analysis.

Table 3.3: Major Schools on Impact of Technology (adapted from DeSanctis and Poole, 1994; Orlikowski, 2009)

| School of Technology Impact                    | Characteristics   | Example Theories  | Rationale   |
|--|---|---|---|
| Decision-Making School<br>( <i>Exogenous</i> ) | Cantered on technology determinism and focuses on technology property. It is known for a positive approach and use of cross-sectional research design | Decision Theory<br>Task-Technology Fit<br>Garbage Can Model | Technology property plays an important role in its outcome. |
| Social Technology School                       | Focus on technology and social structure. It uses a mixed approach: Positive  | Sociotechnical System Theory                                | Technology and social structure both play an important role |

|  |  |   |   |
|--|--|---|---|
| <i>(Emergent Process)</i>                                    | and interpretive, and concentrates on outcome studies.   | Structural Symbolic Interaction<br>Barely Application of Structuration Theory<br>Duality of Technology<br>Adaptive Structuration Theory | in shaping the outcome, but they are separate realities   |
| Institutional School<br><i>(absent presence)</i>             | Focus on social structure within the human institution. It underplays the role of technology. It mostly uses interpretive approach and process-oriented methods. | Institutional Theory<br>Social Information Processing<br>Symbolic interactions  | Technology is an opportunity for change rather than a cause for change.   |
| Sociomateriality School<br><i>(entanglement in practice)</i> | Uses relational ontology, and it does not treat humans and objects as separate unique realities.   | Actor-Network Theory (ANT)  | Technology and social structure both play a role in shaping the outcome, but they are treated symmetrically equal |

This study uses social technology, specifically the duality of technology. The duality of technology by Orlikowski (1992) has clearly articulated how technology can shape value and is shaped by value. The duality of technology focuses on the use of technology within organisations using dual perspectives and follows principles of the social technology school. Technology switches its position from “in design” phase to “in use” phase; "technology is created and changed by human action, yet it is also used by humans to accomplish some action" (Orlikowski, 1992, p. 405). Technology is interpretively flexible, but this flexibility is controlled by: ‘time-space discontinuity’, ‘material characteristics’ of the technology, institutional context, and knowledge of the actors (Jones and Karsten, 2008). The time-space discontinuity can be understood as the gap between the design and post-implementation phases and the different actors involved in shaping the structure of technology. It brings a historical dimension around the evolvement of structure. Interpretive flexibility means that technology can be modified at any point of time through

a change of its design, features, usage, and hence, it explains the unexpected outcomes (Orlikowski, 1992). As shown in Figure 3.4, the model introduces four propositions on the relationships between technology, human actors, and institutional properties.

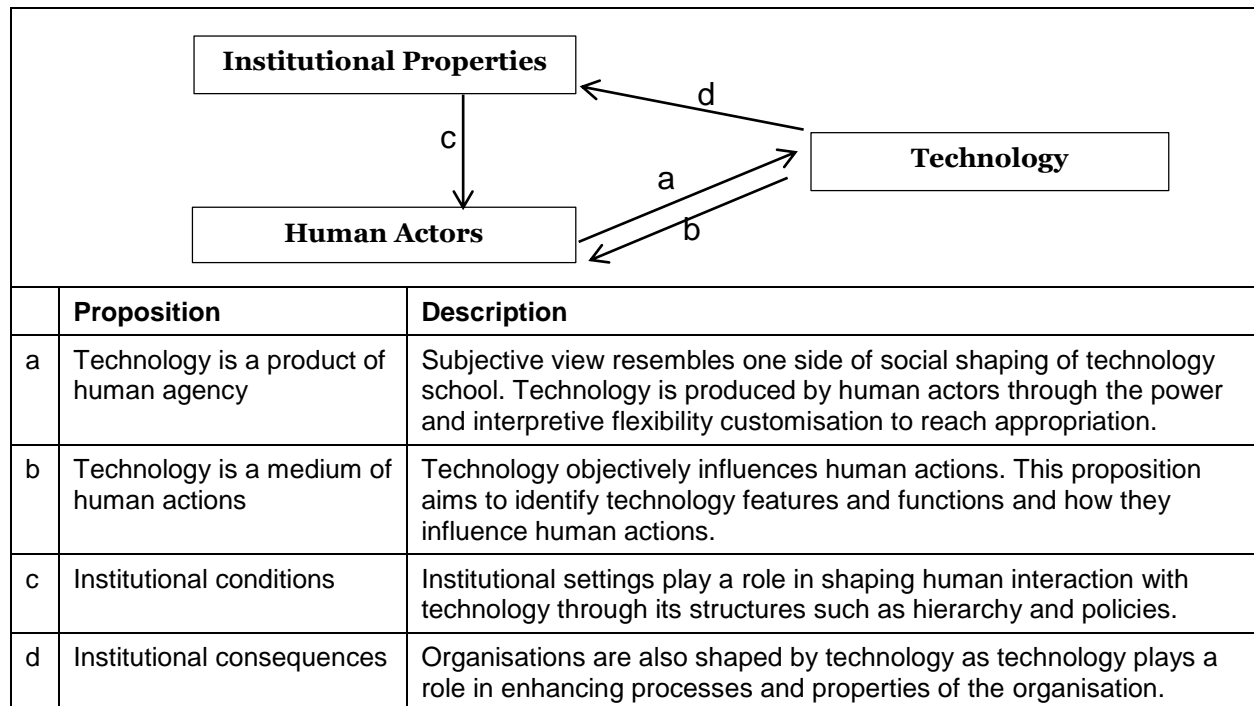


Figure 3.4: The Duality of Technology (adapted from Orlikowski, 1992)

Although the model contribution can be seen in the introduction of technology as an important dimension in the structuration view, it does not utilise the structures introduced by Giddens to establish the link between technology and human actors (Jones and Karsten, 2008). Including technology as a material artefact is considered inconsistent with Giddens' view of structures being nonphysical and inseparable from the human agency (Jones and Karsten, 2008). In response to these critics, Orlikowski (2000) argues that technology structure is enacted rather than appropriated using the term "technology in practice." Orlikowski criticised her own paper arguing that technology structure does not exist in the technology; "technology structures are emergent not embodied" (2000, p.407).

In doing so, Orlikowski introduced enactment model, which is based on Giddens' structures, as shown in Figure 3.5.

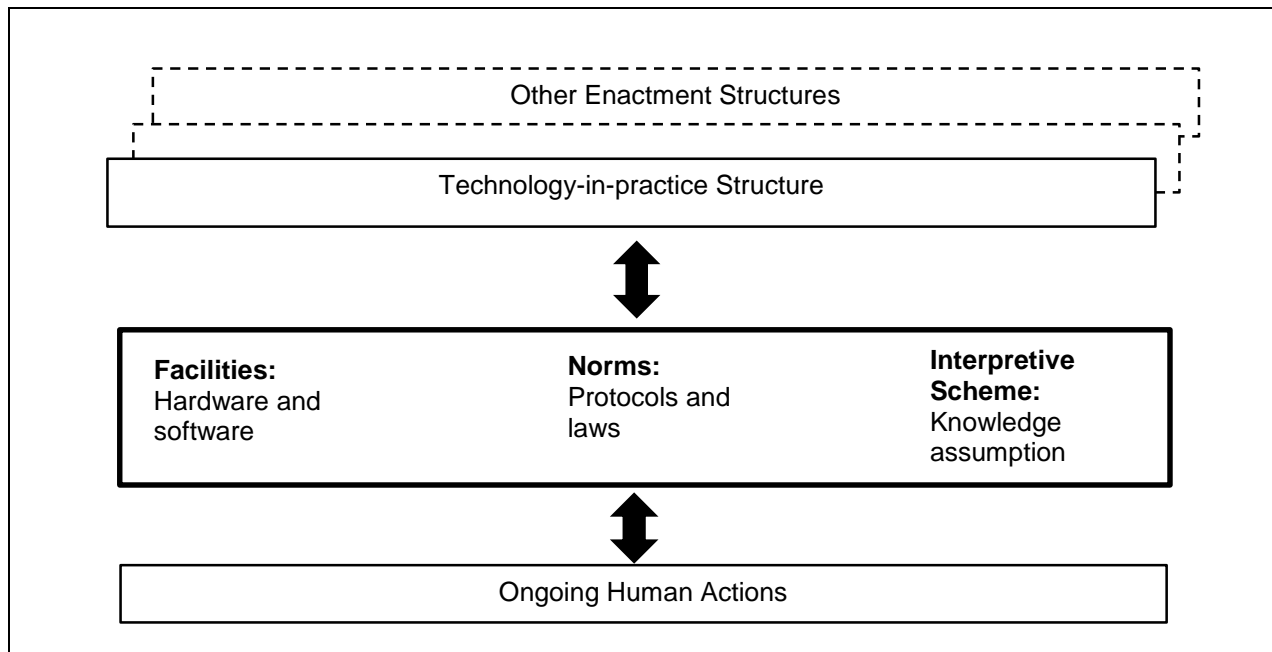


Figure 3.5: Enactment Model (Orlikowski, 2000)

Orlikowski criticised appropriation concepts introduced by (DeSanctis and Poole (1994) refusing the idea of structure being embedded within technology (2000). She introduced the enactment process as a substitute, which means that structures are emergent where actors through their repeated engagement with technology eventually enact a *technology-in-practice* structure. This structure “refers to the specific structure routinely enacted as we use the specific machine, technique, appliance, device, or gadget in recurrent ways in our everyday situated activities” (Orlikowski, 2000, p. 408).

Although the debate on the full usage of Giddens' work may contribute to the IS social technology theories, it does not make the use of the certain structuration concept less



informing (Jones and Karsten, 2008). This study considers the duality of technology because it complements Moore's PV triangle by exploring the role of e-government technology in the creation process. It aligns with Moore's strategic triangle, which focuses on authorising environment and operational capability represented by human actors as key players in PV creation processes. Moreover, the role of time and space in the structuration process adds a chronological dimension to the PV creation process. Thus, the sociotechnical perspective enables the researcher to deepen the understanding of the PV creation process and achieve a holistic investigation of PV creation through e-government lifecycle. The proposition a and b noted in Figure 3.4 introduces a historical perspective into the PV creation process. The understanding of technology as a medium of human actions and a product of human agency allows the researcher to capture data related to technology-in-design and technology-in-use stages. The model allows a deeper understanding of how PV is created through e-government, and hence explains how technology shapes PV as an outcome and vice versa.

### ***E-government Public Value Creation Framework***

This research is interested in studying how e-government technologies shape and are shaped by organisational actors and stakeholders. However, as it is likely that the communities of individuals who are the ultimate end-users of these electronic services are also shaped by, as well as shaping, e-government technology, the study aims to explore these important relationships. This issue is particularly important, as many researchers (e.g. Moore, 1995; Williams and Shearer, 2011; Rutgers, 2015) have noted that PV is co-created by governments and the citizens that they serve. In addition, the PV

dimension is an extremely important element of the study. Communicating with citizens helps in understanding perceptions of PVs from users' perspectives. These perceptions are compared to the organisations perspective to identify possible misalignment, and it may influence the creation of e-government PV. Hence, investigating citizens' perceptions of e-government PV allows the study to contrast these perceptions against the organisations perceptions and analyse the consequences of any perceptual gaps in the meaning of PV and how they are linked with technology artefacts and features.

The research framework, as presented in Figure 3.6, has been designed to help integrate the key recursive features of the sociotechnical lens into Moore's (1995) PV Strategic Triangle. The top half of the framework represents a simplified version of Orlikowski's (1992) duality of technology, highlighting the recursive relationship between human agency and technology, while the bottom portion of the framework presents Moore's (1995) PV triangle. The research framework focuses on the interaction, which takes place between four important dimensions: authorising environment, operating capability, e-government, and PV.

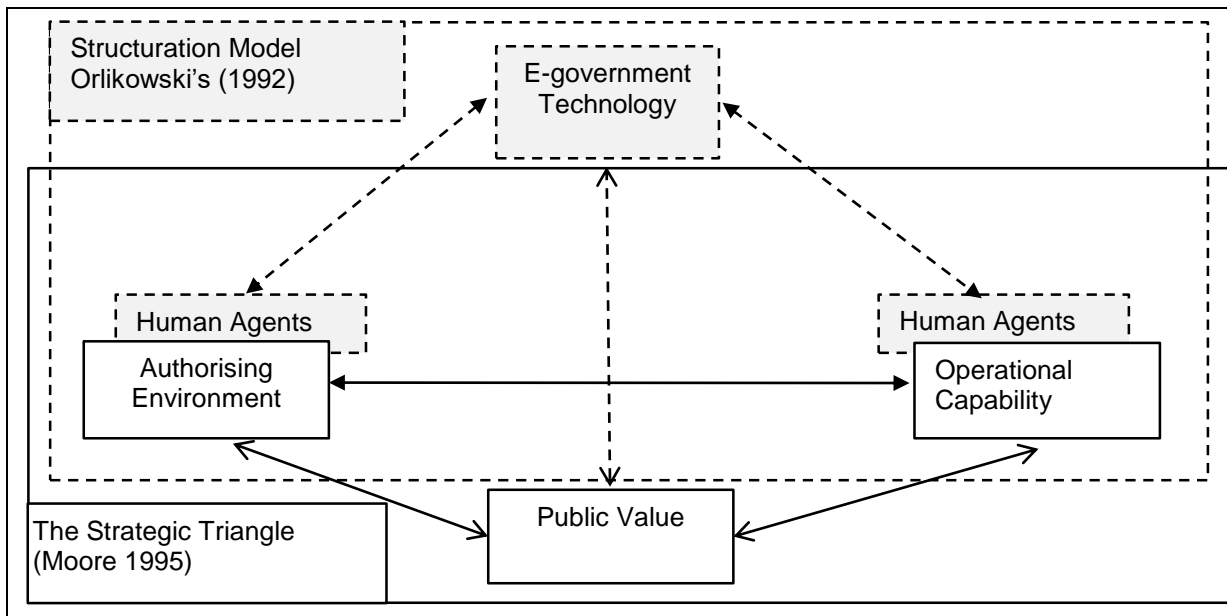


Figure 3.6: E-government Public Value Creation Framework

### 3.4 Chapter Summary

In the previous chapter, the relevant literature was critically reviewed. The review revealed that public value (PV) and e-government have had similar evolutionary paths. The focus in both shifted from efficiency and effectiveness to engagement and citizen-

centred values. Yet, empirical studies of the growth of e-government and PV show that many challenges have arisen in facilitating the development of PV, even in democratic countries, such as the US. Despite the recent focus on PV within e-government research, there is a lack of empirical research investigating the creation of PV and, specifically, how it is enabled by e-government. The majority of research looking at e-government and PV focusses on developing evaluation frameworks, using various PV models. This study is based on the premise that an understanding of how e-government enables the creation of PV can improve the success rate of e-government PV projects.

The research framework is intended to fill the gaps in PV studies, specifically research on e-government and PV. Moore's PV strategic triangle framework (1995) is selected as the underpinning theoretical framework for the study. The model is chosen because it focusses on the PV creation process, and it allows the researcher to conduct a holistic investigation of all key stakeholders in the process. This makes it possible to go beyond the usual, narrow e-government PV research, which, as argued in Chapter 2, rarely considers human actors, organisational settings, technology, and outcomes within the same investigation. The outcomes related to e-government cannot be explained by looking at these factors in isolation from each other; holistic investigation highlights the interplay between them. Also, a sophisticated understanding of the relationships, over time, between inputs, outputs and outcomes can identify factors that influence the creation process. The evaluation of citizens' perceptions aims to determine whether actions intended to influence social structures have resulted in the creation of the intended PV, and to uncover citizens' interpretations of the technological features and designs used in creating PV.

The literature review in Chapter 3 helps in developing a conceptual model of how e-government may enable PV creation (see Figure 3.6). However, the model only allows the researcher to identify the main dimensions (authorising environment, operational capabilities, e-government, and PV). The conceptual model is not necessarily meant to explain how e-government enables PV creation. It is used as a basic framework during data analysis, as described in Chapter 4. This initial framework reflects a synthesis of the literature review conducted in Chapters 2 and 3. The literature review of the PV strategic triangle suggests that further questions need to be answered about issues within PV theory.

When it comes to the authorising environment within which PV is created, literature reviews show ongoing debates on the suitability of PV theory, and specifically Moore's strategic triangle, in different political settings (Rhodes and Wanna, 2007). Moreover, the appropriate arbiter of PV creation is also debated among PV researchers. One group believes that the public is the right arbiter (Rhodes and Wanna, 2007, 2009; Benington and Moore, 2011; Moore, 2014), whereas the other group agrees with Moore's initial position (Dahl et al., 2014; Hartley et al., 2015; Prebble, 2018), which states that public service managers should have this responsibility. Moreover, most of the research and the literature reviews, on the basis of which existing PV models have been developed, have focussed on established democracies. Thus, investigating the e-government PV creation process in other democratic contexts can enrich the existing knowledge and provide additional insights to the ongoing debates. So, the first sub question which unfolds from this debate is:

*RQ1- How is the authorising environment obtained in an emerging democracy?*

The second construct is operational capability. Although PV research has identified different operational capabilities that may influence PV creation, it does not explain their roles. Acquiring the necessarily resources is not enough if they are not managed and operationalised in the right way. Moreover, Bryson et al. (2017) call for future research to identify the best way to operationalise organisational capabilities in the PV creation processes, in order to overcome the high-level abstraction of Moore's PV strategic triangle. Thus, the second sub question aims to identify the required operational capabilities and how they can be managed in order to enable e-government to create PV.

*RQ2- What are the required operational capacities and practices in an emerging democracy, and how are they operationalised?*

Although e-government is one of the ways in which PV is operationalised, it is considered as a separate dimension in order to uncover the specific role of technology in PV creation. Thus, expanding Moore's PV framework, by separating out the role of e-government, enriches the understanding of the PV production process. Technology shapes, and is shaped by, human actors and institutions, and its role cannot be investigated separately. The duality of technology (Orlikowski, 1992) also introduces the concept of time discontinuity, which is used throughout the data collection and analysis process to identify how technology is developed to satisfy PV based design criteria, as suggested by Karkin and Janssen (2014). In doing so, the study investigates the development of the technical design of a system, from the time of implementation until the post implementation stage.

*RQ3- How is PV incorporated into e-government technical design?*

Answering these research questions is expected to develop new insights regarding the requirements for the creation of PV through e-government and the general relationships between authorising environment, institution, e-government and PV. The current gaps and the ongoing debates highlighted in the literature review point to the need for more empirical studies (Karkin and Janssen, 2014; Osborne et al., 2016; Bryson et al., 2017; Hartley et al., 2017; Hartley et al., 2019). The next chapter explains the method adopted to address the research questions.

## **4. Research Method**

After developing the conceptual research framework, the research intends to fulfil research objectives and answer the research questions using a suitable research paradigm, methodology, and methods. The choice of philosophical paradigm is guided by the research problem and research questions (Guba and Lincoln, 1994; Creswell, 2014). The nature of the explorative questions highlighted in Chapter 3, position this study as qualitative interpretive research. The research uses a single case study in an emerging democracy context to investigate the role of e-government in enhancing and enabling the creation of PV. The study employs several qualitative methods to help the researcher identify the PVs perceived by citizens as well as the service providers. The collected data are analysed using thematic analysis to determine how PV is created and realised through e-government. This chapter is divided into several subsections, including the research philosophy, epistemologies in IS research, research approach, strategy, data collection, data analysis, translation and language, ethical considerations and research reliability and validity.

### **4.1 Research Philosophy**

Research philosophy, as described by Creswell (2014), refers to the development of knowledge and how the researcher acquires it. To decide on the philosophical paradigm, the researcher needs to consider the objective-subjective dimensions, which position the research within ontologies, epistemology, methodologies paradigms, and methods (Holden and Lynch, 2004). This research adopts the philosophical research framework developed by Creswell (2014) as shown in Figure 4.1.



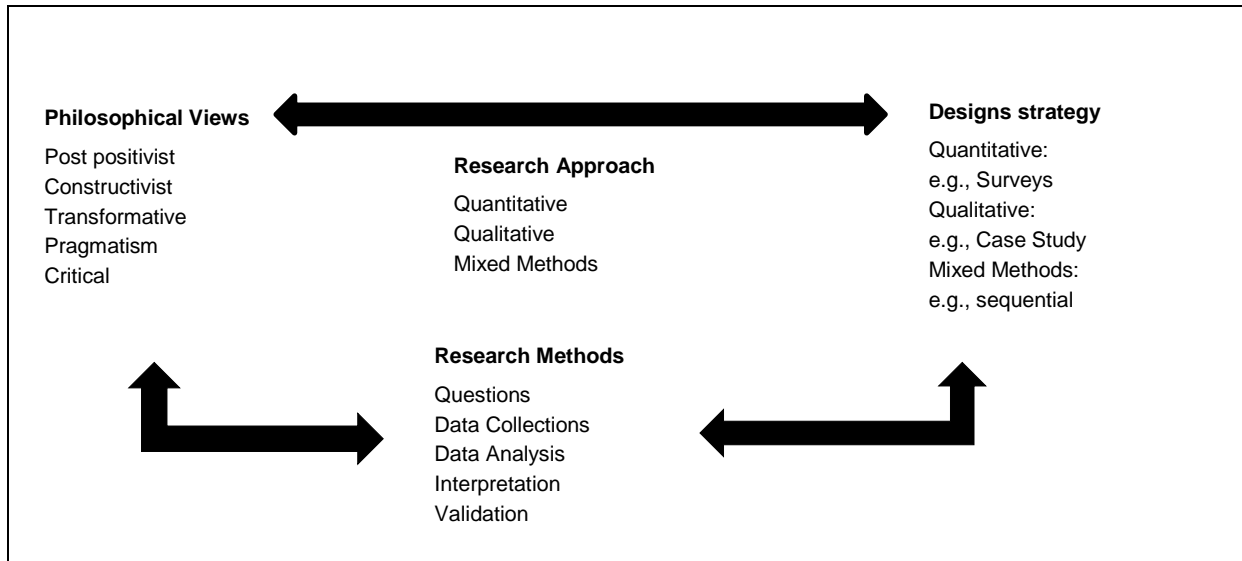


Figure 4.1: Research Design Framework (Orlikowski and Baroudi, 1991; Creswell, 2014)

The ontology paradigm positions the researcher’s views on knowledge definition while epistemology defines the researcher’s assumptions on how knowledge is constructed (Orlikowski and Baroudi, 1991; Creswell, 2014). Creswell (2014, p. 5) defines methodology as “strategy or plan of action that links methods to outcomes”, and hence, helps the researcher to choose the appropriate techniques to collect data. The research approach is shaped by three important enquiries: the knowledge claims being made by the researcher, the strategies of enquiry to inform procedures and methods of data collection and analysis (Creswell, 2014). These enquiries are influenced by the research problem, the researcher’s personal experience and philosophical paradigm, and the audience for the research findings (Creswell, 2014). The details of the research design are discussed in the following sections.

## 4.2 Epistemologies in IS research

Orlikowski and Baroudi (1991) identified three philosophical epistemologies in IS research: positivist, interpretive, and critical. These schools of epistemology research are summarised in Table 4.1. The positivist paradigm means that reality is objective, and knowledge exists independent of humans, presenting a structured way of learning about a phenomenon based on a pre-existing hypothesised relationship (Orlikowski and Baroudi, 1991). On the other hand, the interpretive paradigm means knowledge exists because of humans, who assign meanings through their interaction with the phenomenon (Orlikowski and Baroudi, 1991). The critical view aims to “critique the status quo”, and is used for evaluation of transformation programmes (Orlikowski and Baroudi, 1991, p. 6).

|           | <b>Positivism</b>                 | <b>Critical</b>              | <b>Interpretive</b>           |
|-----------|-----------------------------------|------------------------------|-------------------------------|
| Knowledge | Discovered independent of human   | No absolute truth in reality | Only exists because of humans |
| Ontology  | Objective                         | Objective and subjective     | Subjective                    |
| Focus     | Facts                             | Facts and meaning            | Meaning                       |
| Goal      | Formulate and test the hypothesis | Construct theories           | Construct theories            |
| Approach  | Deductive                         | Abductive                    | Inductive                     |
| Sampling  | Large sample                      | Small or large sample        | Small sample                  |
| Method    | Quantitative                      | Qualitative/mixed methods    | Qualitative                   |

Creswell (2014) expanded the paradigms to four views: post-positivism, constructivism, transformative and pragmatism, summarised in Table 4.2. The first two views reflect the positivist and interpretivist paradigms, respectively. The latter two overlap with three

philosophical schools identified by Orlikowski and Baroudi. In summary, the positivist approach lacks attention to the subjective impact of human actors, and the critical approach seems to focus on evaluating transformation programmes.

| Table 4.2: Characteristics of Research Philosophy Paradigms (adapted from Creswell, 2014)   |   |
|---|---|
| <b>Post-positivism</b>  | <b>Constructivism</b>   |
| <ul style="list-style-type: none"> <li>- Determination</li> <li>- Reductionism</li> <li>- Empirical observation and measurement</li> <li>- Theory verification</li> </ul> | <ul style="list-style-type: none"> <li>- Understanding</li> <li>- Multiple participant meanings</li> <li>- Social and historical construction</li> <li>- Theory generation</li> </ul> |
| <b>Transformative</b>   | <b>Pragmatism</b>   |
| <ul style="list-style-type: none"> <li>- Political</li> <li>- Power and justice-oriented</li> <li>- Collaborative and change-oriented</li> </ul>                          | <ul style="list-style-type: none"> <li>- Consequences of actions</li> <li>- Problem-centred and pluralistic</li> <li>- Real-world practice oriented</li> </ul>                        |

When it comes to e-government research, there is diversity in the philosophical approach with the positivist approach dominant (Joseph, 2013). Joseph (2013) explained this diversity through the diverse researched topics such as public administration, healthcare, education, political science, and economics. However, the positivist and critical approaches are not in line with principle of e-government PV creation being a social product. Moore (2014) argues that PV is not about the PVs themselves, but about the public view of the values produced. Hence public perception is a critical factor in this research. Moreover, Rutgers (2015, p. 7) notes that PV is “socially established (learned) phenomenon.” In line with these two statements, this study adopts the interpretive paradigm focusing on the importance of human interaction in the PV creation process. Consistent with constructivism paradigm (Creswell 2014), the research framework focuses on multiple participants meaning and social and historical construction.

### **4.3 Research Approach**

When it comes to social science, the philosophical debate is not about the methodology paradigm; researchers strongly believe “it is possible to subscribe to the philosophy of one paradigm but also employ the methods of others” (Steckler et al., 1992, p. 4). Both paradigms have their unique characteristics that can help social science researchers to compensate for their weaknesses (Creswell, 2014). Therefore, it is possible to employ qualitative methods in positivist research and vice versa (Joseph, 2013). This section provides an overview of quantitative, qualitative and mixed methods approaches followed by a summary of the rationale for adopting an exploratory sequential qualitative approach.

#### **4.3.1 Quantitative Approach**

The quantitative approach has always been associated with the positivist paradigm and it aims to serve explanatory questions (Creswell, 2014). Flick (1998) associates it with narrow enquiries, describing it as product-focused and free of context. The approach deductively starts with a theory to establish research hypotheses using quantified data collection and statistical analysis methods (Creswell, 2014). Common strategies utilised by the quantitative approach are experimental designs and non-experimental design (surveys), which examine the relationships between variables and analyse existing associations (Creswell, 2014). Although the quantitative approach is context-free and gives the breadth required to generalise the findings, it fails to give the depth and the insight needed to understand a phenomenon (Venkatesh et al., 2013).

### 4.3.2 Qualitative Approach

Flick (1998) defines the qualitative approach as a social enquiry that focuses on how people interpret and make sense of their experience with the world. Qualitative methods usually suit subjective epistemology views, as explained earlier. Key features of qualitative research can be understood from Yin (2011) as follows: 1) studies the meaning of human life; 2) represents the views of human (participants); 3) covers social, institutional, political and environmental contexts; 4) explains human social behaviour; and 5) uses multiple pieces of evidence. Flick's explanation of the difference between the two approaches is summarised in Table 4.3. Known strategies under the qualitative approach are narrative research, grounded theory, ethnography and case study. Although this approach is useful for exploratory studies seeking a deep understanding of IS phenomena, unlike the quantitative approach, it is context-based, and thus, generalisability might be a challenge in IS research (Venkatesh et al., 2013).

|                         | <b>Qualitative</b>  | <b>Quantitative</b>  |
|-------------------------|---|--|
| Aim                     | Exploratory   | Explanatory  |
| Approach                | Broad and process focus   | Narrow and product focus   |
| Data Collection         | Non-standard interviews, fieldwork, participant observation, documents, photograph, video | Questioners, standardized interviews, randomized controlled trials |
| Analysis                | Thematic, constant comparative, interpretive  | Statistical  |
| Outcome                 | Non-standardized data   | Numerical and measurable   |
| Researcher Relationship | Direct involvement  | Limited involvement  |
| Rigour                  | Trustworthiness, authenticity, and transferability  | Validity, reliability, and generalisability                        |
| Context                 | Context-based   | Context free   |

### 4.3.3 Mixed Methods

Mixed methods refer to the combination of qualitative and quantitative research and data in a research design (Venkatesh et al., 2013). The concept was developed in 1959 when Campbell and Fisk used multiple quantitative research methods (Creswell, 2014). Venkatesh et al. (2103) suggest using mixed methods in IS research can develop a rich understanding of the phenomenon. In the 1990s, researchers started using different research designs within one single study for triangulation purposes, but this evolved to four known mixed methods designs as shown in Table 4.4 (Creswell, 2014).

| Design                 | Description  |
|------------------------|--|
| Convergent Parallel    | <ul style="list-style-type: none"> <li>- Research collect both quantitative and qualitative data within one phase and analyse the data separately, and the findings are integrated</li> <li>- Used for a comprehensive analysis of the phenomena</li> </ul>  |
| Explanatory Sequential | <ul style="list-style-type: none"> <li>- Starts with quantitative research enriched by qualitative research</li> <li>- Done sequentially in multiple phases</li> <li>- Strong quantitative orientation</li> <li>- The sample size is a challenge as they tend to be different in each phase</li> </ul> |
| Exploratory Sequential | <ul style="list-style-type: none"> <li>- Starts with qualitative research followed by confirmatory quantitative research</li> <li>- Done sequentially in multiple phases</li> <li>- Strong qualitative orientation</li> <li>- Challenge is to focus the findings to specific</li> </ul>                |
| Transformative         | <ul style="list-style-type: none"> <li>- Uses social justice and power theories</li> <li>- Either embedded design or multiphase</li> <li>- Data can either converge or be used sequentially</li> <li>- To best understand long-term programme goals</li> </ul>   |

Others have proposed only the first three designs but as noted by Venkatesh et al. (2013), these designs can be divided into two designs: concurrent or multiphase. The concurrent design is used for “diversity”, “compensation” or “complementarity” purposes to identify divergent results, while multiphase design is used to either develop, explain, expand or

confirm the findings (Venkatesh et al., 2013). However, these designs are challenging because of the complexity, effort and time required for data collection and analysis and the need to be competent in both approaches (Creswell, 2014).

#### **4.3.4 Research Approach Justification**

This section details the rationale behind adopting a qualitative approach in light of the criteria presented by Venkatesh et al. (2013): philosophical paradigm, 'A-paradigmatic' stance and substantive theory stance. The philosophical paradigm adopts a subjective epistemology, which explains the qualitative dominance of the research. 'A-paradigmatic' stance is related to the research questions. The research question ('*how*') is an open-ended question and exploratory in nature, falling under qualitative approaches (Creswell, 2014). The research framework is based on two models from complex multidisciplinary fields (public administration and technology), which explores PV within a public institution, perceptions of citizens, and technology. Exploration and understanding of multi-domain and multi-stakeholder research areas requires an approach that enables a broad and holistic investigation. In addition, the contextual and complex pluralistic nature of PV (Bozeman, 2007) is best understood through a qualitative approach (Creswell, 2014). Based on this guidance this study adopted a qualitative approach.

#### **4.4 Research Strategy**

Creswell (2014) states that research strategy refers to the type of enquiry within the selected approach. Yin (2013) states that research questions and the required behavioural control play a role in determining the right research strategy. The research

question focuses on *how* public value is created through e-government. Using Yin’s criteria, summarised in Table 4.5, history and case study are the most appropriate methods. Experiments are not used because the researcher does not have control over the participants’ behaviour. As this study focuses on the life cycle of e-government, history and case study strategies are appropriate for this research. History, also known as *historiography*, is considered a research strategy where the researcher reconstructs events, perceptions, actions, and changes over time (Bannister, 2002). Yin (2013) notes that there is an overlap between these two methods. This research favours case study as the ultimate method because of its ability to address the research question, the complexity of research topic, and its bounding capability toward scoping the research.

Table 4.5: Criteria for Selecting a Research Strategy (Yin, 2013)

| Strategy    | Question type                          | Behavioural control | Contemporary |
|-------------|--|---------------------|--------------|
| Experiments | How and why                            | Yes                 | Yes          |
| Surveys     | Who, what, how many, how much, and who | No                  | Yes          |
| Archival    | Who, what, how many, how much, and who | No                  | Yes/no       |
| History     | How and why                            | No                  | No           |
| Case Study  | How and why                            | No                  | Yes          |

#### 4.4.1 Case Study

The dominant method within e-government research is the case study because of its capability to capture rapidly changing innovation (Joseph, 2013). The case study approach has been widely used in IS research representing 25% of all empirical publications in major IS journals (Keutel et al., 2014). Yin (2013, p. 16) defines the case



study strategy as an “empirical enquiry” which undertakes an in-depth investigation of a real-world context where the boundaries between the phenomenon and the context are not clear. It enables the researcher to generate theories from practice using real-life cases and understand the nature and complexity of the topic (Gable, 1994). However, the benefits of the case study strategy do not necessarily justify the choice as the researcher should also consider the research question, required control of behaviour and contemporary focus (Yin, 2013). Yin (2013, p. 2) argues that a case study should be selected if the research question is of the “how and why” type, the researcher has no control over the “behavioural event” and it deals with contemporary topics. However, the case study is weak in terms of manipulating independent variables, generalising findings and requires considerable effort and skills (Gable, 1994). Yin (2013) refutes these criticisms by differentiating ‘population generalisability’ and ‘theoretical generalisability’; unlike surveys, a case study serves the purpose of fulfilling the latter as the research aims to generalise to theory.

### ***Case Study Design***

According to Baxter and Jack (2008), there are different designs for case study research: explanatory, exploratory, descriptive, multiple, intrinsic, and instrumental as shown in Table 4.6. Research purpose and objectives should guide the researcher to choose the right design (Baxter and Jack, 2008). In addition, Yin (2013) identifies five important components that influence case study design: the research question, propositions if they exist, the unit of analysis, the data linkage to proposition or theory, and the criteria for findings interpretation. These components are explained and linked to the research in the

sections below. The study employs an exploratory design aiming to understand the unpredictable outcome of e-government, especially when it comes to the creation of PV.

Table 4.6: Case Study Designs (adapted from Baxter and Jack, 2008)

| <b>Case Study Designs</b> | <b>Description</b>   |
|---------------------------|--|
| Explanatory               | Seek justification for proposed causal links in a phenomenon |
| Exploratory               | Explore a phenomenon for which the outcome is not clear      |
| Descriptive               | Describe a phenomenon in its real context                    |
| Multiple                  | Used to compare and explore differences between cases        |
| Intrinsic                 | Understand a phenomenon                                      |
| Instrumental              | Accomplish a task rather than understand the case            |

The research question explores a gap in the existing literature to understand how PV is produced through e-government in an emerging democracy. Defining the unit of analysis is an important step toward the research design (Yin, 2013). The unit of analysis of the case study could be an individual, an event, a particular organisation, or a community (Myers, 1997). The unit level of analysis for this study is the event of PV creation through educational reform using e-government technology in an emerging democracy. Thus, the case study involved participants at two levels: organisational and individual (citizens).

The case study can either be single or multiple based on the following criteria: critical, unusual, common, revelatory or longitudinal (Yin, 2013). A single case study is appropriate to gain a deep understanding of the phenomenon in its natural settings where the researcher seeks to explore different dimensions (Yin, 2013). “This insight allows for seeing the world through different lenses” (Keutel et al., 2014, p. 259). Employing a single case study is critical because the research aims to understand the interplay between inputs, outputs and outcome through investigating different stakeholders. Another critical

consideration is the lack of universal agreement on PV, and its meaning makes it difficult to investigate multiple case studies. This is due to the high contextualization and pluralistic characteristics of PV (Bozeman, 2007; Williams and Shearer, 2011) requiring deep analysis and richer understanding of a unique environment. Moreover, concentrating on one e-government application focuses on research data collection and analysis effort to capture the enormous amount of evidence from all stakeholders. Hence, to understand e-government PV creation through its complex structure, more insight can be gained from a single case study.

#### **4.4.2 Case Study Scope**

Usage of e-government is a social interaction that involves different types of actors: human and non-human. When it comes to human actors, Barbosa et al. (2013) identify four social groups associated with e-government: citizens, enterprise, IT implementers, and public managers. Software developers, analysts, and administrators also have a role in the life cycle of the application. Suppliers and other indirect stakeholders are part of the interaction, but the research framework only assesses stakeholders directly involved in e-government PV creation. Service portals and other technology platforms represent the non-human actors in the creation process of PV through e-government, and hence, as an output of e-government, they are within the research scope.

#### **4.4.3 Case Study Selection Criteria**

Keutel et al. (2014) call for researchers to clearly demonstrate how the research topic fits in the knowledge-building process, their case selection criteria and data collection

process. Following their recommendations, this section elaborates on the criteria used by the researcher to select the case study.

One of the factors identified by Hossain et al. (2011) that may affect the value creation potential of e-government systems is information technology (IT) sophistication, which can be seen in the level of automation. While the level of automation does not necessarily increase value creation, it is an important factor in PV creation; semi-automated processes lead to human intervention during the operation stage, which undermines the role of technology. Consequently, the first criterion was to select an electronic service, which operationally has a minimum human intervention. Shortlisting was undertaken by analysing the yearly assessment report generated by Oman's Information Technology Authority (ITA, 2012). The second criterion was the period over which the system had been assimilated. Having a longer-term perspective of the assimilation process it can enable observation of historical events such as changes to human actors, technology, or institutional properties and their impact on PV creation.

Besides, Miles and Huberman (1994) introduced six principles for sampling qualitative research (see Table 4.7). The six criteria helped the researcher to identify the most relevant and achievable case study. The first attribute is related to the sample relevance to the research framework. The case study needs to be related to the research framework. This suggests sampling those cases which had considered the creation of values that can be categorised as public values. Hence, only services that had attempted the creation of PV were considered as suitable. The second attribute is related to the richness of information for the studied phenomenon. The researcher should be able to "obtain a rich

set of data surrounding the specific research issue, as well as capturing the contextual complexity” (Benbasat et al., 1987, p.374). Thus, availability of the rich level of details about the implementation, the design, users’ feedback and other related data is considered when selecting the case study. The third attribute concerned the generalisability of the sample and more specifically, analytical generalisability as initially explained by Yin (2013). Analytical generalisability does not depend on sample size, and it means the extraction of a more abstract level of ideas from the case study findings (Yin, 2013). Hence, this criterion may not play a significant role in the selection process. The fourth attribute highlights the need to be able to produce a believable explanation, which refers to the credibility of the data. Thus, cases with multiple data sources are preferred for triangulation purpose. The fifth attribute concerned the ethical implications of selecting a particular case study and any associated risks with the case samples. Cases with less ethical requirements are considered. Finally, the sixth characteristic concerned the feasibility of the investigation in terms of planning and accessibility, communication and experience of the informants. This criterion is the gateway to obtaining required data, and hence, the organisation accessibility and welcoming attitude toward the study is assessed. These attributes, along with other technical attributes, were used to finalise the selection of the case study.

| <b>Selection Criteria</b>           | <b>Case 1: Electronic Admission Service (EAS) (Ministry of Higher Education)</b>   | <b>Case 2: Education Portal (Ministry of Education)</b>  | <b>Case 3: Pilgrimage Service (Ministry of Religion Affairs)</b>  |
|-------------------------------------|--|--|---|
| Sophistication                      | Fully Automated and no alternative way   | Fully Automated but manual intervention might take place   | Fully Automated and no alternative way  |
| Years of Assimilation               | 10 Years   | 10 Years   | 3 Years   |
| Relevance to the research framework | Social and economic values from all stakeholders.  | Tendency toward economic values and system usability   | Social and economic values  |
| Information Richness                | Yes, information is available about implementation, design, and users feedback   | Yes, information is available about implementation, design, and users feedback   | Yes, information is available about implementation, design, and users feedback  |
| Analytical generalisability         | Not applicable   | Not applicable   | Not applicable  |
| Believable explanation              | Yes, the credibility of the data can be sourced from different sources: interviews, document analysis, reports, and social media | Yes, the credibility of the data can be sourced from different sources: interviews, document analysis, reports, and social media | Yes, the credibility of the data can be sought from different sources: interviews, document analysis, reports, and social media |
| Ethical Consideration               | No issues with ethical consideration   | Ethical considerations are required when dealing with minor students if students are part of the study.                          | No issues with ethical consideration  |
| Feasibility                         | Access sought and granted  | Access was not granted   | Access is not sought  |

The researcher initially identified three electronic services by analysing Information Technology Authority reports for the maturity level of Omani e-services (ITA, 2017). The three electronic services were short-listed because they are considered some of the few services which are mature and have good level of automation. As shown in Table 4.7, Case 1 and 2 were the best candidates for the study. The Case 1 service was chosen over the Ministry of Education portal (Case 2) for two reasons: 1) accessibility and level

of sophistication being fully automated, and 2) existence of evidence that the organisation had an interest in both economic and social values (Al azri et al., 2010). It also required standard ethical consideration whereas Case 2 may have required special ethical clearance. Besides, access to Case 2 was sought but not granted. At the time of the study, the Pilgrimage e-service (Case 3) had been recently launched and was used by a small number of stakeholders. Hence, it was not a good candidate for the case study.

#### **4.5 Data Collection**

Baxter and Jack (2008) note that using multiple data sources enhances data credibility. In fact, in addition to investigators, theory, and method triangulation, data triangulation can help in “converging line of enquiry” and thus increases the accuracy of the findings (Yin, 2013, p. 47). This study used extensive data and method triangulation to authenticate all evidence and improve research rigour (Baxter and Jack, 2008). Thus, in this research, “data triangulations serve to discover the diverse meanings held by participants within” the selected case study (Keutel et al., 2014, p. 259). Following the footsteps of existing interpretive studies which use structuration concepts (e.g. Barrett and Walsham, 1999; Orlikowski, 2000; Cordella and Iannacci, 2010), the research adopts observations, interviews, focus groups and archival information as the data collection tools to “investigate the natural settings” of e-government PV (Cordella and Iannacci, 2010). The following sections explain the data collection and analysis procedures along with guidelines for conducting these procedures.

#### **4.5.1 Archival Information**

Archived information is one of the ways to collect data for qualitative research. This method complements and triangulates other sources of empirical data. In this study, documentation included existing archival information such as policies, reports and audio records. Using thematic analysis of HEAC statistical reports and surveys, initial findings show that HEAC senior management had taken PVs (choice, informedness, responsiveness, transparency and fairness) into consideration. These PVs were measured in HEAC student surveys. Therefore, documents such as HEAC annual reports, development release log files and survey results were collected during the interviews, especially when informants referred to them as evidence of HEAC pursuing PV. The list of all collected, reviewed, and coded documents are listed in Appendix 10.1. The coding was applied to relevant text and not the full document.

#### **4.5.2 Interviews**

In interpretive research, interviews are considered a "window on social reality" undertaken through guided conversation to construct meaning (Schultze and Avital, 2011, p. 4). In-depth interviews help the researcher to extract a "richer and more realistic picture of the phenomenon of interest" (Schultze and Avital, 2011, p. 4). Rowley (2012) noted that interview questions are designed in a way to enable the collection of data which allows the research to answer the research questions. In doing so, "both research and interview questions can be informed by practice or experience, or by theory or previous research" (Rowley, 2012, p. 263). Therefore, the interview questions design is centred on the research framework, as explained below.



## ***Interview Question Design***

To achieve internal consistency of the interview questions, the research followed the guidance provided by Neri de Souza et al. (2016) which suggests linking questions to dimensions, categories, and subcategories of analysis and keeping it consistent with research objectives and questions.

The research interviews were centred on Moore's PV model. Moore and Khagram (2004) presented three important questions when considering the legitimacy and the authorisation of PV. These questions aim to identify the PV the organisation wishes to deliver, the source of legitimacy and support for the innovation (e-government), and the organisational capabilities which support the delivery of the PV (Moore and Khagram, 2004). The research interviews utilised these points as the starting point to design the interviews.

1. What are the important PVs the organisation sought to produce?
2. What source of legitimacy and support would be required to authorise the organisation to take action and provide the resources necessary to sustain the effort to create PVs?
3. What operational capabilities would the organisation need to deliver the desired PV?

Focusing on e-government PV did not eliminate the importance of the structuration concept and more specifically, the duality of technology when designing research interviews. While the model was used for analytical purposes, it was also used to design

the interviews because it helped the researcher to establish the link to e-government as a technology. Orlikowski (2000) associated enactment types with three sets of conditions (interpretive, technological and institutional) and consequences (processual, technological, and structural). Both conditions and consequences were used to construct the protocol for the interviews and focus groups. The definitions of these dimensions are shown in Table 4.8. These dimensions helped the researcher to pinpoint important categories when designing the interview protocol.

Table 4.8: Enactment Dimensions (adapted from Orlikowski 2000, p. 422)

|   | <b>Interview Dimensions</b> | <b>Description</b>  |
|---|-----------------------------|---|
| 1 | Interpretive conditions     | “Conventional understandings and shared meanings that members of a community construct to make sense of their world (including the technology they use).” |
| 2 | Technological conditions    | “The technological properties (both tool and data) available to the users in their work practices.”   |
| 3 | Institutional conditions    | “The social structures (normative, authoritative) that constitute part of the larger social system within which users work.”                              |
| 4 | Processual consequences     | “Changes (if any) in the execution and outcome of users’ work practices.”   |
| 5 | Technological consequences  | “Changes (if any) in the technological properties available to the users.”  |
| 6 | Structural consequences     | “Changes (if any) in structures that users enact as part of the larger social system in which they are participating.”                                    |

The protocol questions were also influenced by previous publications which used similar theories and models. Context and history are an important part of PV (Jørgensen and Bozeman, 2007). Time is also an important concept in structuration theory, which needed to be taken into consideration when investigating social structures. As the research duration did not permit a longitudinal approach, it was important to capture the historical

events and develop historical reconstructions of events, perceptions, and actions over time as noted by Barrett and Walsham (1999). Orlikowski (1996) used a historical approach to investigate organisational transformation over time. For this reason, the question design needed to include questions which require informants to recall past actions and perceptions over time. Bannister (2002) also presents sample questions which could be adapted to historically investigate IS value by focusing on events evolution and their impact on ICT lifecycle, as shown below:

1. How does the evolution of information systems (IS) affect the evolution of power within organisations?
2. How has the organisational structure been changed over time by IS evolution?

In addition, it is also important to situate the researcher and "minimise social dissonance" and ask the informant to give some background about their experience and role (Myers and Newman, 2007, p. 15). Finally, the design of the questions was also influenced by the researcher's experience in IS development and design, specifically when dealing with clients and assessing their requirements. For example, questions about the technical design of the EAS system were instigated using the researcher's practical expertise in the field of IS development as a software developer/analyst.

Guided by the above principles, 30 open-ended interview questions were drafted. To reach different stakeholders, Myers and Newman (2007) recommend utilising the flexibility of semi-structured interviews. The researcher tried to standardise all the interview questions for comparison purposes, but there were slight changes to suit each stakeholder group (top management, operation team, IT team, admission staff, students).

For example, IT informant's questions included specific questions about the technological changes to the system. The full interview protocol can be found in Appendix 10.2.

### ***Validating Interview /Focus Group Questions***

The first draft of the interview protocol was reviewed by both supervisors for relevance to the research framework and identifying leading questions. The protocol was revised over several iterations before it was approved. Then, the interview protocol was translated by the researcher to Arabic, and distributed to several colleagues and experts for feedback, as shown in Table 4.9. These reviewers were selected because of their expertise in Information System (IS) research in the context of Oman and their linguistic skills. In addition, two students reviewers were chosen to assess the clarity of the interview questions. Their feedback helped in refining ambiguous questions in both Arabic and English.

| <b>No.</b> | <b>Position</b>   | <b>Characteristics</b>            |
|------------|---|-----------------------------------|
| 1          | Assistant Professor at Sultan Qaboos University, Muscat                       | PhD, Native Arabic Fluent English |
| 2          | Deputy Head of Information Technology Services at Ministry of Defence, Muscat | PhD, Native Arabic Fluent English |
| 3          | Assistant Professor at Applied College of Technology and Sciences, Suhar      | PhD, Native Arabic Fluent English |
| 4          | Student at Sultan Qaboos University   | (Male) Native Arabic              |
| 5          | Student at Sultan Qaboos University   | (Female) Native Arabic            |

## ***Interview Guidelines***

Having established the link between the interview protocol design and research framework and existing publications, the next step was to ensure that interviews were conducted according to established guidelines. The researcher followed the recommendations of Myers and Newman (2007) when conducting qualitative interviews in IS research. The first two recommendations concern breaking the ice and doing a brief introduction to make the informant comfortable. The third recommendation is to maintain ethical considerations throughout the whole interview, and the fourth suggests understanding the informant's words as an interpretation of their world. The fifth recommendation concerns representing various voices. It is important to design accessible interviews representing different views matching the various stakeholders involved in e-government. Myers and Newman (2007) also suggest mirroring informant comments when constructing subsequent questions. Although the same interview question design influences focus group questions, they fall under group interviews (Myers and Newman, 2007), and are discussed in more detail in section 4.5.3 below.

### **4.5.3 Focus Groups**

Focus groups are a type of group interview but differ from one-to-one interviews as they require a special arrangement (Myers and Newman, 2007). They use group interaction to produce research data that would not be accessible at the individual level (Morgan, 1997). Also, focus groups differ from group interviews as they are a focused discussion by a group of people moderated by the researcher to produce data which cannot be accessed through individual interviews (Liamputtong, 2011). The aim of conducting a

focus group is to have an in-depth discussion of the research topic carried out by a small number of informants (Liamputtong, 2011). The role of the moderator is to get accurate data from the interactions between the informants and not to rely completely on one-to-one interviews (Liamputtong, 2011). Liamputtong (2011) also noted that it is important for the researcher to have a theoretical framework which justifies the adoption of focus groups. Symbolic interactionism is one of the frameworks which utilises a focus group to "examine the ways in which people collectively understand an issue of concern and then construct meaning around it" (Liamputtong, 2011, p. 16).

In this study, focus groups were used with EAS users because of the definition of PV presented by Moore (2014) as the collective perceptions of the public or as Bozmen (2007) identified, PV is what the public values. Both definitions stress the importance of the public narrative for the meaning of these values. Therefore, symbolic interaction is the theoretical framework which helps the study explore how citizens and e-government users construct their perception of the created PV when interacting with EAS. When dealing with citizens and trying to unpack their collective testimonies regarding e-government PV, focus groups come in handy in generating collective narratives (Liamputtong, 2011). Focus group interviews enable the researcher to cross-check users' interpretation of EAS PV with HEAC informants' interpretations.

### ***Focus Group Questions Design***

Following the same principles discussed in the interview protocol design and validation (section 4.5.2), focus group questions were drafted and validated, see Appendix 10.2. Focus groups were used with students to identify what PVs have either been realised or

not realised. The study acknowledges that capturing students' expectations and realisation of PV before, during and after using the service would require a longitudinal study. However, the focus group questions aimed to reconstruct the historical events and perceptions and triangulate them with findings from existing archival information. Although the targeted informants were those who had used the system over the last four years, a few focus groups were held with informants that had used the service in its early stages (2007-2009). The interview questions developed for the HEAC informants were modified to suit EAS users, and questions related to the organisation and the authorising of the EAS implementation were omitted. Hence, the focus group interviews ended up with 22 questions, as shown in Appendix 10.2.

### ***Focus Group Guideline***

Group composition plays an important role in the quality of the data collected through focus groups. Liamputtong (2011) presents guidance for managing group dynamics based on previous focus group studies. These are guidelines and not concrete rules because each study has its own rationale and reasoning for selecting different group dynamics. This section presents the focus group guidelines for managing group dynamics and size.

The selection process of focus group participants can either be homogeneous or heterogeneous. A composition of a group, which share the same social and cultural background, usually facilitate open and honest discussion which can be hindered if the group is heterogeneous (Liamputtong, 2011). In the case of EAS end-users' common background meant the same level of education and the same educational institute. This

ensured that the informants had a shared experience and used the same version of the system. Therefore, the composition of the informants was homogeneous. When it comes to the familiarity among the group informants, Liamputtong (2011) suggests that a group of strangers are more likely to have an honest discussion and not try to set the discussion agenda. However, a group of informants that are familiar with each other are likely to have a good flow of discussion and are used in social science research when investigating sensitive topics. As PV can be a sensitive topic a familiar group is likely to encourage informants to give their opinion and have a rich dialogue.

To select focus group informants, the study adopted purposive and snowball sampling from university students. This sampling approach is suitable since this group shared similar characteristics (Tong et al., 2007). At the practical level, assembling the focus group could be easily managed by coordinating with academic staff. Focus group sample size can either be a full group (8-10) or mini group (4-6 participants) (Greenbaum, 1998). In this study a small focus group was selected because the larger the group size is, the less manageable the discussion becomes. Greenbaum noted that the average duration of the focus group should be around 90 minutes to two hours (1998). The researcher carried out 11 focus groups, with informants with a range of experiences including using different versions of the EAS, registered choices, and awarded choice, and attributes in terms of gender, geographical location and academic major. Saturation level, in this case, was the categories of the identified public value, the associated technological artefacts and the factors influencing the creation of these public values. As this study uses an abductive approach, the validation of these public values and their factors is a post data collection step to enable the researcher to explore all possible findings.



#### **4.5.4 Translation and Language Challenges**

Filep (2009) presents two strategies when a translation is involved in academic research: literal and non-literal. Literal translation can reduce the readability of the text and diminish the cultural and contextual aspects of the interview (Filep, 2009). The same issue is discussed by Liamputtong (2011) when translating the focus group as the misinterpretation of meaning has a dangerous impact on data quality. The study adopts a non-literal strategy for two reasons. First, PV is centred on meaning, cultural and social facets of the society. Second, the interpretive design of the research focuses on interpreting the thoughts and the perceptions of the informants. In addition, use of idioms and traditional sayings are difficult to understand when using the literal translation strategy (Liamputtong, 2011). Hence it was important to maintain the perceptions and interpretations of the informants.

Having established the translation approach, the authenticity and accuracy of the translation should be handled using known academic methods. Filep (2009) presents three approaches to translation. The first approach is called "back translation" and it means that once the questions are translated from English into Arabic, they will be given to a second bilingual person to translate it back to English. This approach follows an iterative approach until both translations match. This approach can take a long time, depending on the number of cycles. The second approach is a 'consultative' translation, which means that the translated questions are verified by two sound translators separately (Filep, 2009). The third approach uses collaboration when conducting the pilot study to ask participants to also comment on the interpretation of their meaning (Filep,

2009). The first and third approaches are not practical as they take a long time for the interviewer and informants, respectively. Thus, this study uses a consultative approach and, as discussed in section 4.5.2, interview questions were sent to two additional experts in the field who speak both languages fluently to comment on both versions: Arabic and English. Interviews undertaken in Arabic were transcribed verbatim in Arabic and translated by the researcher whenever references are quoted in the thesis. Preserving the perceptions of PV in its natural context was critical since the literature review shows a pluralistic characteristic of PV. Hence, it was important to transcribe the interviews and code the manuscripts in the original language of the informants. Quotes within the text were also translated using a consultative approach where the researcher used a PhD candidate who speaks Arabic and English to proofread the results (Chapter 6) and verify the meaning of the translated text.

#### **4.5.5 Ethical Clearance**

The study adhered to the ethical principles of safety, informed consent, privacy and avoidance of deception for informants (Gray, 2013). The Loughborough University Research Ethics Committee approval was obtained before commencing the interviews/focus groups by forwarding the form to the ethical committee, which is attached in Appendix 10.6.

#### **4.5.6 Special Consideration**

Culture plays an important role when conducting a focus group, and its sensitivity needs to be acknowledged (Liamputtong, 2011). Hence, this study needed to pay special

consideration to the subject and the informants. It would have been problematic to discuss negative outcomes of government services, if they existed, before the Arab spring. However, this is less problematic since the Arab spring, especially for academic research (Ryan et al., 2014). As the researcher was a cultural insider who spoke the native language he was able to establish the trust needed for rich interaction, and to accurately interpret and translate the data (Liamputtong, 2011). A further consideration concerns gender segregation. To address this issue, the researcher organised three different focus group compositions: all male, all female and mixed. Gender segregation is not a big issue in Oman as long as the seating is segregated. The researcher left it to the participants to choose their seats, and they favoured segregated seating arrangements.

#### **4.5.7 Pilot Study**

To gain confidence as an interviewer, assess the effectiveness of the interview protocol, and examine the appropriateness and the accessibility of the interviews (Bryman, 2004), three pilot interviews were done over the phone. The first interview was done with a PhD student who used the system to apply for a scholarship in 2014. The interview lasted 20 minutes, and it was done in English as the informant spoke fluent English. The second interview lasted 26 minutes, and it was done with a Bachelor student who also used the system in 2014. This interview was in Arabic to check the Arabic version of the questions. Two different levels of education were chosen to assess the ease of understanding of the interview questions for all stakeholders as HEAC's users are either at Bachelor, Master, or Doctorate level. Taking samples from the lowest and highest level ensures the suitability of questions for all stakeholders.

The third interview was done with the HEAC Project Manager/former Head of Admission Service in the Ministry of Higher Education, and it was done in English. The interview lasted 50 minutes. The interview aimed to assess the interview protocol questions and collect historical information about the start of HEAC. The informant held the following roles: HEAC IT Project Manager (March 2005-October 2008) and Deputy Director General of Admission Systems (October 2006-June 2008). In addition, he was part of the educational reform committee which set the foundation to establish the Higher Education Admission Centre in Oman.

The interviews helped assess the suitability of the interview questions in answering the research questions. Some questions which did not generate rich data were omitted. For example, asking informants what HEAC meant for them was confusing for the first two informants. The answer was the same, which is applying for higher education programmes. For this reason, this question was dropped. Also, all questions needed to be put in the past tense format to ensure that the answer reflects actual users experience with the service. For example, asking informants how HEAC would eliminate *wasta* (favouritism), resulted in an answer which encouraged speculation. The question in the second interview was refined to "did HEAC eliminate *wasta*? and why?". This resulted in an answer closely related to realisation rather than expectation.

Finally, the pilot interviews were also helpful in gaining access to a key gatekeeper who happened to be a friend of the first informant. In addition, the former HEAC project manager helped the researcher to gain access by providing a list of potential informants

and stakeholders. The snowballing technique enabled the researcher to generate a list of potential informants.

#### **4.5.8 Interviews/Focus Group Process**

This section presents the process of conducting the interviews and focus groups. In this section, since focus groups are special types of interviews, an interview refers to both individual interviews and focus groups.

As mentioned in the previous section, a gatekeeper was identified when interviewing a PhD candidate studying in the UK. The gatekeeper happened to be the former general manager of HEAC, who also participated in setting up the processes, system, and policies when HEAC was established in 2006. When the researcher arrived in Oman, an initial interview took place with the gatekeeper. The gatekeeper then facilitated access to the HEAC centre by calling one of his former colleagues (Head of Admission), and an interview was scheduled with her.

The study employed a mixed purposeful sampling strategy. Initially, theoretical sampling was adopted to identify potential informants. The research framework guided the researcher to detect the population of the study, and initially identify three main teams from the organisation: management, operation, and IT teams. Once the interview process started, snowball sampling was employed to identify individual informants. The snowball sampling technique also helped to identify departments of interest and relevant stakeholders. For example, career awareness specialists, who carried out the training on HEAC e-service, were identified by the first interview with the Head of Admission.

Through the first two interviews, a list of potential informants was drafted and sent to the Head of Admission to schedule the interviews according to their convenience. There were 16 interviews with informants from HEAC and other HEIs and two follow up interviews with two staff from HEAC (See appendix 10.3). Initial communication with potential informants was done via email sent by the Head of Admission to all potential informants with a brief about the research, its aim, and estimated duration.

The researcher followed a consistent process when conducting all the interviews. All interviews, except the pilot interviews, were face-to-face encounters and were scheduled pragmatically according to the availability of the participants. If the potential informants showed interest in the research, they would call the researcher directly to arrange a suitable time and location. All meetings took place at the organisation's premises except for one meeting which took place at a café because the informant was on leave and preferred to meet outside the organisation. For those interviews which were conducted at the informant's work premises, the researcher adhered to the formal dress code, being a native Omani himself. For the meeting which took place at the café, the dress code was casual to make the informant feel comfortable.

Once the meeting location and time is agreed, the researcher prepared for the interview by reading the interview questions before commencing the interview. To break the ice and establish rapport before starting the interview, the researcher thanked the informant for agreeing to conduct the interview, introduced himself as a PhD student at Loughborough University in the UK, and explained the objectives of the research. Then, the consent form was explained (See appendix 10.4), and the informant was asked to

select the Arabic or English copy. Informants were offered a copy of the consent form if they wanted it. However, no participants showed an interest in keeping a copy. The researcher also explained the consent form before the informant signed the consent form and verbally asked for permission to record the interview. Two recording devices were used in most of the interviews: an Olympus recorder and the researcher's Samsung S5 phone. The phone was used as a backup, and was switched to flight mode so it did not disturb the interview. All informants agreed to record the interviews except for one, and that interview was minuted. The last two interviews (17 and 18) were follow up interviews, and they were minuted since they were very specific and short. For the interviews which took place at the informant's office, the researcher would pause the recorder in case of interruptions, such as office phone calls. The researcher also asked the informant for their language preference even if they were fluent in English. All participants preferred interviewing in Arabic except for two informants. Some of the informants sometimes used English phrases or definitions while answering questions but this did not impact the interview as the researcher is fluent in both languages. Round tables were used in all focus groups, which helped to have clear recordings, and during focus group sessions, students were asked to raise their voices to improve the quality of the recording. The researcher maintained the rapport by keeping eye contact with the informant(s), calling them by name from time to time and nodding his head following Bryman's (2004) advice for active listening. Using names helped the researcher to identify the informants when transcribing focus group interviews. To enrich the interview, the researcher used the probing technique by asking for examples, how questions, or requesting further

explanations. The researcher was able to get more details and validate some of the answers using mirroring to probe the informants.

#### **4.5.9 Challenges**

There were a few challenges during data collection. The first challenge was getting the informant to commit to the agreed time. There were a few times where the informants would not make it to the meeting because of circumstances out of his/her control. The researcher politely asked for the meeting to be rescheduled. The second challenge occurred when scheduling focus groups directly with students. The students were often late which delayed the meeting. Scheduling focus groups through university faculty resolved this issue. In addition, Ramadan occurred during June 2017 which is the fasting month when people tend to work fewer hours and be less talkative. Ramadan was followed by two Eid celebrations which meant national holidays across the country for 3-5 working days. The researcher considered this and did not plan any interviews/focus groups during these events and used this time to transcribe previous interviews/focus groups. Coding was undertaken during Eid holidays using Nvivo. The researcher faced some technical challenges when coding Arabic scripts in Nvivo; when coding nodes, it was difficult to highlight the relevant text. This problem was resolved by changing the font type to simple text. It was also challenging for the researcher to link the demographic attributes to the codes when coding focus groups. After watching several Nvivo tutorials on Youtube, this was resolved by creating a students node which captures individual demographic attributes for each student.



## 4.6 Data Analysis

Miles and Huberman (1994) define qualitative data analysis as the iterative process with three consistent activities: data reduction, data display and conclusion drawing. Qualitative data analysis is about searching for relationships between different categories of data to identify the main themes (Marshall and Rossman, 2014). “Thematic analysis provides a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data” (Braun and Clarke, 2006, p. 78). The flexibility of the approach has led to wide adoption across qualitative research, and it has been described as the foundation level of qualitative data analysis (Braun and Clarke, 2006). The approach allowed the researcher to summarise the data corpus and develop the codes and categories for subsequent analysis (Davis, 2014). The data corpus included interviews, focus groups and archived information. As noted by Braun and Clarke (2006), thematic analysis is the method of “identifying, analysing, and reporting patterns (themes) within data” by organising it in a rich format and interpreting for interpretation purpose.

As noted by Braun and Clarke (2006, p. 80), the themes do not emerge from the data by themselves and they “reside in our head”, and they are influenced by our epistemological and conceptual views. Therefore, the sense-making of the data was influenced by the conceptual framework developed from the literature review. The study adopted Braun and Clarke’s (2006) guidelines when conducting the data analysis. Thematic analysis was used systematically for three units: organisation, students and PV. PV analysis was conducted by comparing findings related to a particular PV at the organisational and

student levels. The following subsections explain how Braun and Clarke's (2006) guidelines for thematic analysis were followed.

#### **4.6.1 Semantic and Latent Themes**

Regardless of thematic analysis flexibility, the researcher needs to be consistent with the philosophical approach which determines how theme analysis is going to be used (Braun and Clarke, 2006). While a realist worldview would probably use semantic or explicit approaches when identifying themes, social constructivist and the interpretivist school would use a latent or interpretive level when identifying themes in data (Braun and Clarke, 2006). The latent level digs beyond the textual meaning to “examine the underlying ideas, assumptions, and conceptualisations” which inform the semantic content of the data (Braun and Clarke, 2006). This interpretivist research aims to explore how social structures resulting from using technology shapes and is shaped by the actors. In line with PV ontology, Braun and Clarke (2006) state “meaning and experience are socially produced and reproduced, rather than inherent within individuals.” This study aimed to go beyond the findings of PV of interest and to understand the creation process of PV. Therefore, the study aimed to examine both semantic and latent themes when possible.

#### **4.6.2 Abductive Analysis**

Thematic analysis can be done using either a deductive, inductive or abductive approach. While the deductive approach is influenced by the theoretical research framework and research questions, the inductive approach focuses on the data without “trying to fit into pre-existing codes” (Braun and Clarke, 2006). The abductive approach takes a middle

stand, and allows the researcher take advantage of the empirical data but the knowledge presented by the theoretical foundation (Dubois and Gadde, 2002). Dubois and Gadde (2002) argue that tightly structured analysis (deductive) can blind the researcher from seeing important themes, and loose analysis (inductive) may lead to indiscriminate data collection and data overload. Weick recommends the usage of a theoretical framework to “keep some intellectual control over the burgeoning set of case descriptions” (1979, p. 38).

This study used an abductive approach guided by the research framework and existing literature on e-government PV value as well as the empirical data set. The study used the conceptual framework to position the anchor codes and relied on the data to generate further codes as suggested by Saldana (2013). The framework developed in Chapter 3 influenced the initial identification of anchor codes. Yet, the researcher was also sensitive to any emergent themes to deepen understanding of the PV creation process. Open-ended interview questions also enabled the researcher to generate new themes and identify further sub-themes within the main anchor codes derived from the conceptual framework.

#### **4.6.3 Interview and Focus Group Analysis Process**

As noted earlier, the research employed Braun and Clarke’s (2006) six steps. These guidelines have been widely used for conducting thematic analysis within qualitative research (Braun and Clarke, 2006). The analysis process is recursive, and it is not linear as the steps might indicate. The researcher needs to go back and forth. Table 4.10 summarises the six steps, as shown below.

|   | <b>Phase</b>     | <b>Description</b>  |
|---|------------------|---|
| 1 | Familiarisation  | Transcribing and reading transcripts and familiarisation                                    |
| 2 | Searching Codes  | Coding interesting features in each data set  |
| 3 | Finding Themes   | Organising codes into possible themes   |
| 4 | Reviewing Themes | Checking if the theme works across the whole data set.                                      |
| 5 | Naming Themes    | Ongoing analysis to refine the themes which mean going back and forth to the previous steps |
| 6 | Reporting        | Selecting rich data extracts and relating to research questions to produce the final report |

### ***Familiarisation***

Familiarisation started during the transcription of the data. During this stage, the quality of the transcribed interview and focus groups was evaluated based on the richness of data. Two focus groups were dropped because of quality issues. Focus group 6 had 12 informants, and it had issues with sound quality. The informants in Focus group 8 were late, which squeezed the interview time, resulting in brief answers. The two focus groups were transcribed, but they were not coded. As the researcher was transcribing, interesting data extracts were highlighted and referenced in a reflexive journal using a small notebook and Nvivo memoing feature at a later stage. Before coding, the researcher listened to the transcribed interview using normal speed mode while reading the transcription to ensure accuracy of all transcriptions. It is important to note that the same coding process was used for both the interviews and focus groups. Coding and analysis started during data collection.

## ***Searching Codes***

To achieve immersion as advised by Braun and Clarke (2006), the researcher read the transcriptions using Nvivo 11 and started creating initial nodes. In this step, the researcher created more than 500 codes. During the first cycle of coding, the researcher used Nvivo, process, and value coding to capture informants perspectives, as suggested by Saldana (2013). During the second coding cycle, the researcher re-read the interviews and developed further codes coming from the data such as beliefs, assumptions, information quality, planned values, created values, organisation properties, processes, policies, technological artefacts, and outcomes. Due to the complexity of the data, more coding cycles were done to ensure that categorising of the individual nodes identified in the first cycle were properly categorised. For example, it was possible to have a piece of text which belonged to two different categories, especially when coding semantic and latent meanings. This step also allowed the researcher to start spotting potential themes and log them in Nvivo memos.

The reflexive journal was also used to capture any noted observation during the data collection stage (Probst and Berenson, 2014). Research reflexivity is the “conscious, explicit self-awareness, the continual evaluation of subjective responses, inter-subjective dynamics, and the research process itself” (Finlay, 2002, p. 532). Probst and Berenson (2014) argue that this deepens the understanding of the constructed meanings. For example, opinion changes were observed during some of the focus groups (FG4, FG7, FG8, FG11). Opinion change is when an informant changes his/her opinion from positive to negative or from negative to positive. Most of the changes were from negative to

positive. This change is due to the dialogue which took place among informants. Capturing these observations as codes allowed the researcher to reflect on the impact of the group dynamic on PV realisation; learning new information about how specific technological artefacts influenced informants perceptions of PV and changed them from negative to positive. The researcher's technical experience was used to clarify the responses. For example, some informants pointed out encryption as a way to hide students identity. Using the researcher's technical knowledge, it was obvious that the informants meant identity anonymisation. Clarification of these meanings allowed the researcher to systematically apply the coding process to each data set (interviews, focus groups, archival information).

The time-space discontinuity dimension from the duality of technology was also used to capture potential codes. Palvia et al. (2015) use time-space discontinuity dimension from the duality of technology as an analytical dimension. Palvia et al. used it to capture codes across the system lifecycle looking into codes related to the design phase and codes related to the post-implementation phase. Arranging these codes by historical timeline brought more insight into the analysis process (Palvia et al., 2015). Following the same steps, this research developed a historical timeline for all types of changes, as shown in Appendix 10.5. The development of the historical timeline allowed the researcher to understand different events, changes, and their reasons and outcomes. For example, informants referenced the implementation of social media, but they did not mention the e-participation policy because of this implementation. The timeline of the e-participation policy suggests that this policy was an outcome of HEAC compliance with the royal directive to increase government participation with citizens. The timeline also allowed the

researcher to validate informants' references to key changes and the timing of these changes. Technical dimensions were grouped as implementation stage related codes and post-implementation related codes. This allowed the researcher to trace the evolution of the electronic system over time. It allowed the researcher to understand the reason behind the change, the change, and the outcome of the change.

### ***Finding Themes***

As noted by Braun and Clarke (2006, p. 82), the “keyness of a theme is not necessarily dependent on quantifiable measures”, but has to do with its relevance to the research questions and objectives and the philosophical schools. Nvivo 11 Matrix query was used to visualise the pattern of the coded data using reference and case counts. Code reference counts were used to see the dominance of a pattern within a group. Case counts across groups were used when identifying a pattern around the sought PVs. Count levels (e.g. high vs Low) does not necessarily determine the prevalence of a theme, and it is possible to develop a theme through visualisation of low counts if the theme informs the study. For example, change of opinion among informants with low awareness was one of the themes which showed a low count within the focus group. The theme does not focus on how many informants changed their opinion. Instead, the theme is developed around the group dynamic and the demographic attributes of those informants who changed their opinion. In this case, a change of opinion happened when the informants were influenced by word of mouth, especially if they showed little or no awareness of the existing processes, policies, and system features.

After finishing the coding of the data (interviews, focus groups, archival data), the researcher mapped the codes and related themes to the research questions. Data analysis was conducted at two levels. At the organisational level, a chronological list of events in the HEAC evolution was developed covering the duration from the point of HEAC creation to the time of data collection (see appendix 10.5). The chronological list of key events enabled the researcher to understand the process of educational reform. Then, focus groups were analysed, looking at meaning and perceptions around the identified PVs at the organisational level, to derive perceptual maps (see Appendix 10.7). It is important to acknowledge that the aim was not to measure the level of realisation of PVs, but to understand how users defined these values, the links they may attribute to the EAS system, its design and features, and any positive or negative perceptions they associate with the EAS. For example, the relationship between positive and negative perceptions of planned PVs, reform outcomes, users' levels of informedness, users' assumptions and beliefs were analysed to understand the influence of these factors to PV creation.

Further analysis was conducted by comparing and contrasting different stakeholder perceptions of the PV creation process. This analysis was mainly with regard to the technological capabilities that were perceived to enhance the delivery of the planned PVs. Following this three-step approach for the data analysis was important to be confident that all relevant themes had been identified. This analytical process ensured a holistic, enriching approach, which was identified as a gap in the literature review.



#### **4.6.4 Document Analysis**

As mentioned earlier, archived documents were retrieved as part of the data collection process and to triangulate data sources. As listed in Appendix 10.1, 35 documents were collected and analysed as part of the dataset. This document analysis was useful to enhance understanding through by situating the contemporary account of informants within a historical context. It also allowed a comparison between the researcher's interpretation of events and records in documents relating to those events (May, 2011).

The main documents analysed in this research are policy documents such as admission regulation and e-participation policies, admission reports (2006-2017), survey reports, HEAC Portal, EAS design documents, electronic students' guides (2006-2018). These documents were used to analyse the educational reform within the historical context. This allowed the researcher to establish a timeline for the electronic admission system from planning until assimilation. The findings from this analysis were compared with findings from the interviews and focus groups for further analysis. May (2011, p. 199) stated that document analysis should "not simply reflect, but also construct reality and versions of events." These considerations were followed as guidelines to make the document analysis reliable. Moreover, the document analysis enabled triangulation of data sources within the case study. For example, the objectives of EAS implementation were compared to those reported by informants in the interviews. Details of changes in the organisation and EAS design were also captured from the documents. Document metadata allowed the researcher to authenticate and identify the date for the changes. Informants often referred to specific events or changes, but they do not reliably remember the date of these

events or changes. The archived documents allowed the researcher to obtain additional information which corroborated the interview data.

#### **4.7 Research Reliability and Validity**

To evaluate research credibility, quantitative research uses the terms: validity and reliability. The reliability and validity in qualitative research are associated with trustworthiness, rigour and research process transparency (Golafshani, 2003). Noble and Smith, (2015) propose four strategies to demonstrate reliability and validity in qualitative research: demonstrating trustworthiness, consistency, neutrality and applicability, as shown in Table 4.11.

The strategies presented by Noble and Smith (2015) were adopted in this research study. The previous sections of this chapter have provided a detailed description of the research approach, research strategy, data collection, and data analysis to provide a clear documented research process and hence achieve research consistency. The researcher also maintained a reflexive journal throughout the study and considered peer reviews by the research supervisors and research colleagues to minimise any potential bias. Consideration for potential bias is discussed in Chapter 8 in the research limitations section.

| Table 4.11: Qualitative Research Credibility Criteria and Enhancement Strategies (Adapted from Noble and Smith, 2015)  |   |
|--|---|
| Criteria   | Enhancement Strategies  |
| <p><b><u>Trustworthiness</u></b><br/>           Recognising that multiple realities exist, and outlining personal experience and viewpoints which could lead to research biased</p>  | <p><b><u>Reflexivity</u></b><br/>           Reflexive Journal<br/>           Peer debriefing to uncover bias</p> <p><b><u>Representativeness of the findings in relation to the phenomena</u></b><br/>           Inclusion of thick and rich verbatim description of participants account to support the findings</p> <p><b><u>Data Triangulation</u></b><br/>           Use of multiple data sources to validate the truthiness of the data.</p> |
| <p><b><u>Consistency</u></b><br/>           The research process is clear and transparent, where an independent researcher could be able to arrive at similar or comparable findings.</p>  | <p><b><u>Achieving Auditability</u></b><br/>           A transparent and clear description of the research process<br/>           Engaging with other researcher and discussing emerging themes to reduce research bias</p>   |
| <p><b><u>Neutrality</u></b><br/>           Focus on acknowledging the complexity engagement with participants and the mythological approach, the analysis, and the findings are linked to the researcher philosophical position.</p> | <p>Achieved when truth value, consistency, and applicability have been addressed.</p>   |
| <p><b><u>Applicability</u></b><br/>           Consideration is given to whether the findings can be applied to other context, settings, or groups.</p>   | <p>Rich details of the context and settings</p>   |

## 4.8 Chapter Summary

In summary, this chapter has discussed the research philosophy used in the study. The discussion set out the distinct differences between existing paradigms prior to arguing the suitability of interpretive paradigm as the best choice to guide this study. Also, it reported

the research approach deployed to guide this study and explored various approaches available to IS researchers, before outlining the justification for the choice of a qualitative research approach. In addition, it presented the selected research design, case study, outlining the methods deployed in the design of this approach. As well as presenting a brief discussion on the selection of the research design and the case study, this chapter documented the data collections and analysis process along with research reliability and validity. Having described the research methods for this study, the following chapter describes the key features of the case chosen for investigation.

## **5. Case Study Background**

This chapter provides background information about the case study. As stated in Chapter 3, the theory of public value was developed and mainly investigated in democratic states where the political and social settings differ from those states which are less democratic or have no democracy at all. The debate on the authorising environment, and its suitability for different political settings, encourages researchers to investigate e-government PV creation and the known PV frameworks in the context of different political and social settings (Williams and Shearer, 2011). Therefore, investigating how e-government can create PV in Oman will bring more insight to general PV and e-government PV research. This chapter provides general information about the country and reviews its PV and e-government. It also provides background information about the selected case study in Oman.

### **5.1 General Information**

The Sultanate of Oman is an Arab and Middle Eastern country located in the south-eastern part of the Arab Peninsula. The total area is 309,500 km<sup>2</sup>, with a population of 4,664,981 with 56.3% Omanis and 43.7% expatriates (NCSI.gov.om, 2019). According to 2017 statistics, 42% of the population is under the age of 17, and 23% is in the age group 18-29 years (NCSI.gov.om, 2019). The Sultanate is ruled by his Majesty Sultan Qaboos, who is the final authoritative power where general laws are approved. The Sultan assumed power on 23 July 1970 when the country was struggling with poverty, illiteracy, and absence of infrastructure and government public services. Therefore, the Sultan is a symbol of transformation in the country where living standards have improved remarkably.

Laws are usually issued in the form of a decree or directives. The Sultan is the Prime Minister, and he appoints the ministers who are cabinet members in the Ministerial Council. The ministers have the power to implement the details of the decrees and directives. The government structure is composed of the three councils: Ministerial Council, 'Shura' Council, and the State Council. Shura is the Arabic translation for the word consultative.

The literature labels Oman as an authoritarian regime with a highly centralised hierarchical decision system (Common, 2008). The Sultanate has gradually adopted democratic practices without antagonising the traditional country base (Al-Haj, 1996). In 1981, the State Consultative Council (SCC) was established as an advisory board to the government with appointed members: 17 members representing Omani provinces, 17 representing the government, and 11 representing the private sector (Al-Haj, 1996). A reform was seen in 1991 when the Oman Consultative Council (OCC) was established with more power and authority and elected members to represent the 59 states in Oman. The ministers are called by the OCC and questioned on the work of their ministries in an open question-and-answer session broadcasted live on nationwide TV (Rabi, 2002). Another milestone was witnessed in 1996 when the Sultan issued a royal decree to form the State Council which consisted of two councils: an appointed council, i.e. the Oman Council, and an elected council, the Consultative Council (Rabi, 2002). The State Council works with the ministerial parliament, but does not have power over the parliament apart from advising and questioning the progress of government projects (Rabi, 2002). The political structure in Oman is a blend of tribal values, Sultanic tradition, and religious

principles of consultation (Rabi, 2002). The status of an individual is determined by the tribal or group affiliation and rarely by individual merits (Al-Hamadi et al., 2007).

## **5.2 Oman Public Administration**

The Sultanate of Oman has an elected consultative council, founded in 1991, which has been utilising e-voting since 2011 (ITA, 2012). Hence, Oman can be categorised as an emerging democracy. However, Common (2008) categorises it as highly centralised, in which national culture plays an important role in shaping public administration (PA) practices.

Common (2008) identifies *wasta* as one of the challenges facing PA in Oman, which has hindered PA reform (2008). *Wasta* is the use of social networks of interpersonal connections rooted in family and kinship ties to favour someone over other citizens (Hutchings and Weir, 2005; Smith et al., 2012). Unlike Chinese Guanxi, *wasta* is always regarded as a negative cultural practice associated with corruption (Hutchings and Weir, 2005). Krause (2008) argues that *wasta* impedes economic development and weakens civil society. Cunningham and Sarayrah (1993, p. 95) stated *wasta* is obviously unfair “affirmative action for the advantaged.” Hence, *wasta* is always linked with unfair treatment. *Wasta* has become part of the organisational culture in government entities in the Middle East (Smith et al., 2012). It can be a powerful force in the decision-making process in the Arab world (Hutchings and Weir, 2005; Common, 2008). Considering the impact of *wasta* on the decision-making in PA, it is expected that *wasta* plays a role in influencing the perceptions of PVs in Oman. It can also challenge the creation of the PV

process. Thus, questions about the impact of *wasta* were added to the interview and focus group questions, as shown in Appendix 10.2.

### **5.3 E-government Initiative**

The Oman digitisation strategy posted on the Information Technology Authority (ITA) website (ITA.gov.om, 2019), came into being after the Sultanate formed the National Information Technology Committee (NITC) in May 1998. The role of NITC was to develop a national strategy and encourage the usage of IT in government entities. The digitisation strategy was prepared by ITA in 2002 by Gartner Consultancy. To support the implementation of this strategy, the Sultan issued a royal decree 52/2006 to form the Information Technology Authority (ITA) as an independent government entity in 2006. The role of ITA is to oversee the implementation of the Oman digital strategy, which is branded as e.Oman. ITA assesses all government entity digitisation initiatives and produces a yearly report for the Ministerial Council. As a result of government pressure and support, Oman's position in e-government readiness has improved, as shown in Figure 5.1. The United Nations e-government report shows Oman's advancement of more than 30 positions in the 2018 survey from its 2014 position, and it ranks among the top 10 member states with the highest commitment to cybersecurity (United Nations, 2018).



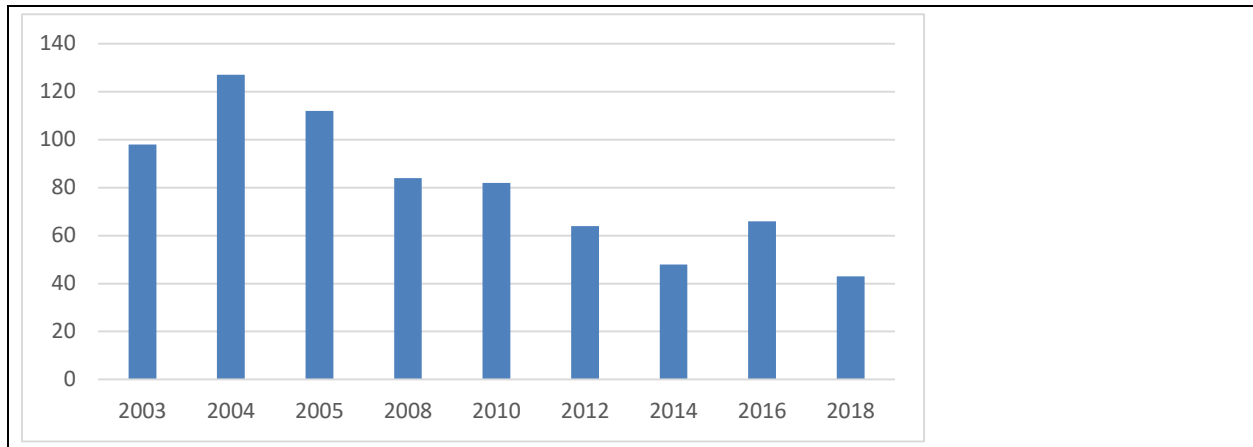


Figure 5.1: Oman E-government Index (adapted from UN E-government Readiness Report 2003-2018). The lower the index the better the ranking.

#### 5.4 Higher Education Admission Centre Reform

One area that is often associated with the PV creation process is educational reforms. The existing literature shows different types of educational reforms associated with higher education admission services. For example, the UK adopted a fair-access policy reform aimed to increase admission rates for those who come from minority groups and low-income students (Boliver, 2013). A review of the reform concluded that the reform was challenged by the inability of government to control universities (Adnett et al., 2011; Boliver, 2013), and the lack of methods to account for contextual factors in the admission process (Boliver, 2013). The introduction of a fair admission algorithm was another type of education reform. Using this algorithm university admission is based on parallel or sequential consideration of students competitive scores and preferences (Lien et al., 2016). The study was carried out in China and investigated the fairness of score-based admission and ability-based admission. The study concluded that in China ability-based

admission is more likely to achieve fairness where students with better ability get admitted into better schools.

The common goal of these higher education admission service reforms is achieving fairness and transparency. In this study, the development of an electronic system for admission services comes as an educational reform where technology is seen as the heart of the reform (HEAC.gov.om, 2019). The Oman e-government based reform aimed to deliver fairness and transparency and informed choice (HEAC.gov.om, 2019). Unlike the Chinese educational reform, the EAS algorithm for the higher education system was a score-based admission. More details about the higher education admission service in Oman and the EAS system are provided in section 5.4.1 below.

#### **5.4.1 Electronic Admission System (EAS)**

The development of Oman's education system in the past 30 years has resulted in an increasing demand for higher education unmatched by supply (AL-Lamki, 2002). Numbers have risen from 900 students and three primary schools before 1970 to 770,481 students of both sexes and about 1,808 schools in 2018 (NCSI.gov.om, 2019). The number of General Education Diploma (GED) graduates has also experienced a rapid increase from 19,000 in 1995 to 34,775 graduates in 2018 (HEAC.gov.om, 2019). To meet the increasing number of students, the Sultanate needed to expand the higher education institutes (HEIs). The number of HEIs has increased from one public university in 1986 to 42 public HEIs and 27 private HEIs in 2018 (HEAC.gov.om, 2019). However, the level of competitiveness for higher education admission remains high because only

23,837 GED graduates were enrolled in HEIs in 2018, with an enrolment percentage of 68% (HEAC.gov.om, 2019).

The high competitiveness and increasing number of students was a challenge to higher education admission services in Oman, which was manual and decentralised (Al-azri et al., 2010). In addition, the admission process was found to be time consuming, slow, and not transparent (Al-azri et al., 2010). Students also faced challenges where they had to travel thousands of kilometres to the individual HEIs scattered across the Sultanate. Against these challenges, the Ministry of Higher Education raised a suggestion to the Ministerial Parliament for centralisation of all higher admission services and the implementation of an electronic admission system (EAS). Al-azri et al. (2010) cite four main objectives for the initiative, as shown in Table 5.1: social, administrative, psychological, and economic.

| Objective      | Advantages   |
|----------------|--|
| Social         | <ul style="list-style-type: none"> <li>- Equality for all Omani students</li> <li>- Transparent admission process</li> <li>- Time for informed choice</li> </ul>   |
| Administrative | <ul style="list-style-type: none"> <li>- Eliminate queues at admission offices</li> <li>- Reduce administrative burden</li> <li>- Accurate information</li> <li>- Improve statistics availability</li> </ul>   |
| Psychological  | <ul style="list-style-type: none"> <li>- Improve information and details of HEIs programmes in one document</li> <li>- Allow students more time to make an informed choice</li> <li>- User-friendly environment for students to select their programmes</li> </ul> |
| Economic       | <ul style="list-style-type: none"> <li>- Reduce travel costs for students</li> <li>- Reduce the number of staff and committees for admission offices</li> <li>- Reduce consumption of paper</li> </ul>   |

The Ministry of Higher Education’s proposal was approved, and the HEAC centre was established by royal decree in 2005 (HEAC.gov.om, 2019). As directorate general within the Ministry of Higher Education, HEAC was tasked by the decree to regulate admission to all public higher education institutes in Oman (HEAC.gov.om, 2019). HEAC works as a buffer between academic institutes, government and citizens. Before HEAC, admission was decentralised, and each organisation had its own regulation and admission service, and the admission process was done manually. Students had to travel to submit their application manually to the academic institutes, which often limited their choices to one or two academic institutes depending on the admission timeline for these organisations.

When HEAC was institutionalised, it started with four main offices/departments: General Manager Office, Awareness Office, Electronic Management Office, and Admission Office. As shown in Figure 5.2, a Statistics Office was added in 2009 to manage all the information generated by the system and send it relevant stakeholders such as Ministry of Education, Ministry of Manpower, Ministerial Parliament and Council of Planning.

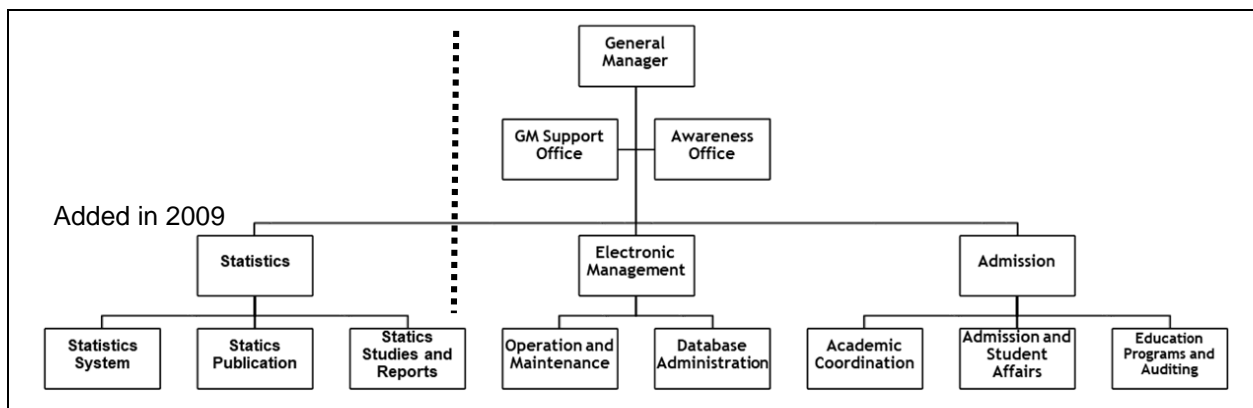


Figure 5.2: HEAC Organisation Chart (HEAC.gov.om, 2019)

As noted on the HEAC website, HEAC provides admission service to GED students, which means students who have completed 12 years of schooling. Higher education institutes offer their education programmes through HEAC. HEAC regulates the general admission policies. However, admission requirements and the number of offered opportunities are provided by the individual higher education institutes. The electronic service is open for students from April until the end of May each year. During the registration phase, students can change their preferences as they see fit, especially after knowing their grades in the first semester. The final GED results come out during July. Then, the system opens again for students to finalise their selections. Students can choose programmes from the following categories: social welfare scholarships, low-income scholarships, full public internal scholarships, partial public internal scholarship, external scholarships, external grants, and internal grants. Initially, students can only choose 30 programmes, but this was changed to 40 in 2011, and unlimited in 2017. Students can also prioritise their selection in the system. The timetable for the initial and the final registration phases are announced on the EAS portal and HEAC social media accounts at the beginning of each academic year. Student guides are also published electronically on the EAS portal and distributed as a hard copy to all students during March. The timetable also includes the dates for the first and second allocation rounds. The allocation round is the announcement of results where students can change their selection only after the first allocation round. Once the second allocation round is announced, the registration is completed, and students cannot alter their choices anymore.

The admission process is based on a competitive score, which is a variable calculated for each selected programme based on students' scores earned in their GED exams. The competitive score varies depending on the requirement for each program. For example, an engineering course may require specific marks in math, physics and English courses. This is called specialisation total, and it is equivalent to 60% of the competitive score. The remaining 40% is calculated based on total marks, as shown in the arithmetic formula in Figure 5.3.

$$\text{Competitive score} = (\text{total marks of subjects required for a specialization}) \times 60\% \text{ or } "0.06" + (\text{total marks of subjects taken by the student}) \times 40\% \text{ or } 0.04$$

Figure 5.3: Competitive Score Calculation (HEAC.gov.om, 2019)

The electronic admission system starts with a portal which serves as a 'one-stop-shop' (Al-azri et al., 2010). Through the portal students can find all relevant information admission regulations, admission processes, admission reports, and admission registration screens. The portal is integrated with the Education Portal from the Ministry of Education to retrieve all students' information and GED marks automatically. Students who study abroad need to upload their certificate, and HEAC verifies it before entering their marks into EAS. The registration screen allows students to list their choices using the programme codes and assign their priorities to each selection. Students can review their selection before submitting their online registration sheet, as shown in Figure 5.4.

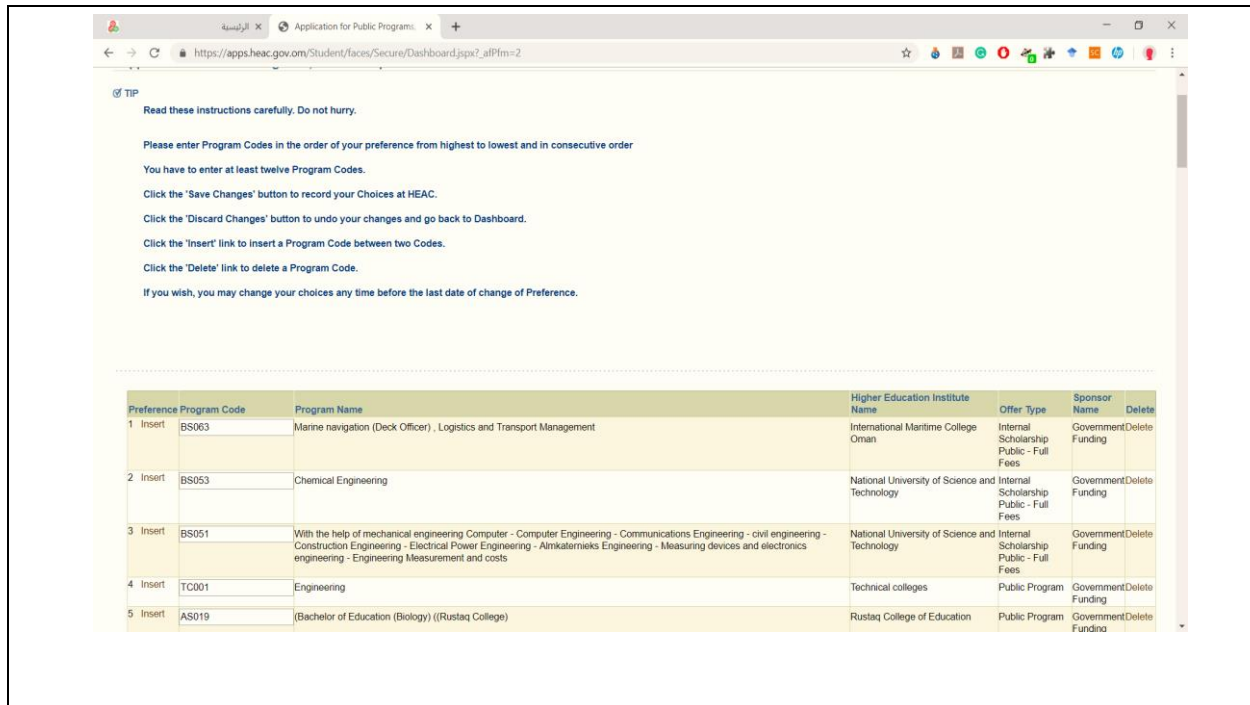


Figure 5.4: Registration Screen (HEAC.gov.om, 2019)

HEAC has further developed the EAS system where students can now register using SMS service or smartphones. Student can also check their results via the available technology artefacts once the results are out. The admission report lists their selections, competitive student score for each selection, overall cut-off marks for each selection, and position in the waiting list if applicable. Student eligibility for the programme is also listed in the report, as shown in the screenshot shown in Figure 5.5. However, SMS only shows the code of the accepted program. The waiting list statistics are provided so that students can decide whether they want to alter their selection after the first allocation round.

| Choice Type | Preference | Round Number | Program Code | Program Name   | Higher Education Institute Name        | Offer Type                              | Eligible Mark | Rank  | Cut Off Marks | Waiting List |
|-------------|------------|--------------|--------------|--|--|---|---------------|-------|---------------|--------------|
| Public      | 1          | 1            | MT006        | Royal Court Affairs  | Military Technological College         | Public Program                          | Yes           | 54.29 | 73.84         | 1201         |
| Public      | 2          | 1            | SA063        | Marine navigation (Deck Officer)   | International Maritime College Oman    | Internal Scholarship Public - Full Fees | Yes           | 54.59 | 74.21         | 2867         |
| Public      | 3          | 1            | MT004        | Royal Navy of Oman   | Military Technological College         | Public Program                          | Yes           | 54.29 | 61.18         | 4400         |
| Public      | 4          | 1            | MT001        | Office of COSSAF   | Military Technological College         | Public Program                          | Yes           | 54.29 | 73.64         | 1230         |
| Public      | 5          | 1            | MT006        | MODES  | Military Technological College         | Public Program                          | Yes           | 54.29 | 62.87         | 1369         |
| Public      | 6          | 1            | SA088        | BSc in Aviation Management   | Modern College of Business and Science | Internal Scholarship Public - Full Fees | Yes           | 54.59 | 80.99         | 4407         |
| Public      | 7          | 1            | SA064        | Port, Shipping and Transport Management  | International Maritime College Oman    | Internal Scholarship Public - Full Fees | Yes           | 54.59 | 72.52         | 3010         |
| Public      | 8          | 1            | MT002        | Royal Army of Oman   | Military Technological College         | Public Program                          | Yes           | 54.29 | 52.67         | 2030         |
| Public      | 9          | 1            | SA029        | English Language and Translation   | Sohar University                       | Internal Scholarship Public - Full Fees | Yes           | 56.69 | 76.8          | 3302         |
| Public      | 10         | 1            | SA279        | Software Engineering   | Muscat College                         | Internal Scholarship Public - Full Fees | Yes           | 56.69 | 71.98         | 0626         |
| Public      | 11         | 1            | SA087        | BSc in Airport Management  | Modern College of Business and Science | Internal Scholarship Public - Full Fees | Yes           | 54.59 | 80.13         | 1366         |
| Public      | 12         | 1            | SA041        | Information Technology   | Middle East College                    | Internal Scholarship Public - Full Fees | Yes           | 54.59 | 71.38         | 9860         |
| Public      | 13         | 1            | SA089        | BSc in Health and Safety   | Modern College of Business and Science | Internal Scholarship Public - Full Fees | Yes           | 54.59 | 78.13         | 1341         |
| Public      | 14         | 1            | SA196        | English Literature Broadcasting Public Relations Advertising Writing Professional English Journalism | Bayan College                          | Internal Scholarship Public - Full Fees | Yes           | 56.69 | 71.7          | 1120         |
| Public      | 15         | 1            | SA128        | Bachelor of Psychology   | Mazoon College                         | Internal Scholarship Public - Full Fees | Yes           | 56.69 | 82.99         | 1366         |
| Public      | 16         | 1            | SA187        | Computer networks  | Majma College                          | Internal Scholarship Public - Full Fees | Yes           | 54.59 | 68.78         | 1207         |

Figure 5.5: EAS Admission Report (HEAC.gov.om, 2019)

The EAS system also comes with an audit report and auto-notification features for any changes in the students' profile. The audit report is accessible via the portal, where it logs all SMS communication with the students, as shown in Figure 5.6.

| Slr. No. | Civil Number | GSM      | Message  | Send Date    |
|----------|--------------|----------|--|--------------|
| 1        |              | 92223731 | 92223731 رقم المستخدم 18993184 - لقد تمت بتغيير رقم هاتفك الرقم السابق هو 94183888 الى الرقم الحالي هو 94183888  | Jul 15, 2018 |
| 2        |              | 94183888 | 92223731 رقم المستخدم 18993184 - لقد تمت بتغيير رقم هاتفك الرقم السابق هو 94183888 الى الرقم الحالي هو 94183888  | Jul 15, 2018 |
| 3        |              | 92223731 | 94183888 رقم المستخدم 18993184 - لقد تمت بتغيير رقم هاتفك الرقم السابق هو 92223731 الى الرقم الحالي هو 94183888  | Jul 15, 2018 |
| 4        |              | 94183888 | 94183888 رقم المستخدم 18993184 - لقد تمت بتغيير رقم هاتفك الرقم السابق هو 92223731 الى الرقم الحالي هو 94183888  | Jul 15, 2018 |
| 5        |              | 92223731 | 92223731 رقم المستخدم 18993184 - وبموجبكم الإطلاع على إعلان مستجدات البرامج الدراسية بمؤسسات التعليم العالي والملتكات من خلال موقع مركز القبول الموحد الإلكتروني   | Jul 12, 2018 |
| 6        |              | 92223731 | 92223731 رقم المستخدم 18993184 - تزيد من فرصة قبولك، تصحك بإضافة عدد أكثر من البرامج الدراسية التي تشترط للقبول بها في مرحلة تعديل الرغبات التي ستبدأ بعد ظهور نتائج بيلوم التعليم العام   | Jul 1, 2018  |
| 7        |              | 92223731 | 92223731 رقم المستخدم 18993184 - علماً بأن هذه النتيجة بناء على نتائجك في الفصل الدراسي الأول، ولا بدك بها نتيجة قبول نهائية وسيتم الإعلان عن النتيجة النهائية بعد ظهور نتائج بيلوم التعليم العام والنهاية مرحلة تعديل الرغبات من البرامج الدراسية | Jul 1, 2018  |
| 8        |              | 92223731 | 92223731 رقم المستخدم 18993184 - قد أُنشأت البرامج التالية وتغيير ترتيب التالي BS222/BS223/MS005/TC004/TC006/TC007/VC002/VC014/VC016/VC005/VC007/VC004/VC011/  | Apr 14, 2018 |
| 9        |              | 92223731 | 92223731 رقم المستخدم 18993184 - يرجى التأكد من صحة بياناتك وإيجاد اختيار لك من البرامج الدراسية   | Apr 14, 2018 |

Figure 5.6: EAS Audit Report (HEAC.gov.om, 2019)



## 5.5 Chapter Summary

This section has presented an overview of Oman's political structure, public administration, e-government, and higher education. Oman has a highly centralised political structure. The Sultanate public administrative practices are influenced by its tribal system, specifically, *wasta*. The presence of *wasta* is seen as a challenge to the fair delivery of government services. Choosing a context such as Oman can advance existing PV research by bringing new insights which may not exist in established democracies. The study selected a case where an educational reform was carried out through the implementation of an Electronic Admission System for public higher education opportunities. The reasons behind the selection of this specific case study are explained in Chapter 4. Having described the key features of the case chosen for investigation, the following chapter describes the findings of the chosen case study.

## 6. Findings

This chapter reports the findings of the exploratory case study. It summarises the ICT-enabled educational reform that occurred in Oman, a Middle Eastern country. A PV perspective is used to interpret the key themes that emerged from the findings. The chapter begins by describing the background to the case study and explaining the Ministry of Higher Education (MHE) motivation for educational reform in section 6.1. Section 6.2 explains the role of the state authority and how it influenced PV creation through the Electronic Admission System (EAS) in this ICT-based educational reform. Section 6.3 presents contrasting interpretations of the PV vision by the higher education admission centre (HEAC) and Higher Education Institutes (HEIs). This is followed by the business changes and enablers that influenced the delivery and the creation of PVs through EAS in Section 6.4 and 6.5, respectively. How the informants from the HEAC and HEIs believed EAS could enable them to improve these perceptions is presented in Section 6.6. Section 6.7 presents users' experience of the manifestation of the planned improvements to ICT educational reform. In doing so, this section provides an indication of the state of PV realisation from the citizens' perspective. Finally, section 6.8 synthesises the findings to present a heuristic process diagram that demonstrates the relationships between the identified themes to achieve this ICT-based educational reform.

Throughout this chapter, informant quotes are referenced using codes to ensure anonymity. For example, informants at the organisational level are coded using INT followed by the informant's code. Focus group (FG) informants are coded using FGM.N, where M refers to the focus group number and N, refers to the informant's code. Archived

documents are referenced Src(N), where is N references the document reference code, as shown in Appendix 10.1.

## **6.1 Background**

This section starts by giving an overview of the EAS. It sets the scene about the higher education admission services before the implementation of the EAS in 2006 and presents how the ICT-based educational reform was initiated. In doing so, this section presents what motivated the Ministry of Higher Education (MHE) to adopt an ICT-enabled educational reform.

The EAS is a government-to-citizens implementation of e-government in Oman. The electronic system not only allows General Education Diploma (GED) graduates to apply online, it automatically processes their applications by calculating their competitive scores against the available undergraduate opportunities in Higher Education Institutions (HEIs) and internal/external scholarships sponsored by the MHE and other HEIs. The competitive score is calculated based on a formula that considers the average student's score and the score of the required subjects, as explained in Chapter 5, section 5.4. The competitive score is calculated to define the applicant's position in the list of the eligible candidates. Students interact with the system via the main portal ([www.heac.gov.om](http://www.heac.gov.om)), SMS services, and the mobile version of the EAS to apply for their preferred higher education subject majors. The EAS system is regarded as one of the most successful implementations in Oman, winning several international awards, such as the World Summit Award (WSA).

Before the EAS implementation, the MHE had a small unit regulating and administrating oversees scholarships and the Colleges of Applied Science and Technology (CAST). These colleges were scattered across the Sultanate. Other HEIs administrated their own admission services, but the regulations of the higher education admission policies were centralised through the Higher Education Council, which was founded by a royal decree in 1998. The Council was led by the Minister of the Royal Court with representatives from any ministry that supervises any of the HEIs in the country, such as the Ministry of Education, Ministry of Higher Education, Ministry of Health, Ministry of Manpower, and Sultan Qaboos University. However, each institute would advertise its educational programmes and its requirements in national newspapers separately.

### **6.1.1 Motivation**

The organisational informant's suggested that the education reform was motivated by challenges that faced both the service providers and beneficiaries. These challenges were related to the time and cost of the admission process and *wasta*<sup>1</sup>. This sub-section details the challenges that motivated the MHE to start ICT-based educational reform.

The findings suggest that the time and cost required to run the admission process were challenging for the organisation and the citizens. The old admission process was costly for the organisation because it was manual, with HEIs having to process many applications. According to HEAC statistics, the number of applicants was 44,330 in 2006.

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<sup>1</sup> For an explanation of the term *wasta* please refer to section 5.2 in chapter 5 page 113

The HEAC former General Manager stated that admission offices used to bring in additional staff to process the admission applications manually. This process included verification of applicants' information, checking their eligibility and sorting all applicants. Admission offices used to have different committees for each task with each committee having between 20 and 100 employees who were paid overtime.

*Admission offices used to spend lots of money on the admission process. They needed many employees in HEIs admission offices. They had different committees to take care of the verification, checking the requirements, and sorting. Each committee would have from 20 to 100 employees. Imagine the huge number gets repeated in other HEIs. Imagine if each student chooses 30 or 40 programmes, the number of transactions is beyond the imagination of human capabilities, and it required electronic sorting. We do not need to pay overtime as we used to.*  
(INT7)

The admission process was also costly for students and their parents. Students sometimes needed to stay overnight in the capital city to apply to several HEIs. The admission offices were located in the capital city, with students from outside sometimes having to travel thousands of kilometres. Some of these students had to undergo a ten-hour drive from the farthest point in the south or seven hours from the farthest point in the north. At that time, transportation was not good, and many of the roads were single lane. In addition, students might need to stay in the capital for a few days so that they could apply to different HEIs. For example, the registration for the Sultan Qaboos University and overseas scholarships could be scheduled on different days. Some of those applicants would rent a place or sleep in a tent on the beach. Informants, especially those who were part of the implementation team in 2006, such as the HEAC former GM and project manager, referenced these challenges.

*From an economic point of view, in the past, students suffered from travelling just to get to the capital. Some of them had to stay overnight. At one point, some students sleep in a tent on the beach. Thus, the Ministry decided to go for one admission system. People were paying too much money, and we, admission officers, used to dedicate so many employees to finish the admission process in a few weeks. (INT7)*

*You know, at the time, there was no system. Each university used to have their system, and the student would have to travel thousands of kilometres to apply for a higher education opportunity. Students had to travel from different places in Oman to the capital to apply for [a] higher education opportunity. (INT2)*

The quotes above suggest that the old admission process was expensive for the HEAC and the users. Consequently, the old admission process was limiting students' choice. In many cases, students would apply for three educational programmes, as stated by HEAC informants.

*Students could only apply for a limited number of educational programmes. At most, they were able to apply for three subjects. The available resources prevented us from allowing students to apply for more than three subjects. (INT2)*

Besides these challenges, the existence of *wasta* was another motive to reform higher education admission services. As discussed in the literature review, *wasta* is considered an example of administrative corruption. In such services, *wasta* can be seen when a student is awarded a scholarship even if the minimum required competitive score is not met. They get this special treatment because they have relatives in the admission services, or they are related to senior members of the government. *Wasta*, as a cultural practice, has always been cited as a source of corruption and unfairness. This was also seen from end-user interviews, as informants associated *wasta* with unfairness and loss of trust. Thus, fighting *wasta* was a core objective for the HEAC implementation team, as illustrated by informants who witnessed EAS implementation. The two informants who

were in the project implementation team acknowledged the spread of *wasta* in the public sector services. Indeed, *wasta* was addressed during the development stage, as stated by the HEAC former general manager (INT7) and former project manager (INT2) when they were asked if reducing *wasta* was among their objectives during the project implementation phase.

*We cannot say that officially, but you know, wasta is everywhere in the public sector, and many people complain about wasta. We tried to make the system transparent and fair, and I think we did it. (INT2)*

*Indeed, wasta was taken into consideration during the development stage because it exists in our society. (INT7)*

Against these challenges, the admission office at the MHE championed this initiative. The admission office escalated the idea to the Minister who brought it up in the Ministerial Parliament, as stated by the former project manager who managed the development of EAS:

*The idea was to have a unified admission electronic system which can have all higher education admissions services under one umbrella. We wanted a [one-stop shop] for all the students. You know, at the time there was no system. Each university used to have their system, and the student would have to travel a lot to apply for a higher education opportunity. Students had to travel from different places in Oman to the capital to apply for [a] higher education opportunity. The Ministerial Parliament blessed the idea and sanctioned it by royal decree in 2005. (INT2)*

Moreover, the admissions manager stated that the organisation structure was based on the idea of making the admission service automated instead of manual. In 2004, the team that was managing higher education admissions wanted to have an electronic system rather than a manual system to overcome the challenges highlighted in the motivation section. Therefore, the HEAC organisation structure was developed to accommodate

what the electronic system required. This may explain why the HEAC was the only directorate that had its own IT team.

*No significant change because HEAC organisational structure is based on the electronic system. The only added department is the statistics department, which was established once HEAC launched the statistics electronic system. The Ministry had an idea to develop an electronic system, and the organisation structure was based on it. (INT5)*

The royal decree (104/2005) allowed MHE to establish a department at the directorate level attached to the Ministry's Undersecretary's office. The royal decree specified that the HEAC should become the only entity that regulates and administers admissions into government-funded higher education opportunities, starting from the academic year 2006/2007 (Src12). Hence, the EAS was launched in the same academic year.

Informants described events and changes throughout the EAS life cycle, covering pre-implementation, implementation, and post-implementation stages. Pre-implementation refers to the situation before the implementation of the EAS. The implementation phase covers the first two years, which witnessed HEAC institutionalisation and EAS development (2004–2006). The post-implementation stage covers the period since the HEAC was launched until the date of the interviews. The EAS system has evolved throughout the years, as shown in the chronological summary in Figure 6.1. The figure shows major events and changes that were witnessed throughout the EAS life cycle with full details of these events and changes and their triggers documented in Appendix 10.5.



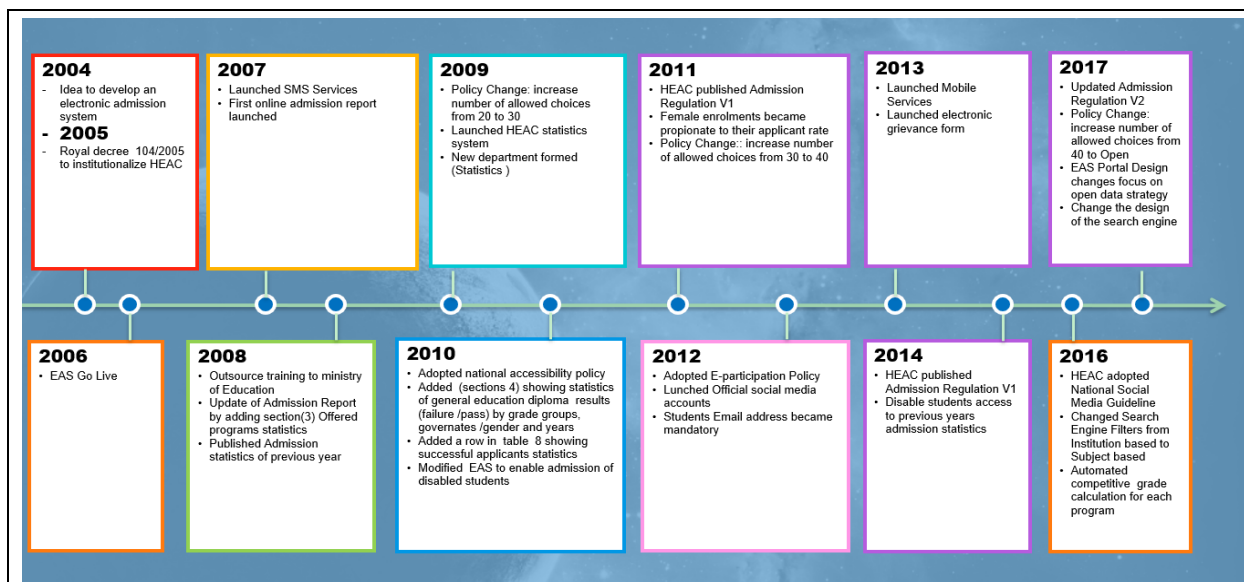


Figure 6.1: EAS Evolution Timeline

This section presented an overview of the EAS story and the motivation behind this ICT-based educational reform. The idea to have an EAS was seen as the means to achieve centralisation of all public higher education admission services and overcome all economic and social challenges that faced both the government and citizens. This idea flourished through the institutionalisation of a new directorate to regulate and administrate all HEIs' admission services, which could not have been possible without the presence of the state authority, as seen in section 6.2.

## 6.2 State Authority

In a highly centralised political structure, state authority influences public sector organisations. The interview data suggested that the state authority played an important role in the creation of public value throughout the EAS life cycle. The previous sections showed that the social and economic issues that accompanied the delivery of higher education admission services in Oman before 2006 resulted in an idea to develop a

centralised EAS. It is important to note that these admission services were run by different ministries such as the Ministry of Higher Education (MHE), Ministry of Manpower, and the Ministry of Health. The MHE needed to have the idea sanctioned by a royal decree in 2005 to be able to centralise the admission services under one umbrella, which consequently led to the institutionalisation of a directorate within the MHE. The findings show that informants from the HEAC project implementation team believed that the royal decree was key for sanctioning the idea and its objectives. Former members of the HEAC project team stated that academic institutes initially complained about the withdrawal of their authority.

*This reminds me of some organisations who complained to the Ministers' Parliament that [their] roles and responsibilities had been withdrawn from them. I think people at the time were surprised how the system changed their daily routine but now they are used to it, and I believe they like it. (INT2)*

*In the beginning, there were some complaints from some academic institutes saying why should HEAC run the admission process. They felt their power is withdrawn by the system. Yes, HEAC removes power from those who abuse power. It removed it from those who believe authority is power. (INT7)*

The former HEAC general manager also explained that His Majesty reviewed the decree and added a phrase that gives exclusive authority to HEAC to run the admission process for government HEIs. The added phrase is also shown on the decree listed on the HEAC website, as shown below (**in bold**).

*'Establishment of Higher Education Admission Centre (HEAC) at the directorate level reporting to the undersecretary office. The centre (**exclusively**) administrates admission service.'* (Src12)

The above quotes suggest that state authority support was a key enabler in forming the HEAC and hence developing the EAS system. However, that support did not seem to last

once the EAS was operational. Limited legislative power was stated implicitly by HEAC informants and explicitly by one of the organisational stakeholder informants. For example, some HEAC informants stated that the HEAC could not change the educational programme list and its requirements as they came from the HEIs.

*Choices were limited in the past. Yet there is still one problem. Some students are interested in programmes which are not listed. HEAC is not responsible for the list. (INT1)*

*Programmes requirements are entered into HEAC by the academic institute. We cannot change it. Only academic institutes can change it. (INT10)*

*HEAC only gives advice and information to the academic institutes. In the case of the unsuitability of programme requirements, the student should apply for grievances. (INT7)*

While HEAC informants implied the limitation of their authority to influence the offered education programme, and control their budget, informants from HEIs explicitly called for HEAC to come out from the Ministry umbrella and be an independent government entity. They argued that HEAC independence from the Ministry would give better control over the required resources and improve their authority.

*HEAC should be independent at the management and financial levels; It should be an independent entity. They will be more valued by society, and they would have more flexibility. (INT16)*

*The other challenge is that HEAC should be an independent government entity and not a directorate with the Ministry of Higher Education. The idea is to have its budget. We are talking about [a] national admission service. HEAC cannot keep the competent staff from leaving with such salaries. (INT15).*

*Another challenge for HEAC is being under the responsibility of the Ministry of Higher Education . The Ministry limits its power. They cannot make any changes without them. (INT14)*

Being part of the MHE means that HEAC would rely on the Ministry's other directorates,

which administrate finance and training. This could mean that HEAC would only get limited opportunity to train its staff or would not get the financial resources to upgrade its systems. This meant that the training plan is centralised; hence, the HEAC could not decide on how many employees would go on training each year. This also meant that the HEAC could not get the financial resources that were required to buy the licenses for technology upgrades.

*Our training comes from the ministry allocated budget for IT training, and we are not located in the IT department. Therefore, we do not get many training programmes for our IT team. We need a budget to upgrade the current technology. For example, we could not implement encryption with current technology. It is running on Oracle 10g using Java. We need to upgrade it. (INT18)*

These constraints could challenge the HEAC initiative to implement changes required to develop the EAS system further and improve users' perceptions of the PVs, as explained in findings from the focus group interviews. Therefore, the centralised control of the resources by the MHE may challenge PV creation through delays in upgrading and advancing system functionality. The reference to the need for HEAC to be independent of the Ministry demonstrated that informants felt a lack of state authority support in the post-implementation stage. The royal decree created a sense of urgency where resources were provided as required. Thus, the continuity of state authority support might have faded out when the service became operational, and hence, affected the ongoing EAS development. For that reason, the operational team did not find the same level of support that existed during the implementation stage. The varying level of support may be due to the highly centralised hierarchical system. In such a political system, it is easier to mobilise the necessary authority and resources during the project implementation stage, but this support may disappear as the service goes live.

This section presented the findings related to the role of the state authority in creating PV through e-government. State authority played a key role in the institutionalisation of the HEAC and empowering the organisation to make the necessary changes and allocate all required resources during the implementation stage. However, this support tends to disappear during the post-implementation stage, which makes it difficult for the organisation to sustain its legislative power to make changes or acquire resources. Hence, the state authority appears to perform a critical role in sustaining the creation of PV throughout the service life cycle. Having discussed the role of the state authority in giving legitimacy and support throughout the EAS life cycle, section 6.3 introduces the new directorate vision and explains the meaning of its PVs.

### **6.3 Public Value-Based Vision**

The findings show that the HEAC adopted a PV-based vision, which aimed to create transparency and fairness and allow students to make an informed choice. This section presents the meaning of these values, as suggested by the interviews with informants from the organisation. The emphasis on achieving the HEAC vision of promoting transparency, fairness and the informed choice was demonstrated in the design of the HEAC logo.

The HEAC logo explicitly states the organisation's main objectives, which aimed to create transparency and fairness and allow students to make an informed choice. The significance of these values was explained by the importance of serving the citizens and making them happy, as stated by the former HEAC project manager when asked why the HEAC focused on social values.

*Definitely, social benefits are much more important than economic gains. We represent a government entity and are here to serve the people so what they think about the service is valuable for users to develop the service and make them happy. So, to give the students the ability to make their choices according to their preference was important. We cared about the transparency of the system, and we tried to make sure that the process is documented, and valuable information and statistics are available for the students and their parents. (INT2)*

Junior informants also referenced the HEAC vision, specifically stating that EAS is based on fairness and transparency.

*The system is based on transparency and fairness. The system is transparent. We documented how the admission process works. We documented the policies. We also announce admission results in a transparent way. (INT10)*

*In general, the design of the system is based on fairness and transparency because they are the basis for developing the system. Our logo is fairness and transparency. (INT3)*

Moreover, the head of IT pointed out the HEAC logo when talking about HEAC goals and objectives. She pointed to the HEAC logo listing the three written values on the logo in Arabic, as seen in Figure 6.2. She magnified the picture of the logo on her screen and pointed to the location of the printed objectives.

*Transparency and fairness are our logo. They are hard to see but try to look at our logo... (INT9)*



Figure 6.2: HEAC Logo

The above quotes suggest a well-communicated vision across the organisation, which focused on enabling informed choice and delivering fair and transparent service. The next subsections explain why each of these values was selected.

### **6.3.1 Informed Choice**

The organisational understanding of informed choice focuses on enabling students to make an informed decision when registering their choices in the system. This section explains why informed choice is an important value within the HEAC vision.

Making an informed decision is vital to students' future careers. Students need to make an informed decision to maximise their chance of getting into college. As the unemployment rate keeps increasing, students with only a high school diploma find it difficult to get a well-paying job in the Sultanate. Even those who are enrolled in universities could face similar challenges if they do not choose a programme that suits their interests and is aligned with their future career plans.

*We aimed to give the students the ability to make their choices according to their preference. This is important for students' future success. (INT2)*

*During Grade 12, our role is to educate the users about EAS. We educate them about the admission processes and how they register. We also teach them about how they benefit from the portal and the information available on it. We tell them about the timing of the admission processes and what they need to do at each stage. We encourage them to register as early as possible. Moreover, we update them on any changes from HEAC regarding the system and the admission requirements. We want to help them to understand how to make their choices. The decision is based on their results and the subjects which they study in grade 11. We want the student to make a decision based on the job market. Therefore, the training programme advises students to consult their trainers to help them to make an informed choice. (INT13)*

Some HEAC informants added that the students' choices were influenced by friends and

parents' opinions. This influence could impact their choices in a negative way and may prevent students from choosing the most suitable programmes. Before the educational reform, students did not have any source of information about available opportunities except for the advertised opportunities in public newspapers. Those advertisements did not provide any information about the educational programmes. Hence, most students would revert to their parents and friends for advice.

*Some students choose a programme because some friends chose it. There are those who are influenced by their parents, and there are those who made their own rational decision. These students may be influenced by the job market or their career plan. Yet, the common thing, unfortunately, in Oman is 'I choose because my friend chose it'. (INT5)*

*The system gives the students and their parents the right information. Any wrong or unavailable information could impact their future. HEAC and other higher education institutions provide this information through the portal. (INT16)*

Moreover, there was an overwhelming consensus among HEAC informants that more choices would mean better decisions. Students' decisions could have been influenced by the limited educational opportunities in the pre-implementation stage. Before the EAS, many of the HEIs would only allow students to apply for three choices. This was due to the time and cost limitations of the former manual admission process. Therefore, their decision was influenced by the limited options.

*Students were encouraged to register many choices. They were also advised to consult with [a] career awareness specialist. Their decision needed to be taken to allow them to have a better opportunity in the future. They improve their chances when they register the maximum allowed choices. (INT13)*

The limited number of programmes could influence students' choices because they would register for those for which they had a higher admission probability. With the EAS,



students have access to the full range of options; hence, their decision is not influenced by the limited number of programmes. They could register for as many as 20 programmes when the EAS was launched.

### **6.3.2 Fairness and Transparency**

The above section explained why the HEAC pursued informed choice as a goal in its vision. This section explains the presence of the two remaining goals included in the HEAC vision: fairness and transparency.

Fairness is understood as fighting *wasta*; informants connected fighting *wasta* with the HEAC objective to deliver fairness. For example, the former general manager of the EAS and the HEAC admissions manager positioned fairness as the outcome of fighting *wasta*.

*People compare and use the admission reports to find out if they were awarded the programme fairly. I think the system did a great job when it comes to fighting wasta. (INT2)*

*In fact, fighting wasta was among one of the objectives when this system was developed. They wanted to avoid wasta and give everyone an equal and fair opportunity. (INT5)*

As the literature explained, *wasta* is the favouring of friends and family relatives, and those who come from wealthy and known families. Some informants suggested that fairness meant allowing equal opportunity for all students regardless of family status and level of income. Although the equal system may not necessarily mean a fair system, this interpretation was mainly driven from informants interpreting fairness as the opposite of *wasta*.

*The system makes the decision based on students' grades, not their colour, race, or family status. It is your competitive score. This is the spirit of fairness. If you are from a low-income family, and*

*your grades qualify for a scholarship abroad, then you have the right to travel and pursue this opportunity. (INT1)*

Moreover, the HEAC also considered having transparent processes as a demonstration of fairness. “Transparency in providing electronic services is a sign of fairness and equality in dealing with students’ applications, and consequently, of the success of electronic admission and registration procedures” (HEAC.gov.om, 2019). This suggests that transparency was seen as a means to deliver fairness. Informants’ statements also supported this interpretation. For example, the admissions specialist at HEAC linked EAS fairness to admission transparency.

*Of course, the system is fair. It is transparent. You can see the admission results, and you can compare your results with other students’ results. (INT1)*

The above understanding of transparency may explain the reason behind informants frequently associating fairness with transparency.

This section presented the HEAC vision and discussed the reasons behind the HEAC pursuing these three public values. The HEAC aimed to enable students to make an informed decision and be able to successfully select a suitable programme based on their career plan and their competitive scores. Fairness was understood as providing an equal opportunity for all students regardless of their family status, income, race, and colour, and HEAC believes that being transparent is key to delivering fairness and, consequently, fighting *wasta*. The data suggest that the HEAC vision is shaped by the interpretations of the initial objectives highlighted in section 6.1. Having discussed the HEAC public value-based vision, the section 6.4 looks at how the admission service entities changed as a result of the adopted PV vision.

## **6.4 HEAC Business Changes**

Informants believed that business changes were required to achieve the HEAC vision and influenced the delivery of its planned PVs. These changes took place in the form of aligning the design business process and policies with their perceptions of fairness, transparency and informed choice.

### **6.4.1 Redesigning Business Processes**

The findings suggest that process design alignment was a critical factor to deliver the planned PVs. These changes were seen in the HEAC admission process, grievance process, and auditing process.

#### ***Admission Process***

Informants linked the centralisation of the admission process and the change in the admission criteria to HEAC's aim to create a fair and transparent service and allow students to make an informed decision. The old admission process was decentralised, and the registration dates for each HEI did not take place at the same time. Higher education institutes used to ask for the original certificate; hence, students had to select one particular institute/university. If the registration periods were on different dates or at different locations, some students could not afford to make several trips to the registration centres. Thus, they were limited in terms of access to the full range of choices. Hence, their decision was influenced by this limitation in the admission process. The centralisation of the admission process ensured that students got better opportunities, as

stated by the former project manager. These changes were done to allow students to make better and more informed choices.

*The admission process was sequential with limited options to choose and many constraints that limit students' chances to get a better opportunity. Now, you can say the process is parallel. I mean, students can apply to many programmes at the same time without the need to travel hundreds of kilometres. (INT7)*

Informants also highlighted the objectivity of the admission process as a critical factor in the creation of the planned PVs. The objectivity of the process meant that the admission process was purely based on criteria that did not require a subjective decision from a human. The new admission process was based on a formula that calculated the admission score through EAS, as described in section 5.4. HEAC removed the requirement for admission interviews, which used to be part of the selection process for some educational programmes, as stated by former EAS project manager.

*The process is also seen as fair and transparent. It is automated and based on a clear, documented business process. In the past, some organisations had interviews as part of the admission process. This does not exist anymore. We tried to make the system as objective as possible, so we do not give a chance for any interventions. (INT2)*

Adding to this point, the admission manager compared the HEAC admission process with Master's and PhD student admission processes, describing the latter as being subjective. She indicated that the undergraduate admission process was only based on the competitive score.

*The admission process for Master's and PhD is different. It is based on IELTS, Bachelor grades, and other subjective criteria. We could not automate the process with the Master [or] PhD degrees because you need a human to evaluate [the] grades of someone who got 2.4 GPA from Harvard and 3.3 GPA from any other unknown school. The admission process within HEAC is only based on the competitive score, which is easy to compare. (INT5)*

The informants highlighted the simplification of the admission criteria to remove any potential intervention from humans in the decision-making of students' admissions. They understood that interview results were subjective, and there was potential for biased decisions. According to the informants, using a formula calculated by EAS eliminated human intervention. The grievance committee member also addressed this benefit, and the senior software developer stated that the new admission processes reduced human intervention to the point where it did not exist, which reduced human errors or intended changes.

*I think EAS made the new processes fairer and trustworthy. The new admission process reduced human errors – to the point it does not exist. (INT11)*

*I think it eliminated wasta; bringing a decision outside the system can affect the whole system. (INT8)*

However, the advantage envisaged by this change in the admission processes did not necessarily guarantee the elimination of biased decisions or technical errors. A biased decision could take place if the users complained or applied for grievance. Moreover, human errors could also take place if there was an error in the programming logic. The data suggest that HEAC catered for these possibilities by having an external grievance process to protect the right of the service beneficiaries and an internal audit process to check for possible programming errors. Therefore, HEAC introduced two more processes and aligned their design to achieve its vision, as shown in the next subsections.

## **Grievance Process**

The grievance process was 'intended to ensure transparency and fair treatment for all applicants', as stated on the HEAC admission guide (2016/2017, p. 19). The grievance process allowed citizens, academic institutes, and HEAC employees to apply grievances if they believed they had been treated unfairly. Having a grievance process might not be a dramatic change, but the planned selection of its members to cater to all stakeholders' representation was unique in this context, as stated by the former project manager.

*The grievance committee within HEAC is different from other committees in the public sector. The members are not from the organisation, and they have representation from the citizens. (INT2)*

Informants believed that the design of the grievance process was critical to creating transparency and fairness. For example, the former HEAC general manager stated that the committee members were not from the MHE. His listing of grievance committee members suggests that the members were carefully chosen to represent citizens, academic institutes and gender equality to ensure equal representation of stakeholder interests. A member of the elected consultative council was an indication of citizens' representation, and a female member is an indication of gender equality. He also added the committee's decision was final and could not be changed by the MHE or the Undersecretary. This empowerment of the committee was also evident in one of the admission specialist's descriptions of a grievance committee decision:

*The decision of this committee is effective; no one can stop it, whether [they are] the general manager, the Undersecretary or even the Minister. The grievance members must have a member from the consultative council, higher education institutes, and a female, like the head of a female high school. There must be a female to represent female students. (INT7)*

*[A] grievance committee decision is beyond the Ministry of Higher Education. (INT16)*

In fact, HEAC employees initially felt this empowerment as a withdrawal of HEAC power, as stated by HEAC former general manager:

*[The] grievance committee was founded by the system. We have an IT system and a society which already had been complaining about the lack of transparency in the distribution of government public higher education opportunities. You know, any IT system would definitely have a problem at the beginning. I also thought that the founder of the system is not going to be here forever. Thus, to avoid any corruption from the staff of the organisation, it was a must to have an independent committee. This committee had the power to make a decision even against us. In the beginning, we discussed how could we let someone else make a decision which could be against us, but this decision was important because we wanted to tell society that their rights were protected. (INT7)*

The above quote suggests that the design of the grievance process was influenced by the goals set by the organisation vision. The effect of the vision was seen in how the organisation considered broad stakeholder representation of the grievance committee and the level of power given to the external committee. Having a representative from the consultative council was driven by the HEAC objective to ensure transparency with society. Likewise, a female representative was intended to challenge male dominance in the committee decision-making, as stated by the former general manager when he was asked about the rationale for a female representative:

*We need a female representative, so that male members do not dominate the decision-making of the committee. (INT7)*

### **Auditing Process**

Another business process change was the introduction of the auditing process. HEAC performed the role of the auditor of the educational programmes and their information

uploaded by the HEIs. Before the implementation of EAS, the requirements of the educational programme were not scrutinised to ensure all information was clear and consistent with the admission policies. After the implementation, HEAC audited the offered programmes and their requirements before posting them on the EAS portal. This step was essential to deliver transparency, as argued by the former project manager:

*There were some changes to the department's handling [of] the admission process. They became like end-users for the Ministry of Higher Education. Each year, before setting up the system for the admission process, each higher education institution needs to enter their data. Once all the programmes [are entered], HEAC audits these programmes and presents them to students. So now we have transparency as all institutes need to present all available programmes and the number of seats to HEAC. (INT2)*

Moreover, informants believed that an internal audit was required to avoid technical errors and ensure the admission results were awarded justly by the EAS. During this process, HEAC checked if the system awarded students the appropriate educational programme by running a mock-up admission process to ensure that EAS admission results were fair, as noted by the head of statistics:

*During the mock-up admission process, we check the competitive grade for the last admitted students. We check if the system awarded them their programme justly. If we find any anomalies, we tell the programming team right away to troubleshoot it. (INT 4)*

The head of statistics explained this process in detail, stating that all HEAC staff participated in the process of comparing the competitive scores and checking the requirements for the awarded programme. They also checked the waiting list and the maximum and minimum competitive score of the admitted students.



*Well, all teams in HEAC participate in the auditing process. We check the maximum, and the minimum admitted competitive scores, and cross check with the requirements and the waiting list. (INT4)*

The fact that all HEAC staff participated in the auditing process suggests that the process took considerable time. The auditing process was subsequently improved by automating some of these audit reports, as suggested by the head of statistics; the process used to take an intensive week from HEAC staff where they had to work late nights.

*I noticed EAS had improved the auditing process. Before 2010, we used to stay late nights to review the reports of the admission process. Now it is electronic. We used to spend seven days reviewing these reports. The electronic management department has developed this process. The also did the same thing with the grievance; it used to be manual. (INT4)*

The above quote suggests that achieving the main objectives was a priority even if the organisation had to spend a lot of time on it. It also suggests that time-saving and process optimisation was considered at later stages once the system was live. This suggests that HEAC staff were driven by the PV vision and prioritised, achieving the planned PVs at the expense of time and cost saving for HEAC.

The findings suggest that the operational processes were influenced by the planned values. The organisation enacted the meaning and perceptions of their targeted PVs in process design. This is seen with the attention given to designing objective processes and representing all stakeholder interests. In sum, the informants believed that aligning the organisation's processes with the organisation's vision was a necessary business change to achieve the planned PVs of this educational reform. This alignment was also enacted through the new admission policies, presented in section 6.4.2 below.

## 6.4.2 Policy Change

Evidence suggests that HEAC policies had been changing to support the continuous improvement of the EAS system. The data highlight changes in HEAC admission policies and adoption of new policies to support the delivery of its planned PVs.

Admission regulations were a set of policies that focused on the general admission rules, grievance process, offered programme information and students' mandatory information. Admission regulations were first endorsed by the MHE by a ministerial directive (8/2011) in January 2011. The policy had 34 directives and focused on information availability detailing both field names and timing of availability. For example, students' details such as name, address, Civil ID, phone number, email address, and grades were mandatory information that the MHE had to provide as per directive (9). When it came to the offered programmes, directive (12) stated that academic institutions must provide all required information before 31 October in each academic year. The policy listed the name of fields to be provided such as programme name, programme requirements, tie-breaking rules, the location of study, and the number of seats. In case of any change, the policy stated that the change must be advertised in all local newspapers as well as on the HEAC portal. This policy was an attempt to ensure HEIs were prompt and concise when supplying the required information. In addition, the focus on information availability was driven by HEAC in an attempt to deliver this information to stakeholders to allow them to make informed decisions. The delivery of this information was also important to ensure that HEAC was transparent, as documented on the HEAC portal:

*HEAC is always keen to fulfil transparency in implementing all admission and registration procedures through announcing all academic programmes, number of vacant seats, and publishing the required information in the Student Guidebook and HEAC website. (Src12)*

Another change in HEAC admission policy was related to the number of choices students were allowed when registering for their educational programmes. The initial policy allowed students to register 20 subjects. As shown in Appendix 10.5, this policy witnessed many changes since the launch of EAS, resulting in an uncapped number of choices. HEAC informants highlighted that this change was to allow students to make better decisions during the registration period. This change was triggered by users' perceptions that more choice allows students to make an informed decision, as stated by the HEAC admission manager.

*We encourage them, especially those who have low grades, to fill as many as possible. This year, we decided not to have a maximum limit. We only set a minimum number of choices to register as 12 choices. (INT5)*

*We survey students and career awareness specialists. So [we get] their feedback along with suggestions from parents, and HEAC visitors. They say why do we limit students with 40 choices? Why do we limit students with grades 60 to 65%? They have low grades, and they want to increase their opportunity to get admission. Some students wanted 50 choices. (INT5)*

Another change was seen in HEAC's adoption of national policies related to e-participation. HEAC compliance with the participation policy resulted in its adoption of social media as another channel by which to engage with end-users and citizens. This change allowed HEAC to improve public engagement, as explained in section 6.5.

The changes in HEAC policies were either driven by HEAC vision, users' feedback or state authority. These changes focus on enabling HEAC to achieve the planned PVs. Informants believed that changes in the business process and policies were important to

achieve HEAC's public value-based vision. These processes and policies were aligned with HEAC perceptions of the vision. HEAC would not have been able to implement these changes without state authority support during the implementation stage, as shown earlier. However, once EAS was live, informants believed that these changes were facilitated by two business enablers, as discussed in section 6.5 below.

## **6.5 Business Enablers**

Informants presented two business enablers that were believed to facilitate business changes and, hence, improve EAS design and features to deliver fairness, transparency and informed choice.

### **6.5.1 Organisational Culture**

There was a shared view among informants that the HEAC organisational culture was a crucial factor in the success of the educational reform. Informants repeatedly cited the friendly work environment and the democratic decision-making culture within the organisation as a key enabler to deliver public values.

The junior admission specialist linked the success of this educational reform to the democratic working environment. His description of the HEAC meetings suggests a democratic environment where employees can freely express their opinion, and the most suitable suggestion is chosen even if the department head did not suggest it.

*We are successful because the work environment is democratic and does not suppress our suggestions. During our meeting, with the department head, we discuss ideas and suggestions. Everyone presents his opinion. Sometimes, the department head presents an idea which would not be supported by everyone, so we do not take it. The same thing applies to the meeting with*

*the general manager. Their suggestions are not necessarily enforced. For example, I can discuss with the manager if I see any wrong decisions. This mutual respect allows us to produce more and make us happy. (INT1)*

Moreover, the head of IT also believed that this educational reform was successful because all staff worked like one family where any individual from any department could communicate the comments of the business users.

*We work as one team, and we all aim to achieve the same goal. Since I joined HEAC, I always felt like we work as one family. There is no tension between the staff which exists in other departments. This motivates you to work harder and to come up with the best recommendation to achieve your goal. If there are any suggestions from the business users who might come to us, the statistics department, the admission department, or the management team, we all discuss it. We see the positive and the negative sides if implemented, and so on. We work as one team, and our meetings sometimes are scheduled on a daily basis. We also have an annual meeting where we all assess the whole academic year, and we check all the suggestions and issues. (INT9)*

The informant repeated the phrase 'one family' twice, which suggests a friendly environment that enabled the exchange of ideas and recommendations to improve the service. The friendly working environment was also noted by the statistics specialist, who believed the cooperative work environment allowed HEAC employees to work as one team toward achieving their goals:

*I think we succeeded in delivering our goals because of the work environment. It is friendly and cooperative. We have the soul of one team, and we work as one hand. (INT6)*

Moreover, the head of admissions stated that a democratic decision-making culture was crucial because it allowed staff in the operational team to express their opinions since they were the closest to the business users.

*We have a culture in HEAC centre that is decision-makers can be at any level. Actually, decision-making starts at the bottom of the organisation hierarchy because these are the people who deal*

*with students and their issues directly. This employee is the most capable of deciding how to resolve students' challenges. (INT5)*

She went on to explain how the ideas and suggestions were discussed within HEAC, saying that HEAC didn't have bureaucratic decision-making.

*Once an employee identifies an issue, then the employee should suggest a solution within his department. They brainstorm it, then the head of the department escalates to the higher level. If it requires the general manager's decision, then it will be done in a meeting representing all departments. We have never had bureaucratic decision-making in HEAC. (INT5)*

When the researcher asked about the impact of changes in top management, she replied no, because the HEAC work environment is democratic.

*The service level never went down. In fact, each general manager is a valuable addition to the team. We take many decisions because the centre's work environment is not bureaucratic, and all staff can present their suggestions. (INT5)*

As mentioned by the head of admissions, operational teams were the closest to end-users; hence, a democratic and friendly work environment would enable feedback from the engagement process to be actioned effectively. In fact, there was a story narrated by the admission specialist about himself being able to say no to an attempt to help students outside the system when a new general manager promised a parent of a student special treatment. The story demonstrates how democratic decision-making empowered the junior staff to be transparent with the general manager.

Moreover, from the interviews done within HEAC, the researcher also observed that seniority did not influence how managers treated junior members or vice versa. Indeed, this was also witnessed in a meeting with most of the staff where the researcher explained the importance of the research; anyone could sit anywhere, and anyone could ask a

question without waiting for the senior managers to permit them. Their interaction showed a different picture from the hierarchical organisational culture known to the researcher through his interactions with the public sector in Oman. Some informants believed this culture was due to the level of education held by HEAC employees. This was also observed by the researcher, as all informants held at least a Bachelor's degree. The two key members of the project implementation team held a Master's degree and a PhD in the field of e-government and ICT. Their participation in setting the vision was evident in how informants looked up to them as role models. The majority of HEAC informants referred to these two members throughout the interview. One of these members was the first general manager for HEAC when it was formed. Thus, it was likely that the project implementation team understood what it would take to deliver these PVs, and hence, they created a culture that aligned with the essence of these values.

The culture has continued in the organisation, although the project implementation team left the organisation, and HEAC has had several general managers since. The organisation culture was not the only enabler; informants also noted the role of public engagement in the creation of fairness, transparency and informed choice, as shown in subsection 6.5.2 below.

### **6.5.2 Public Engagement**

Organisational informants believed strongly that engagement with stakeholders drove continuous service improvement. Findings show that engagement was critical in delivering the ICT-enabled reform. As stated on the HEAC website, 'the centre takes into consideration the most important remarks and suggestions that may help to develop the

admission system'. The continuous service improvement programme depended on engagement not only with end-users but also with the general public. For example, HEAC software developers stated that HEAC sought feedback from students, their parents, and most of the changes in the system were results of their suggestions.

*Most of the system improvements are the students' suggestions. Students and their parents contact us, and they give us their recommendation. The admission department asks us to review these suggestions on a yearly basis. We discuss it internally, and then we raise it to top management. We always ask our colleagues if there are any suggestions from students, their parents or higher education institutes. These suggestions are to improve the system. (INT3)*

The head of admissions also stated that HEAC utilised different means to engage with citizens, students, and government officials. They gave an example of a recommendation on Twitter captured by the awareness specialist and sent to the general manager of HEAC for discussion.

*As I said before, we get feedback from students, their parents, the grievance committee, schools, and the consultative council. We get so much feedback from social media. Since we are talking about it, look at this email sent to the general manager and the IT team for discussion. (Email was a capture of a recommendation on Twitter from one of the citizens). We also present on TV and radio programmes. We tell citizens, we are awaiting your recommendations, and your feedback and opinions are important to us. (INT5)*

Moreover, she also gave another example of HEAC changing the number of allowed choices because of the consultative council recommendation and stating that these were the result of the citizens' requesting changes. Analysis of the yearly two-hour TV programmes showed HEAC's engagement with citizens and receiving compliments, complaints and suggestions.



HEAC also survey users and career awareness specialists. Survey reports were posted on the HEAC portal as part of the open data strategy, as stated on the HEAC portal. The surveys focused on dimensions related to the targeted PVs. For example, HEAC assessed the fairness and transparency of its admission process. This was seen consistently across all posted surveys. Moreover, HEAC assessed the informedness of its technological artefacts such as the availability of information on its portal. HEAC also assessed the most favoured channel for admission registration by users. These surveys helped HEAC improve trust and transparency and further develop the system, as stated by the former HEAC project manager:

*I believe these research opportunities and doing surveys and interviews with people will help us improve trust and transparency issues and further develop the system. (INT2)*

In addition, the head of admissions stated that HEAC valued feedback from student surveys and she gave an example of how HEAC allowed students to add more educational programmes after the first admission run as a result of student surveys.

*We annually get students' feedback. We conduct surveys for students as well as career awareness specialists. For example, many complained about why we do not let students add more choices after the first admission run. Some students also wanted to increase the number of choices. Some wanted 50 choices. (INT5)*

The career awareness specialists were also surveyed because they were the link between HEAC and students, and their engagement was valued on the students' behalf, as stated by the statistics specialist:

*We want to assess our service, and we survey career awareness specialists because they are the link between students and us. They share with us the service delivery. For example, we survey them [on whether] the student guide should only be electronic. Of course, they wanted it to be on*

*paper, and thus until today, we still print the student guide. The same question was directed toward students, and the majority wanted paper format. (INT6)*

Other stakeholders acknowledged HEAC engagement with them. For example, one of the academic institutes' informants stated that HEAC listened to their recommendation and gave the example of HEAC carrying electronic integration with their systems:

*When you have an elite who is keen on the development of the system, you are satisfied. We also take the initiative. For example, electronic integration made it easy, and they have helped us a lot. (INT15)*

Moreover, the informants from the grievance committee also confirmed that HEAC implemented some of their suggestions, such as the implementation of security measures and increased system responsiveness by utilising an SMS service.

*I will give you an example – we had a student complaining about someone using their username and password, and they are changing their choices. Nowadays, HEAC added a feature to inform students about whenever a change takes place. The case we had, the student said he did not give the password to anybody. We considered this case as it was clear from the audit data that it was not him. We also advised HEAC to give more awareness on registration and the importance of users and passwords. (INT11)*

The career awareness specialists are the link between HEAC and its users, and they also confirmed that HEAC took recommendations seriously, and have implemented several recommendations.

*Well, if HEAC does not consider recommendations, then we would not see any improvements. For example, the feature where students can reclaim an education programme in the second admission run was a suggestion from career awareness specialist and parents. Of course, not all recommendations are implemented, but there are many recommendations which were implemented, such as the number of allowed choices. HEAC's improvement is not random. (INT12)*

The researcher also reviewed the recommendations captured by HEAC from its surveys, some of which were implemented. For example, the automatic calculation of the competitive score for each educational programme was suggested in previous surveys, and was implemented, as stated by the HEAC software developer. HEAC made technological and policy changes based on recommendations coming from different stakeholders, including the public. The above quotes demonstrated how the engagement process led to a change in the policy (e.g. the number of allowed choices), change in EAS design (SMS service, auto-calculation of the competitive score for each choice, auditability design). These changes are detailed in Appendix 10.5.

Having documented the impact of the engagement process, it is important to understand how engagement was done by HEAC. Similar to the organisation culture, the importance of the engagement process may have been recognised by the implementation team. The former HEAC project manager acknowledged the importance of getting citizens' feedback. Apart from the annual surveys, there was no formal mechanism through which HEAC would engage with users and citizens. Checking informal social media (Alsabla) demonstrated an initial stage of using ICT to engage with citizens. It is likely that the project implementation team recognised the importance of not only quantitatively measuring end-users' perceptions of fairness, transparency and informed choice; they wanted to know what people were saying about the service, as stated by the former HEAC project manager.

*As I said when I was there, we did not have a mechanism in place to measure it, but I remember that I created a forum to get the opinion and comments of the system. We value their inputs, and we took it seriously to improve the system. Twitter and Facebook were not available at that time,*

*but I used to follow with other social media. I used to check Alsabla (a famous Omani online forum). Personally, I was interested to know what people are saying about the service. (INT2)*

Public engagement was improved in the post-implementation phase because of the adoption of the national e-participation policy. The HEAC adopted an e-participation policy to comply with the state authority directive to improve government engagement with citizens. A royal directive aimed at increasing government engagement with citizens was published in 2011 in the aftermath of the Arab Spring. The Information Technology Authority (ITA) implemented this directive through a national e-participation policy. HEAC complied with the directive, and it resulted in the adoption of social media to improve engagement channels. It also influenced the roles and responsibilities of the awareness team. They became responsible for handling the centre's social media accounts. The engagement process was influenced and formalised by the royal directives in 2011 to increase government participation with citizens. The head of admissions stated that HEAC was reluctant to adopt formal social media accounts, but to comply with the national policy to increase government engagement with citizens, HEAC adopted social media in 2013. This is not to say that HEAC was not engaging before this date, as evidence showed engagement with citizens through TV and radio programmes before 2011, and other informants trying to engage with end-users using informal social media websites such as forums, as mentioned earlier.

*Adopting formal social media started in 2012, and it was a new thing for us, and we started somewhat shy; we were not really into it, and we did not have official social media accounts. Later, in 2013, the Information Technology Authority (ITA) started to advertise that government organisations should have social media accounts, and ITA introduced a social media usage policy and engagement policy. We started somewhat shy in 2013, and it became intensive in later years. (INT5)*

This section demonstrated the organisational belief of public engagement as a business enabler. Public engagement was seen as an enabler to develop the system and continually improve it. Public engagement led to changes in some of the admission policies. It also resulted in development of EAS design and features, adding more technology artefacts and advanced features. These changes are believed to continually develop EAS to improve citizens' perceptions of fairness, transparency and informed choice.

Two business enablers were presented in this section; organisation culture and engagement process, specifically in the post-implementation stage. The engagement process was the gateway that allowed citizens and end-users' feedback to flow into the organisation. This feedback was reviewed and may be implemented to improve perceptions of the created values. The findings presented evidence of changes in the existing policies and EAS design from HEAC engagement with end-users and citizens. The impact of engagement would not have taken place without the support of the organisation culture. The strength of the engagement process can be explained by the friendly and cooperative work environment. The engagement process is also enabled by having a culture that supports democratic decision-making as it allows those who are close to the end-users to suggest and present their opinions in the continuous development of the systems. These two enablers were necessary to sustain the continuous improvement of EAS as they drove the implementation of required business changes. Having explained how HEAC's PV vision shaped its business changes and enablers and the relationship between them, section 6.6 presents how this further shaped

the design and features of the EAS system to improve perceptions of fairness, transparency and informed choice.

## **6.6 EAS Role in Creation Process: Organisational Perspective**

The findings show a widespread belief among informants that the EAS was at the heart of the educational reform. This section presents the technological dimensions that informants presented as key influencers in PV creation.

### **6.6.1 Automation**

Informants presented automation of the admission process as one of the technological influencers in the creation of e-government PV. HEAC's choice of its e-government system design was influenced by the HEAC vision. This was evident in how the EAS project implementation team focused on features such as automation and information availability support. Automation was a critical factor in selecting the right development style. The former HEAC project manager stated that HEAC decided to have in-house development because the project committee wanted to have a fully automated system that could be developed on a platform that supported high availability.

*As I said, there was a committee established to develop all the processes, procedures and systems required to unify the admission services across the different educational institutions. The committee visited Admission System (UCAS) in the UK who advised them to visit Ireland. I was one of the committee members, and we visited Ireland, and I could see that they had what we were looking for in terms of the process. The Ireland experience was a big influencer, but it was not automated all the way with students. Students still had to fill in paperwork, and no online services existed. We also had a look at the system used in Jordan's higher education services. Jordanians had an automated system. There was an idea to use their system, but I opposed the idea. We had to do everything from scratch. The Jordanian system was based on Oracle, and*

*because of my experience, I find Oracle application heavier than Java. That is why we decided to develop the system using Java. You know, Java is lighter than Oracle. (INT2)*

This quote suggests that the consideration of automation was on HEAC's radar during the planning phase, and it was a criterion for choosing the development style and approach. In addition, the former HEAC general manager stated that 'HEAC is not a mediator' (INT7); it renders the admission process through the system. HEAC attempted to reduce human intervention in the admission process. Although this reduced the opportunity for biased decisions, it did not completely remove them. Software designers and developers are human at the end of the day, and they could always influence the design. Yet, HEAC wanted to ensure that all applicants were processed against the same criteria and that there was no attempt of favouritism when processing applications. Thus, human intervention refers to human's attempting *wasta* by influencing the admission process outcome. There were other references to human intervention associated with applicants forging their grades. The head of admissions stated that the EAS allowed the HEAC to have a trusted data source. In the past, students would submit their High Diploma certificate, and the HEIs depended on it. It was difficult to authenticate all certificates. Integrating the system with the Ministry of Education's electronic system allowed the system to transfer students' grades automatically and thereby provide a trusted source.

*The Master's and PhD admission system was developed in 2011, but the sorting process is not automated. Students themselves fill in their data, not like us. Students' data are automatically transferred from a trusted source, the Ministry of Education. Also, their admission process is based on subjective dimensions. (INT5)*

These quotes suggest that potential human intervention in the admission process by service providers or beneficiaries was seen as an inhibitor of PV creation during the

planning stage. The reference to *wasta* and admission process automation was further explained by the HEAC awareness specialist who stated that HEAC eliminated *wasta* because there was no human intervention since the registration and the admission process were electronic. Informants associated the elimination of *wasta* with the phrase 'electronic'. Informants used the word 'electronic' to refer to the full automation. This was evident when one of the career awareness specialists linked EAS success in overcoming *wasta* to the word '*electronic*'.

*EAS eliminated wasta because the admission requirements are configured in the system, and we cannot change them. It is changed based on the higher educational institutes. Once the registration starts, we cannot change anything, and the system renders the admission process automatically. The registration is electronic, and the admission process is electronic. (INT10)*

*Let us say there is a grievance committee, but I still think EAS is fair. It is electronic... electronic system. You prioritise your choices and according to the available seats. (INT13)*

Informants explained how automation resulted in fairness and transparency and the reduction of *wasta*. They explained that EAS treated all applicants equally based on their scores. No special consideration would be given by the system to applicants related to HEAC staff or senior officials. Automation was believed to prevent attempts to favour relatives or friends by awarding them an educational programme that they did not deserve. Other students could be disadvantaged if such prejudice took place. Hence, the EAS system ensured that all students' applications were processed according to the documented admission process. This may have improved perceptions of transparency.

*Let us take an example: if someone attempts to give wasta for a relative whose grade does not qualify him for the programme, then the electronic system would not accept him because of his grade. Thus, indeed, technology resulted in transparency, fairness, and reduction of wasta. (INT16)*



The idea of having an automated system also gave HEAC staff a good excuse when approached by relatives or friends because they could say the admission was run by the system. This excuse was even used by the Minister, as stated by the head of admissions.

*There is a positive impact on wasita. It eliminated wasita, and her Excellency testified for this herself. She used to go on leave during summer time, so when the results are out, she does not feel embarrassed with those seeking wasita. Nowadays, she does need to go on leave, and when someone goes to her office, she tells them to check the system. (INT5)*

This does not necessarily mean that EAS could not be changed; it would, however, reduce any attempt to adjust the results as the IT system is audited. It also gave HEAC staff a good excuse to reject any *wasita* attempt politely. Although *wasita* is recognised as administrative corruption, rejection of *wasita* requests could be considered an impolite gesture, especially when they come from relatives or close friends. Automation was associated with fighting *wasita*, which was closely related to the delivery of fairness, as explained in section 6.3. Informants always coupled fairness with transparency because it was considered an important step toward fairness. However, transparency is mainly linked to information availability, as presented in the next section.

### **6.6.2 Information Availability**

The findings from this study show that HEAC utilised technology to facilitate information availability. HEAC perceived information availability as a critical factor in students' informedness and the creation of transparency and fairness. This section discusses this theme by presenting how information availability was believed to enable the creation of these values.

HEAC uses the EAS portal to provide information about the admission process, the existing procedures, the available educational programmes, and admission statistics to ensure informedness and transparency are achieved, as noted on their website. HEAC aimed to make students informed about the admission process and policies, the full range of admission opportunities, and admission results statistics. HEAC provided a student guide that had information about the admission process, regulations, and tutorials for the electronic service (Src25). The guide also presented a section on the offered programmes along with their requirements. The student guide was provided as a soft copy on the HEAC portal and a hard copy was handed out to students through their schools. As this information did not exist before the implementation of EAS, informants believed that sharing this information improved perceptions of transparency. This information was also believed to help students make an informed decision when choosing their programmes.

*The Ministry of Higher Education (MHE) provides the Open Data Service to ensure transparency and availability of data and statistics of Higher Education in Oman to all users and visitors on the internet. (Src12)*

*Students now have all the information they need about the offered programmes. They have the student guide, and it has programme requirements. The admission report also shows the minimum and maximum, which allows students to know the rationale behind the admission decision and apply for grievance if needed. (INT7)*

*The system also gives you transparency, which is very important for students. The admission process is clear, and all the information is available on the portal as well as the student guide. (INT11)*

Moreover, admission reports provided statistics about the number of applicants, offered opportunities, awarded opportunities and vacant opportunities. Most importantly, the admission reports provide statistics about the highest and the lowest admitted competitive

score. This information was believed to allow students to benchmark their results and rationale for their admission results. If they were rejected, then HEAC would be able to justify the decision using the admission reports. Before EAS implementation, such information was not available. The admission service used to publish the list of admitted students ID numbers for each educational programme in the newspaper. Students had no chance to know their position within the admission results or understand the reason if they were rejected. Even those students who were on the waiting list would not know their position on the waiting list. Knowing their position on the waiting list for each programme could influence students' decisions in the second round of admission if those who were admitted in that specific programme changed their decision. Therefore, HEAC staff believed that publishing this information demonstrated transparency and influenced users' perception of EAS transparency and consequently, the fairness of their admission results.

*As I told you, there is transparency. The number of available scholarships is reported. In the past, if there were a thousand scholarships, would citizens know that there are a thousand scholarships? No. Now, citizens know the number of offered programmes, available seats, vacant seats and admission requirements. (INT15)*

*The system is transparent. When the results are out, we publish these results for students, and they can get reports about his competitive score, and the minimum and maximum admitted competitive scores. They can compare and see their position on the waiting list. Hence, HEAC is 100% transparent. (INT5)*

Publishing admission reports was not only important for end-users. It was also believed to help parents to understand the rationale behind their child's admission results. The lack of this information in the past led parents to support their children and to complain about their admission results if not satisfied. Publishing the admission process, procedures, policies and the admission results gave parents enough information to understand the

results of the admission process. HEAC recognised the importance of making the admission statistics available for parents. Since the statistics were made available online parents rarely complain because they understand the rationale of the admission decision, as stated by the HEAC junior software developer.

*EAS presents students' admission results. Nowadays, parents are educated, and they can view these reports and discuss with their children the rationale of the admission decision, and hence they do not blame the system. (INT3)*

The initial EAS design focused on technological artefacts (portal and admission reports) that supported information availability. The organisation believed that this information allowed students to make an informed decision regarding their choices and enhanced students' perceptions of fairness and transparency. The availability of this information would not have been possible without system availability and accessibility. Therefore, the next section discusses the role of system accessibility and availability in the PV creation process.

### **6.6.3 System Accessibility and Availability**

System availability was considered to be a key aim of the planned implementation. The implementation team actively wanted to be always available to users as that would provide users with a better experience. As the EAS became operational, the HEAC realised that the EAS needed to be accessible in a wide range of locations and devices. Achieving availability and accessibility were thought to help increase users' confidence in and acceptance of the system, and consequently, influence users' perceptions of the planned PVs.

## ***EAS Availability***

The HEAC considered system availability during the project implementation stage of the EAS. One of the criteria for selecting the Java platform rather than Oracle was its better support for system availability. As a technology, Java was lighter than Oracle according to the former HEAC project manager. 'Lighter', as a technical term, referred to how long it took the application to load its screen for the users. It could mean that the Java-based application did not crash as often as an Oracle-based application. Hence, the project implementation team chose Java for its perceived high performance and reliability. The implementation team also considered setting up an infrastructure that supported higher system availability. The EAS infrastructure was equipped with load balancer devices, which were used to improve system availability. Improving system availability was believed to allow students to reach to all the required information and hence improve their perceptions of the created PV, as explained in the previous section.

*The Jordanian system was based on Oracle, and because of my experience, I find Oracle application heavier than Java. That is why we decided to develop the system using Java. You know, Java is lighter than Oracle. We had to set up load balancing and consider a backup strategy. You know, the system became very critical for students' future. (INT2)*

*We have so many servers to ensure that EAS is available to all users. The system is very stable. (INT3)*

*It is important that EAS is accessible and reachable and easy to use. We also cared about EAS availability. Especially during the registration process. We want the students to be able to have all the information they need. (INT9)*

The above quotes suggest that system availability was considered during the implementation phase. Informants believed that the availability of the system was critical

to enable information availability for students. This subsequently allowed students to make an informed decision and improve their perceptions of fairness and transparency.

### ***EAS Accessibility***

The evidence suggests that EAS accessibility came into consideration once the EAS was live. The focus during the implementation stage was mainly on system availability, as suggested by the above quotes. Changes to the EAS design and HEAC policies, which were dedicated to addressing accessibility challenges were implemented once the EAS became operational. The HEAC implemented policy and technology changes to ensure the system was widely accessible: enhancements were made to aid disabled users and support registration using multiple devices. Enhancements to aid disabled users were referenced as an attempt to ensure that EAS services were delivered to students with a disability. These enhancements were seen in HEAC's attempt to implement accessibility features for visually impaired users, to allow them to read all available information and register their own choices (Src12). This change was triggered by HEAC's adoption of the national e-accessibility policy developed by ITA (Src18). The HEAC e-accessibility document defines service accessibility as the ability to use the service and access its products and information by all people regardless of their age or disability (Src18). This policy was published in 2010. The accessibility policy focused on disabled and elderly citizens. The HEAC e-accessibility policy argues that with the help of ICT, HEAC can enable elderly and citizens with special needs to access its service giving them a fair opportunity like anyone else in pursuing education and engaging with the government (Src18). HEAC had to influence the HEIs' decision to admit those who had disabilities,

which did not prevent those students from pursuing their higher education. This resulted in changing the requirements of some of the offered programmes, with HEIs having to specify which disabled students can register depending on disability type. Accordingly, EAS registration screens were changed to allow students with disabilities to specify their disability type:

*We wanted to be fair to all students. To allow students with disabilities, we had to change the education programme requirements. In the past, it was a general requirement to be medically fit. This was changed after HEAC objected to the generality of the condition. I remember we had eight students from one of the schools for students with vision disability asking if they can apply for higher education opportunities. We asked them to apply because there was no condition which specified vision disability as a condition. They applied, and they were admitted into Sultan Qaboos University. This was not easy at the beginning because the university refused. We told them that their condition had a general statement about disability, and these students' disability does not prevent them from pursuing their education. We also told them that our definition of medically fit was limited to mental issues for certain education programmes. We debated this definition and SQU accepted these students. (INT7).*

Although this initiative is aimed at delivering fair opportunities to all students, this understanding of fairness had evolved from the initial definition of fair opportunity. The initial definition was aimed at fighting *wasta* and hence positioned at overcoming favouring friends and relatives of senior government members. The latter definition of fair opportunity has expanded to mean providing access for all students regardless of their disabilities or geographical location. Initially, the EAS was accessible through the portal. However, as students started using the system, the EAS was further developed to cater for accessibility issues, especially for those students with disabilities, students from remote areas and students with limited income. This resulted in EAS being accessible through SMS services and mobile application platforms. HEAC informants believed that EAS accessibility was achieved by using multiple ICT platforms such as computers or

mobile devices. The HEAC software developer stated that HEAC implemented a mobile application as the third platform to deliver EAS services because the majority of people had a smartphone and to allow those who live in remote areas or outside the country to be able to reach to the service.

*Now, the number of grievances decreased because HEAC developed three channels: portal, SMS service, and mobile service. During the second year, 3,000 students were not able to register because they did not have internet service. Thus, we decided to implement SMS services because almost everyone has a phone. (INT5)*

*Most people have a smartphone and find it easier to use smartphones. There is no house without at least a smartphone. In addition, some areas do not have the internet so that you can use it anywhere. (INT3)*

*I think we were successful in making the service accessible to all students. It is fair. Now any students can register, not only those who live in specific states. All students can see all available education opportunities. (INT6)*

The above quotes suggest that the definition of fairness expanded beyond the *wasta* challenge and to consider fairness in term of users' income, location and disabilities. Other evidence supporting the argument that accessibility was addressed in the post-implementation stage is the inclusion of users from remote areas. The internet infrastructure in those areas is not well developed. Therefore, making the service accessible through other technology platforms was seen as an attempt to be fair to this group. As stated by the admissions manager, the SMS service was implemented to overcome this accessibility issue. Since the majority of students, including those who live in a remote area could access telecommunication services, SMS services were implemented. This allowed students in remote areas to access EAS services easily and hence, register their choices.



## **Summary**

This section presented how the HEAC aimed to ensure system availability and accessibility to achieve its planned PVs. System availability was seen as an important factor to enable information availability and hence improve the perception of fairness, transparency and informed choice. While systems availability was an aim during the implementation phase, system accessibility was considered to address accessibility issues during the post-implementation phase. EAS was delivered through a range of technology platforms to ensure its accessibility was maximised for all students, and hence provide fair service for students regardless of their location, income and disability.

### **6.6.4 System Auditability**

System auditability allowed HEAC and EAS users to track all transactions. The findings suggest that informants found the system auditability capability to be a critical factor in influencing users' perceptions of fairness and transparency.

When EAS was launched, auditability was not advanced. The former HEAC GM explained how students used to apply for grievance complaining that someone changed their choices. He added that HEAC was not able to find out if the students or someone else made the changes. This security breach was also mentioned by the grievance committee member, who stated that the enhancement of auditability features was an outcome of the grievance committee decision on grievances related to a security breach. Users suspected that their choices were changed by someone else, and hence they

complained to HEAC. Lack of audit logs compromised users' trust, which influenced their perceptions of fairness and transparency.

*There was a student who claimed that someone changed his choices. We told the grievance committee that based on the audit trail and the transaction date, it might be him, but we were not sure if someone else had made the changes. (INT7)*

*I will give you another example of awareness importance. We had a student complaining about someone using their username and password, and they are changing their choices. Nowadays, HEAC added a feature to inform students about whenever a change takes place. The case we had, the student said he did not give the password to anybody. We considered this case as it was clear from the audit data that it was not him. We also advised HEAC to give more awareness of registration and the importance of username and password. (INT11)*

Audit trails were a reactive mechanism because they would not prevent the security breach, but they would help the HEAC and the grievance committee make a fair decision on the grievances. However, the HEAC not only provided logs for users' transactions, but also alerts for students whenever a change in their profile took place. This feature proactively prevented security breaches and allowed students to find out instantaneously if their choices were being compromised. This feature tracked all transactions and was inclusive of changes in password or registered phone number. It sent a message to both old and new phone numbers, as stated by the HEAC senior developer. The former general manager of HEAC stated that HEAC was a pioneer in utilising the SMS service to keep users informed about any change in their profile. Transaction logs along with timestamp were sent to the students via the SMS service.

*We do not have encryption, but we did logs, the audit trail. Hence, any change in the system, we capture what changed when, and by whom. If the students say someone has deleted their choice or changed them, we can track, and we can find the source of the change. When the student changes his password, a confirmation message is sent to their registered phone number in HEAC*

*by the student. If you are changing your GSM, it will send a message to both phone numbers: old and new phone numbers. (INT8)*

*If someone tampered with students' choices – and this is dangerous – if someone used his account and changed his choices, then changes can affect his admission results. The system keeps updating these users of any changes. This is a type of transparency. In addition, HEAC also protects itself through this transparency. You have all the logs with timestamps and students would know if someone is altering his choices. In addition, if students claimed that they could not log in to the system because of technical failure and they could not accept the offer because of that, then we can trace. Thus, we deliver fairness here. (INT9)*

The HEAC believed that such a feature could enhance student trust, which in turn would improve their perceptions of fairness and transparency. Users' perceptions of transparency were improved by keeping them informed of changes in their profile instantly, as stated by the head of IT (INT9). Sharing these logs with the users was expected to positively influence users' perceptions of transparency. In addition, these records allowed HEAC and the grievance committee to make a fair decision based on existing logs, as stated by the HEAC IT manager because HEAC could verify users' complaints and assess situations based on existing logs. A fair decision would protect both HEAC and the students. It would protect HEAC from any false claims and protect students from any security breaches.

*System auditability ensures fair treatment. If I have an event which needed investigation, just like the forensics detectives, technology allows you to trace the logins and all transactions. Hence, you can make your decision based on the data logs. (INT9)*

Obviously, most information systems may come with auditing capability, but having an auditability design that shares transaction logs with the users was believed to influence users' trust positively and thus, enhance their perceptions of fairness and transparency.

This was not planned and HEAC developed this technical feature through the grievance committee.

The findings presented the technological dimensions that could influence the creation of the planned PV: automation, information availability, system availability and accessibility, and system auditability. While automation, information availability and system availability were considered during the implementation phase, system accessibility and auditability came into perspective once the EAS was operational. The technical dimensions that were considered during the implementation phase were influenced and shaped by the implementation team's understanding of HEAC's public value-based vision. They inscribed their interpretation of the meaning of fairness, transparency and informed choice into the EAS design. Once EAS was operational, users' perception of the created value was fed into HEAC and this resulted in further advancement of the EAS design to consider system accessibility and auditability. This explains the technological changes in EAS design and the addition of a new platform such as SMS service mobile application services. Having discussed the organisational point of view on how the EAS could influence users' perceptions of the planned PV, section 6.7 below presents end-user interpretations of how the EAS influenced their perceptions of the planned PVs.

## **6.7 EAS Role in PV Creation Process: Users' Perceptions**

As described in Chapter 5, focus groups with end-users (students) were used to investigate how citizens perceived the electronic system enabled PV creation. This section presents what the users had to say about the value realised from using the

electronic admission service (EAS). It discusses the technological dimensions that influenced end-user informants perceptions of the realisation of the planned PVs.

### **6.7.1 Automation**

Automation was cited as one of the key technological dimensions that influenced users' perceptions of the planned PVs. Before the EAS, the admission decision was made by the admission service staff. After the implementation of the EAS, the sorting process of all applicants was automated to minimise human intervention in admission decisions. Focus group informants referenced the automation of the admission process and specifically the sorting process, using the term electronic. Again, the term electronic tended to be used by informants to refer to automation. This fact resonated with focus group informants experiences' with EAS, and they linked it to their perception of the presence of *wasta*. They believed that automation minimised admission staff intervention in admission decisions and hence reduced *wasta* attempts. Those informants who had a positive perception of fairness referenced technology automation in their explanations. For example, one informant stated that HEAC was an electronic system and did not treat students based on status, when he was asked about the rationale for his positive perceptions.

*The system is electronic and does not treat students based on their status. (FG10.1)*

*Technology is behind this fairness. The system sorts admission applications based on the required competitive average grade. If you have it, you are in. Otherwise, you are out. This is really fairness. (FG11.3)*

*Technology eliminated *wasta*, and every student gets the deserved choice. (FG3.3)*

*There is no wasta because it all done through the system. (FG11.3)*

In the past, students were given limited choices because admission offices could not process a high number of choices. For some users, the number of choices allowed was a factor in making an informed choice. Some informants believed that the EAS gave them a chance to increase their choices and select the 'right' one. Thus, it appeared that automation helped students select the right programme without being pressured by time limitations.

*EAS gave us many opportunities. In the past, choices were limited. Maybe three programmes. Now, we can register up to 40 choices. EAS gave us more choices. (FG4.4)*

The findings suggest that HEAC's focus on automation was fruitful. Users confirmed the role of automation in PV creation. They also associated it with the reduction of human intervention and they associated it with positive perceptions of PV specifically fairness, elimination of *wasta* and making an informed choice. Moreover, those who believed *wasta* existed argued it would happen outside the system in the HEIs, as shown from the sample quotes from different focus groups. These users refer to students who got admitted directly by the HEIs or changed their programmes once they were accepted.

*I do not think there is wasta anymore. It is electronic. If there is wasta, it would be outside the system once the results are out. (FG1.2)*

*There could be a place for wasta within the higher education institutes once the results are out. (FG7.1)*

Further investigation of the above statements showed that the technical design of the system did not have full integration with the other stakeholders. For example, the former

project manager noted that HEAC initially treated all HEIs as end-users, where they were given user accounts to allow them to upload their educational programmes and their requirements, but integration with their system was not possible due to security and readiness constraints.

*Initially, we had the idea of full integration with these higher education organisations, but I recommended giving them a username and a password and treating them as users. This might cause some security concerns, but I think it was a better option as many of these organisations were technically ready for integration. We did not want to delay the project because of full integration. They only used the system once a year so treating them as [an] end-user was enough.  
(INT2)*

The lack of full integration of the students' registration systems within the HEIs may open a door for human intervention, which may explain the end-users' concerns about the possibility of favouritism being present once the results were out.

Informants from focus groups associated automation with positive perceptions of fairness realisation. This theme confirms the organisational belief of automation being an enabler to create positive perceptions of the planned PVs.

### **6.7.2 Information Availability**

The findings from the users' perspective also highlight information availability as a key influencer in the creation of the planned PVs. The availability of information related to admission requirements, the admission process, admission policies and offered programmes. The EAS features were believed to play a role in improving user realisation of the planned PVs as highlighted in section 6.5. Much of this information was not available to end-users before the implementation of the EAS. The findings show that the

availability of this information had a positive impact on users' perceptions of fairness, transparency and informed choice. Participants cited different information when presenting their positive perception of the created PV. For example, the presence of the waiting list had a positive impact on users' perceptions of transparency. It allowed them to know the probability of their admission in the second round of the admission process. One participant linked his positive perceptions of transparency to the availability of the waiting list sequence, although he showed dissatisfaction with the awarded programme.

*HEAC is transparent even if I was awarded the seventh choice. I was on the waiting list. HEAC shows your order on the waiting list. My first choice was engineering, and I was the second one on the waiting list, but unfortunately, I was not admitted. (FG1.4)*

Other participants referenced a HEAC admission report that showed the minimum and the maximum admitted competitive grades. The report gave them satisfaction with their results and improved their perceptions of transparency. These users were able to benchmark their admission results with the available statistics, which helped them understand the reasons behind their admission result.

*Transparency was realised. The system sorts all applicants using the competitive grades, and it shows the minimum and maximum admitted competitive grades for all programmes. Thus, I am satisfied. (FG8.3)*

*The system is transparent because it gives the lowest admitted competitive grade when announcing admission results (FG3.4)*

Information availability was also associated with the students' ability to make an informed choice. Before the implementation of the EAS, HEIs used to advertise the names of opportunities in the public newspapers without any information about the duration or main subjects of the programme. Some participants believed that available information about



the offered opportunities helped them to make an informed decision. Information about the duration of the course, the curriculum and the location allowed students to make better choices. The EAS clarified student eligibility and only listed courses that met the student's requirements. This was not the case before EAS and students could apply for programmes for which they were ineligible.

*They trained us really well on the system. EAS gave us all the information we need to select the right programmes. Each programme is detailed in the student guide. We can find the name, the duration, the school which teaches the programme and a link to the school. (FG6.2)*

*EAS has a feature which lists all potential educational programmes [for] which I am allowed to register. It made it easy for us and saved us a lot of time. It also helped us make the right decision. (FG8.1)*

While information availability proved to be a cornerstone in improving users' perceptions of transparency and informed choice, lack of information was evident in the negative perceptions of these values. For example, some participants linked their negative perceptions of transparency to the lack of information about the reasons behind rejections from some of these educational programmes. They wanted the rationale for rejection to be included in the SMS messaging when announcing the admission results as a recommendation to improve HEAC transparency.

*It would be nice if they include the rationale for not being admitted to any selected educational programme. (FG3.5)*

*It is not transparent. At least they show and send the SMS with the admitted programme. They need to give a brief message about why someone was not accepted. Now, they only report whether you are admitted to the programme or not. (FG6.4)*

The above quote is another example of how the lack of information can negatively shape the enactment of transparency. However, the lack of information mentioned in the above

quote is out of the developers' control and it is caused by the limitation of the SMS service to present detailed reports. This shows how technology artefacts can shape the enactment of transparency. This was echoed when one informant stated that the portal did a better job of enhancing transparency than the mobile service. A few students compared the capabilities of the portal and mobile service support for information availability. They stated that the portal was more transparent because it gave more information.

*Yes, I realised transparency. I see the portal [having] more transparency than the mobile service. It gives far more information. (FG11.1)*

Other students complained about the lack of detailed information about the job markets. However, the HEAC believed that providing such detailed reports was beyond the scope of their remit and was the responsibility of another Ministry. The HEAC also believed that these reports were difficult to generate because the job market was unpredictable and they could not be sure about the changes after five years.

The focus group analysis suggests that information availability is associated with positive perceptions of transparency and informed choice by informants. This finding again confirms the organisational view on the importance of information availability in the creation of positive perceptions of the planned PVs. However, information availability could not be achieved without system availability and accessibility, as highlighted section 6.7.3 below.

### 6.7.3 System Accessibility and Availability

System accessibility and availability were presented as critical technical dimensions that influenced participants' perceptions of the created PV. Findings from the organisational data suggested that the EAS system availability would enable information availability and the enhancement of fairness, transparency and informed choice. The findings from the focus group confirmed the importance of the system availability, specifically when implementing students' informed choices. A few students, who came from remote areas, found the system to be slow. Internet speed was one of the technological factors that influenced their decision on registered choices. The realisation of choices was mostly a negative experience for those students who experienced a slow internet service. The slow internet service could lead to the system timing out and ending the session. This meant that these students had to log in again and rearrange their choices. In fact, one of those who had a slow internet service had to reduce her choices, as stated by FG7.5.

*Because the system was slow, I only registered 30 choices. (FG7.5)*

*The only way was we had to do it is to exit the system and keep trying. This internet quality was terrible, and whenever we tried to save our choices, it failed. (FG9.4)*

The above quote suggests that slow internet service stopped students from recording their choices. Therefore, they had more difficulty implementing their informed choice. The HEAC may lack the required authority to cause a change in the quality of the internet service within the ICT companies in Oman and a change would most likely have to be driven by the highest state authority. Therefore, HEAC may find it challenging to have end-to-end system availability because it does not own the network that facilitates internet service availability.

When it came to accessibility, some students associated it with positive perceptions of transparency and fairness. They reasoned this to the availability of multiple technology platforms through which they could access the system. The association of system availability with fairness and transparency could be due to the available information facilitated by system accessibility. For example, an informant recognised the accessibility of the admission report and the SMS services and associated them with positive perceptions of trust and transparency when highlighting HEAC fairness. They referred to the admission results and the audit logs. Hence, having access to this information was believed to influence the student's perceptions of transparency and trust positively.

*The system sends our parents and us any changes. Hence, it is transparent and trustworthy. Even when the results are out, you easily view your results from the system. (FG7.1)*

*I agree. First, the system is easy, and there is no paper. Moreover, it has helpful features and right away, such as SMS services. I think it is smooth and fair. When it comes to wasta, it does not exist. (FG8.1)*

*The mobile application is excellent because you can go somewhere where you do not have a PC, and you can register using your phone. (FG11.3)*

The findings from the focus group data confirm the role of system accessibility and availability in enhancing the creation of the planned values. The slow internet service in remote regions influenced the EAS availability and students' ability to post their informed choices. On the other hand, the EAS accessibility via different platforms positively influenced users' ability to access the available information and hence, improved their perceptions of trust and transparency. The next section presents system auditability as an influencer in the PV creation process.

#### 6.7.4 System Auditability

Informants from the focus group interviews explained that system auditability influenced their perceptions of transparency and fairness. Findings from the organisational dataset suggested that HEAC implemented a responsive auditable system to enhance users' perceptions of fairness, transparency and trust. The impact of that change was positively recognised by some participants, who stated that they had better trust in the system with such an auditing mechanism in place.

*You can trust no one [to] fiddle with your account. When you log in or out, you get a message right away on your registered phone number. (FG11.3)*

*Yes, you can trust that no one accesses your account except yourself. I wish we can get the message when someone tries to change our password, similar to Facebook. (FG11.2):*

*This feature exists. (FG11.3)*

*I did not know about this feature. (FG11.2)*

*As FG11.3 said, we realised trust. You can access the system with your password, and no one accesses your account. (FG11.1)*

Those who were familiar with this feature showed more trust than those who were not aware of it. This was also noted by informants in other focus groups. For example, FG7.1 believed that the EAS audit feature resulted in the delivery of transparency and trust because every change got logged and could be seen immediately. This improved their perceptions of transparency and encouraged them to trust the system. It was not a surprise that this finding confirmed the findings from the organisational data because it was initiated by users' complaints about the security of the system.

*The system sends our parents and us any changes. Hence, it is transparent and trustworthy. Even when the results are out, you easily view your results from the system. (FG7.1)*

The audit logs are sent using the SMS service. This also shows how the SMS service role has changed over time. This service was initially implemented to enhance system accessibility for users in remote areas. Post-implementation it was also used to enhance system transparency and trust. System auditability and the previous technical dimensions were addressed by organisational informants and the focus group informants. The next two sections present two additional technical dimensions that were believed to influence user perception of the created PVs.

#### **6.7.5 Ease of Use**

Ease of use is one of the system features that was not addressed by the organisational informants. Focus group informants believed ease of use influenced their perceptions of the created PV. Some informants pointed to the design of the HEAC registration system lacking the necessary features to help them easily process the information available and navigate through the system. The lack of these features, which enable ease of use, negatively impacted on their perceptions of the realisation of planned PVs. These informants highlighted two main challenges to illustrate the importance of ease of use in improving their experience with the system: information readability related features and search engine features.

As mentioned earlier, information availability played a key role in influencing participants' PV perceptions. The available information raised their level of informedness and hence improved their perceptions of fairness, transparency and informed choice. Yet, some

participants found it difficult to understand and digest the information available. They found it difficult to understand and comprehend the information available due to 1) the size of the students' guide, and 2) the design of the search engine. The students' guide was available as a soft copy in PDF format on the EAS portal and as a hard copy distributed to students through their schools. Some participants found the student guide very condensed and difficult to read. Those students referenced information related to the offered opportunities and the EAS users' guide. Some students suggested separating the offered programmes from the theoretical part, which rarely changes. The offered programmes information usually changes every academic year. This could shorten the student guide and encourage them to read it. The student guide presents information about the admission process and policies, the EAS system guide, and the offered education programme details. The quality of this information is influenced by its readability. The quality of student guide information can influence students' decisions. Therefore, the presentation of this information was critical to students' informedness. Informants found its design hindered their ability to have better informedness and hence make an informed choice.

*Students' guide does not have to be 100 pages. It is big. They should make it small and provide a separate section which gives detailed information about the offered programme. For example, details about the school foundation programme. The technological college had an English course of one year, two years' foundation, then two years post-foundation. At least we need to understand the student guide. I lost one year because of them. (FG6.4)*

*I agree when we read the student guide, we do not understand it. Students did not know how to register and needed more information about EAS. We had to talk to the school principal to have someone explain it to us on PowerPoint, which helps us a lot. (FG3.3)*

The second challenge highlighted by the focus group was the EAS search engine design. The design of the search engine for the available list of programmes was organised by subject. Therefore, students can only filter available programmes using the subject filter. For example, if they choose engineering, they would get the list of engineering opportunities regardless of the school. This made it difficult when the offered programmes exceed 20,000 opportunities. Some students stated that the EAS indexing for the programmes offered made it difficult for them to filter the right programme. They stated that the EAS indexing style was not flexible and some users found it hard to access the available information. Other students wanted to have the choice to select the filter that suits them. Those who wanted to have it indexed by school reasoned their preference to their interest in the school's features, regardless of subjects. They sought admission in specific universities because of accommodation availability and monthly government allowance. Others wanted to have the information indexed by subject because they had an interest in specific subjects, regardless of the university. The organisation could have kept the system flexibility and allowed students to filter educational programmes as they wish, which was recommend by FG11.1.

*When we register, it takes us a lot of time to find the right programme. For example, If I am looking for engineering schools, I do not need to go over the whole guide. I mean, it is not organised nicely. It is not supposed to take a lot of time to find the right programme. (FG6.4)*

*They can have both options: the university and the subject. (FG11.1)*

Referring to a follow-up interview on the search engine design, the head of statistics stated that this change was a result of surveying students and career awareness specialists for their preference for searchability. Moreover, the awareness specialist noted



that HEAC noticed that students base their choices on academic institutes without looking at the subjects and hence, they changed it to be subject based.

*We noticed that students based their choices in academic institutes. They register different subjects at Sultan Qaboos University. Then they move to the next favourable college. We had an idea with the admission office to have the programme searched by subjects. (INT10)*

Interestingly, this change was also a recommendation suggested by INT7, who was a former HEAC employee and left HEAC in 2011. His recommendation is that this change was driven by government agenda to give a chance to new universities to accept more students, particularly those private universities that gave out grants for students in exchange for government funding.

*One of the things we need to think about is basing the selection on the subject and not academic institutes... We focus on the social and academic aspects, but the government sees the economic side as well. The government has invested in supporting private academic institutes by giving them funds and land. Without students, these institutes will not be able to succeed. Hence, this change helps the government economically. (INT7)*

This evidence suggests that HEAC may have deliberately changed the design of the search engine to influence student choices. In fact, HEAC could have made it flexible and allowed students to search using either option as recommended by the students. The above arguments suggest that the software developer needs to consider the readability of information when creating the architecture of the system design.

To conclude, ease of use was not originally considered by the organisational informants as a critical factor to help students make an informed decision. However, some student informants associated ease of use with their ability to understand the information available or easily select their choices. The lack of a technological feature that enables ease of use

made it difficult for some students to understand the information available or implement their choices. As a result, this could either affect their informedness or make them frustrated because they could not implement their informed decision. Ease of use was not the only technological dimension not addressed by the organisation; section 6.7.6 presents data anonymisation as the second technological dimension that was not addressed by HEAC informants.

### **6.7.6 Data Anonymisation**

Data anonymisation helped hide the identity of the students when completing the admission process. Some informants believed that data anonymisation improved their perceptions of fairness. Informants from the users' side overwhelmingly referenced this security dimension. This was also recommended by informants in focus groups 3, 4, 7, 8, 9 and 11. Those informants believed that anonymising the record identity would minimise any attempt to help family members or friends and, in turn, reduce any *wasta* attempt. They believed anonymisation of record identity would improve perceptions of trust, transparency and fairness.

*Is it possible not to display students' names during the admission processes? This way, we achieve transparency. (FG3.5)*

*When you do not know the student's name, you cannot help your relatives or friends. The record should not be known. Why cannot they hide our names and just use IDs? (FG4.2)*

Moreover, a dialogue about how fairness could be achieved took place in focus group 8. Informant FG8.2 explained why anonymisation was essential. He stated that recording

students' data using codes instead of names would prevent organisational users from identifying their relatives. Hence, it prevented any attempt for favouritism.

**Researcher:** *How can fairness be achieved?*

*I think that when the data are recorded into the system, it should not have names. Maybe they can use codes. When you use the code, it will not identify the person. You would not know if this record was for your son, brother, or cousin. (FG8.2)*

During a follow-up interview with an informant from HEAC, an incident was mentioned about a user from one of the academic institutes helping one of his relatives. He advised the academic institute to lower the admission requirements after seeing that his relative was a few points short. This change allowed his relative to be admitted. The researcher minuted this during a casual conversation with a participant from HEAC during the follow-up visits. The participant reference was not recorded to protect their identity. Therefore, anonymising students' records could prevent any attempt to influence the admission results. In another follow-up interview, HEAC staff stated that implementing data anonymisation was difficult because of a lack of resources. The change would require the EAS technical architecture to be changed, which would need competent developers. Again, the absence this technical feature was linked to a lack of resources and budget constraints.

*We cannot change the system now because of resources – lack of technical competence and financial resources. I have six developers, but you still cannot call them developers. Most of them are fresh. The turnover of developers is high. We had great developers, but they left. In addition, the training budget is very low. We do not have our own allocated budget. Our training comes from the Ministry-allocated budget for IT training, and we are not located in the IT department. (INT18)*

This section demonstrated that data anonymisation could influence users' perceptions of

transparency and fairness. HEAC interviews did not address this technical dimension, and follow-up interviews confirmed the importance of this feature. However, implementation of such a feature requires the HEAC to have the resources to change the EAS architecture. It may be possible that the HEAC informants avoided talking about this feature because they did not think it was feasible to implement due to a lack of resources.

### **6.7.7 Summary of users' perceptions**

The findings from section 6.7 presented the technological dimensions that end-user informants believed influenced their perceptions of the planned PVs. The findings confirmed the importance of the four technological dimensions presented in section 6.6: automation, information availability, system accessibility and availability and system audit. As mentioned earlier, apart from system auditability, these dimensions were shaped by the initial understanding and interpretation of the HEAC PV vision by the implementation team. The planning of these features was fruitful as they were associated with positive perceptions. Users' experience and perceptions of the created PVs influenced the design of the EAS system and introduced system auditability to enhance users' perceptions of fairness and transparency. It also enhanced other technical features by implementing SMS and mobile application platforms.

Two additional technological dimensions were identified from the focus group interviews: ease of use and data anonymisation. Ease of use allowed the student to access the information available easily and improve their informedness of the admission process, policies, EAS features and the programmes offered. Ease of use was also seen to influence their ability to implement their informed choices. Data anonymisation was

believed to improve user's trust in the system and improve their perceptions of fairness and transparency. The lack of these features led to negative perceptions of the created PVs. The implementation of these artefacts was subject to the availability of resources related to the capabilities of the technical team, technology used and the support of the organisation processes, as shown in the follow-up interviews with HEAC informants. The implementation of these technical dimensions also required that users' perceptions were fed into the organisation and actioned when necessary. Focus groups, conducted in this study, proved to be a helpful engagement tool to have a deeper understanding of the different possible meanings and perceptions that end-users might interpret when interacting with the system.

## **6.8 PV Creation Process through EAS**

The main aim of this study was to better understand the activities and factors related to the implementation of e-government-enabled educational reform using a PV perspective in the Sultanate of Oman. The investigation was executed through a case study which collected data from a wide range of stakeholders, including public service providers and beneficiaries. The analysis of the organisational dataset showed how creating a new EAS resulted in educational reform aimed at creating PVs. As shown Figure 6.3, the analysis of this case study presented key dimensions in the PV creation process through a combination of state authority, HEAC vision, objectives, business changes and enablers, EAS system design and features, and end user's perceptions of the created PVs.

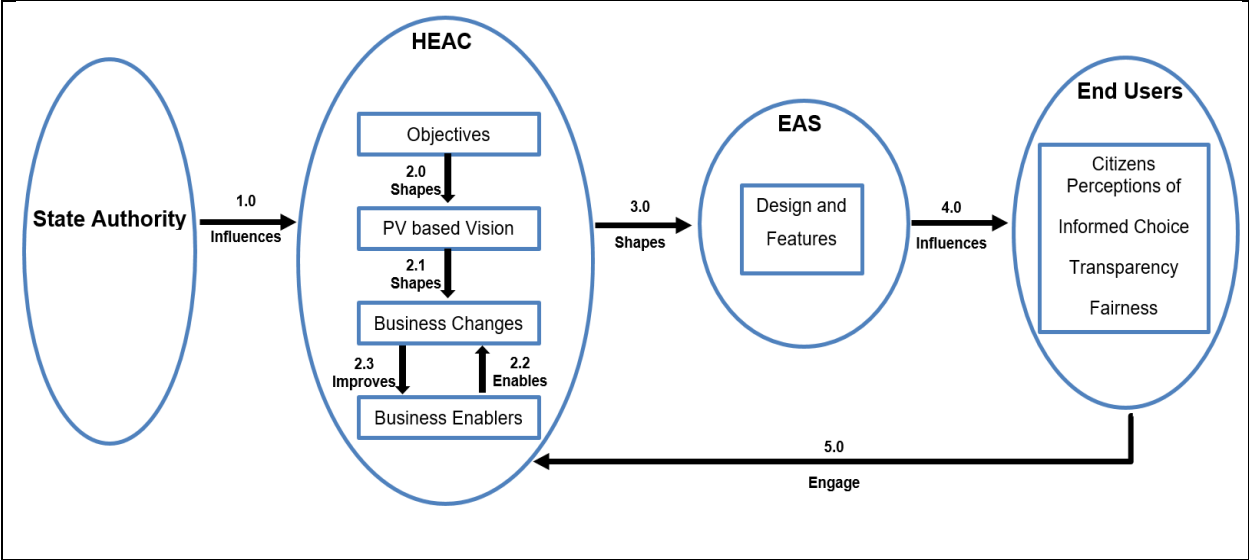


Figure 6.3: EAS Public Value Creation Process

The findings show that state authority influenced PV creation indirectly by influencing HEAC. This influence could be seen mostly during the implementation stage for the EAS, as it gave the HEAC the legitimacy and support required to implement its digitisation initiative. The state authority played a key role in the formation of HEAC, centralising all public admission offices in the Sultanate and managing all admission services under one umbrella. It empowered the HEAC to make the necessary business changes and acquire the necessary resources for ICT reform, such as the centralisation of the admission services and the alignment and development of admission, grievance, and audit processes. However, state authority support was not sustained during the post-implementation stage for the EAS. During this later stage the state authority involvement was indirect and mostly driven by external factors such as the Arab Spring (e.g. through a royal directive to increase citizen participation). This lack of support challenged the advancement of EAS technical features, as suggested by the evidence from the focus

groups and the follow-up interviews. The absence of these additional features effected citizens' experience with the system and hence, the realisation of the planned PVs.

The findings from this case study highlighted four organisational dimensions that influenced the creation of PV from the EAS: objective, vision, business changes and business enablers (see Figure 6.3, relationships 2.0, 2.1, 2.2 and 2.3). Unlike most IT projects at that point in time, the HEAC objectives focused on fighting *wasta* and enabling students to make an informed decision. The interpretation of these objectives shaped HEAC's adoption of a public value-based vision as shown in relationship 2.0. The project implementation team's understanding of *wasta* as an unfair treatment when delivering admission services resulted in a vision that aimed to deliver fairness and transparency. Therefore, HEAC's vision focused on the delivery of fairness, transparency and informed choice. Since HEAC adopted a public value-based vision, it recognised that its internal processes needed to be aligned with its vision. Thus, HEAC's vision shaped the required changes, as shown in relationship 2.1. For example, perceptions of fairness influenced the changes in the admission process. Minimising human intervention in the admission decision was a key change in the admission process. This was caused by the HEAC understanding that fairness could be achieved by reducing human intervention, and hence, minimising process subjectivity. Another example concerned other process and admission policies. HEAC focused on information availability as a result of its understanding of transparency and informed choice. Thus, the evolution of the admission policy resulted in the publication of detailed articles to ensure critical information was provided in a timely manner.

The initial EAS design focused on features enacted through the implementation team's understanding of the meaning of the three planned PVs. Thus, the PV-based vision shaped the design of the EAS system, as shown in relationship 3.0. Their meanings of fairness, transparency and informed choice were translated into a technical design that concentrated on automation, information availability and system availability. Hence, EAS was developed with artefacts that enabled automation of the admission decision and information richness, such as the EAS portal and admission reports, and registration screen. The first two artefacts focused on information availability, which was believed to be a cornerstone to achieve transparency and informed choice. The registration screen design focused on automation to reduce human intervention when sorting all applications because the implementation team believed that reducing human intervention was a key requirement to fight *wasta* and hence achieve fairness.

The fourth dimension was the citizens' perception of the created values. These perceptions played a role in further developing the EAS system, as mentioned earlier, especially when they differed from the HEAC's perception of the PVs. The findings also showed that the HEAC perception of fairness and transparency, enabling it to fight *wasta*, matched users' perceptions. Thus, those who believed the EAS was transparent and fair linked their perceptions to automation and information availability. On the other hand, those who were not aware of the EAS capabilities and its features showed negative perceptions of these values. End-users also highlighted negative perceptions due to the lack of anonymisation or advanced technological features to enable ease of use. Anonymisation and ease of use did not seem to be addressed by the HEAC informants



or existing archived documents. Therefore, the EAS design and features influenced users' perceptions of the planned PVs, as shown in relationship 4.0.

The HEAC created different channels and mechanisms through which users' perceptions were communicated to the HEAC and its staff. The HEAC's effort to ensure citizens' engagement was seen in its adoption of a grievance process that catered for the broad representation of society. It was also evident in its utilisation of different engagement channels such as public TV programmes, surveys and social media. This allowed end-users to engage with HEAC and present their views on the planned values, as demonstrated by relationship 5.0. The presence of processes, policies, and tools ensured that citizens' perceptions were fed back to the HEAC. This feedback enabled the HEAC to further develop the EAS to improve users' perceptions of the created values. For example, the SMS service was implemented as a response to users' complaints about system accessibility when the EAS was launched. The implementation of the SMS service improved citizen perceptions of system accessibility, which improved the level of informedness, and hence, improved perceptions of the planned PVs. Another example was the change in the policy of maximum choices allowed, which influenced users' perceptions of the informed choice. HEAC changed its policy and the design of the EAS to enhance users' perceptions of informed choice.

The findings showed that EAS developments to meet user expectations of the planned PVs was also influenced by the relationship between business changes and business enablers. The relationship between the HEAC business changes and enablers was important for developing EAS design and features. Once the EAS was live, citizen

perceptions and realisations of fairness, transparency and informed choice needed an effective engagement process for citizen's views to be communicated to HEAC. In addition, reviewing these perceptions and implementing the changes necessary required a democratic and cooperative culture. Implementing the changes required could have been much more difficult had the organisation not had a democratic and cooperative culture. Hence, public engagement and HEAC organisational culture were important enablers for the PV creation process, as shown in relationship 2.2. Business changes and enablers also appear to be in a reinforcing relationship. While the business enabler drove the required changes to either the HEAC or the EAS, some of those changes led to the improvement of the HEAC engagement process, as seen in relationship 2.3. For example, the adoption of an e-participation policy and an official social media presence was a step toward improving public engagement. The representation of the grievance committee played a role in bringing the consultative council on board to represent the citizens' voice and hence, improve public engagement.

## **6.9 Chapter Summary**

As shown in Figure 6.3, the process diagram summarises the continuous improvement cycle, which facilitated the creation of the planned PVs through the EAS. This cycle brought service providers' and beneficiaries' perceptions closer together through continuous improvement of the EAS design and HEAC organisational processes. The findings show that the EAS has gone through an incremental cycle of change influenced by state authority, the PV-based vision, business changes and citizens' feedback. However, findings also show that business enablers were important to drive through these

changes. Having presented the findings of the case study in relation to educational reform through e-government in Oman and how it contributed to the creation of PVs, the following chapter contextualises these findings in the extant literature.

## **7. Discussion**

This thesis empirically examined the interplay between human actors, e-government, institutional settings, and PV. As presented in Chapter 4, the study employed an interpretive philosophical orientation and applied qualitative methods to answer the research questions. The qualitative methods included interviews with organisational informants, archived documents, and focus groups with end-users. The data collection stage took place between March 2016 and September 2016, where 18 interviews and 11 focus groups were conducted. Three questions were identified at the end of the theoretical framework chapter. These questions focus on understanding three dimensions: 1) How is the authorising environment obtained in this emerging democracy? 2) How are operational capabilities managed to enable e-government PV creation, and 3) How is public value incorporated into e-government technical design?

### **7.1 PV Authorising Environment in an Emerging Democracy**

Aiming to answer the first research sub question, the findings are discussed with relation to the ongoing debates about the complexity and suitability of PV authorising environment and the key arbiter of PV creation, which were presented in Chapter 3.

#### **7.1.1 Legitimacy and Sustained Authority**

The existing literature presents the authorising environment as a key dimension in the creation of PV (Moore, 1995; Stoker, 2006; Benington and Moore 2011; Moore, 2013; Moore, 2014; Bryson et al., 2014). The authorising environment is a central element in Moore's PV Strategic Triangle framework, and it influences and is influenced by

operational capabilities and the PV as an outcome (Moore, 1995; Benington and Moore, 2011). Moore (1995, 2013, 2014) presented two components of the authorising environment in a democratic state: legitimacy and sustained authority. While legitimacy refers to the aim to create publicly valuable value, sustained authority refers to the mobilisation of sufficient sustained authority, which influences the decisions required for PV creation (Benington and Moore 2011). Existing literature shows that achieving legitimacy and sustained authority is difficult in an established democracy (Alford, 2008; Colebatch, 2010; Moore, 2013; Bryson et al., 2017). It is difficult because of the complex groups who are involved in the decision-making and the authorisation in the PV creation (Moore, 2013; Bryson et al., 2017). It is also complicated because of the dynamic and changing social and political conditions (Moore, 2013). For example, in the US, the changing representatives and the shift of power between Republicans and Democrats can change how the authorising environment builds their legitimacy and support for their agenda to create PV. Thus, the competition between these two parties may challenge the required authorising environment to create PV. The same can be seen in Australia where power is divided between the Federal Government and State Governments, which makes authority an “ambiguous and contestable term” (Colebatch, 2010, p. 68). It is also challenged by the individualistic culture, which may lead to uncertainty and ambiguity to judge what constitutes PV (Bozeman, 2002).

Although the literature does not spell out democracy as a requirement for PV creation, it is mainly linked to democratic societies as seen with Moore (1995, 2013, 2014), Sadiki (2004), Stoker (2006), Bozeman (2007), Alford and Hughes (2008), Alford and O'Flynn (2009), Benington and Moore (2011), Hartley et al. (2015), Douglas and Meijer (2016),

and Bryson et al. (2017). The creation of PV is understudied in contexts which do not have elected parliaments or Western-like political structures. Hence, an insight from a different political system can bring more insight to the e-government PV creation process. This study sought to understand and answer the research question about what defines the required authorising environment for PV creation in an emerging democracy. The data confirmed the importance of the two principles of the authorising environment required for PV creation. However, the findings show that creating an authorising environment in an emerging democracy is not as complex as previously described by existing studies in established democracies, as explained below.

### ***Legitimacy***

One of the requirements for a PV strategy is gaining “the legitimacy of a wide range of stakeholders” (Stoker, 2006, p. 47). However, achieving legitimacy is complicated in an established democracy. The first challenge facing PV legitimacy in an established democracy is associated with the balance between cost-saving and PVs. Public service managers are expected to reduce cost as well as create PV and hence, prioritising their goals can be difficult (Moore, 2013). Moore’s recommendation in established democracy contexts is that public managers should have a balance and “remain attentive to costs as well as the relevant dimensions of public value” (Moore, 2013., p. 178). However, the high level of accountability facing public service managers may challenge any effort to balance their priorities. In established democracies, public service managers are held accountable for every penny spent from the taxpayers’ money, and hence, their future is at stake in case of failure (Moore, 2013). Strong valuing of individual rights and limited value of

collective goods in Western established democracies, like the US, is also seen as a reason for PV failure (Bozeman, 2002). Thus, opinion diversity can challenge the legitimacy of PV creation initiatives.

By contrast, the findings of this study suggest that the legitimacy challenges identified by the literature do not exist in this case study. We found that cost saving was less important than creating PV by addressing a social problem (*wasta*). Citizens were not paying taxes, and a strategy based on time and cost-saving may not seem as appealing as fighting a cultural issue which was recognised by most stakeholders, including citizens. Fighting *wasta* was more appealing than cost-saving, as confirmed by focus group findings with EAS end-users. Although the data suggested that HEAC implementation had other objectives, such as time and cost savings, these were not the focus of the HEAC vision, as shown on the organisation logo. The absence of known legitimacy challenges in this context can be linked to national culture or the level of accountability. As a Middle Eastern country, Oman's cultural value has been described as collectivism (Buda and Elsayed-Elkhoully, 1998; Zakaria et al., 2003). The collective nature of Arab states means that their citizens are more willing to emphasise the common good (Zakaria et al., 2003). This culture encourages public service managers to identify values which may please their citizens. In addition, this focus on PVs can also be linked to the poor accountability known in the region (Jreisat, 2009). Thus, public service managers do not necessarily consider cost-saving when prioritising their objectives. These factors made the prioritisation of public service managers' objectives less complex than in an established democracy.

The findings from this study not only confirm the importance of legitimacy when defining the authorising environment, but they also show how sourcing legitimacy is less complex in this context. Identifying what is valuable for the public is more straightforward because public service managers do not face competing values such as PV or cost reductions. It is also comparatively less complex because of the collectivism culture of value in the Middle East. These findings suggest that we should broadly think of PV creation legitimacy; there is no single solution to legitimise actions for the creation of PV. This may contradict Meynhardt (2009, p. 214) who argues that “Legitimation by numbers, however, may appear a less complex challenge than facing the challenge of a pro-active dialogue about what our work is valuable to society.” Legitimation by number can be challenged by other cultural and social values as seen in the US recent elections, and Brexit in the UK; “The heated culture wars dividing young and old have the capacity to heighten generational conflict, challenge the legitimacy of liberal democracy, and disturb long-established patterns of party competition” (Inglehart and Norris, 2016, p. 5). The pluralism and contextualisation characteristics of PV require us to rethink how we assess the legitimisation of PV creation. Legitimation is situational where public service managers need to identify political, cultural, economic factors which help them identify what is valuable.

In this case study, national problem and issue solving can be one approach to obtaining the needed legitimacy to create PV. This is in line with the recent call by Bryson et al. (2017) to position public problems or challenges in the centre of the PV triangle as a separate dimension. They argue that doing so is helpful because “it prompts all actors to question their understanding, appreciation, value, and commitments” (Bryson et al., 2017,



p. 644). Yet, it is not necessarily that these problems are wrapped around PV creation. It is possible that other contexts may find that cost saving is far more important to citizens than social problems. The economic, social, and political conditions play a role in legitimising PV-based initiatives.

### ***Sustained Authority***

The second strategic principle for PV creation is the mobilisation of “sufficient authority and be politically sustainable” (Moore, 2011, p. 5). As described in Chapter 3, achieving the required authority for PV creation is difficult and complex in the US (Jacobs, 2014). Moreover, Rhodes and Wanna (2007) criticised its suitability in Australia, New Zealand and the UK. Government fragmentation and the competing power positions in these contexts are behind the complexity of obtaining the required authority. For example, the US context is described as “sharply divided public opinion, intensely partisan politics, the power of organised interest, and the many veto points into governance arrangement” (Bryson et al., 2017, p. 640). Sadiki (2004) argues that the absence of elected parliaments, which can influence decision makers, makes it hard to have popularly based legitimacy in Arab countries.

The findings of this study showed that the highest state authority enabled public managers to achieve their PV vision. The managers from the Ministry of Higher Education (MHE) raised their suggestion for the centralised admission service to the Ministerial Parliament. State authority was required to centralise the admission services under one umbrella and mobilise the required resources required for the educational reform. The institutional change was not possible without the royal decree. The Sultan has “an

enormous degree of discretionary power over state and society” (Common, 2011, p. 214). The country’s political system made the institutional change easier since power is consolidated in the Sultan. Royal decrees are a form of regulatory element within the organisation, and they are considered the most important element to produce stability in organisation structure and behaviour; they give organisations authoritative power (Scott, 2001). The establishment of HEAC was based on Royal Decree number 104/2005, which specified that EAS should become the only system of admission into government-funded higher education opportunities. The Decree empowered the MHE to make the necessary changes to the admission service. HEAC’s former general manager and former project managers stated that other HEIs were not initially happy with the decision to centralise the admission services under HEAC. The Royal Decree allowed the implementation team to overcome any opposition.

The centralisation of power allows smoother decision-making where there are minimum objections, especially when it is a Royal Decree. This is different from the fragmented power structure in the US or political power structures. It also contradicts Sadiki’s comments about the importance of the elected parliamentary system for authorising PV creation. This shows that even monarchical power can be used and directed toward enabling the implementation of educational reform and hence creating PV. Therefore, these findings highlight the role of politicians in the creation of PV (Bryson et al., 2017) regardless of the political system differences. Politicians can either support or hinder any PV initiative, but it depends on whether it is legitimised. The focus of public value research should not be on the suitability of political structure for PV creation. Legitimacy and authority can be obtained in any political structure: is not about the suitability of the

American government, Westminster systems, or monarchical power. What matters is *how* authority is sought and obtained when attempting the creation of PV through public services. This case study shows that in a context where the governing body follows monarchical power, the highest state authority is a suitable starting point to obtain authority, especially when institutional changes are expected to take place. The institution of HEAC and the consolidation of all higher education admission services entities needed a Royal Decree.

### **Summary**

To summarise, the findings also show that the required legitimacy and support for PV creation in Oman is not as complex as it is in an established democracy. In an established democracy, the authorising environment is complex and difficult to achieve because “the new world is a polycentric, multi-nodal, multi-sector, multi-level, multi-actor, multi-logic, multi-media, multi-practice place characterised by complexity, dynamism, uncertainty, and ambiguity in which a wide of range of actors are engaged in public value creation.” (Bryson et al., 2017, p. 641). All these complexities may not exist to the same level in the Sultanate or similar contexts.

The findings presented three key differences between this context and established democracies. First, it may be less complex for public service managers in Oman to legitimate their PV objectives than in an established democracy context. Public service managers are expected to create PV and achieve efficiency at the same time, and they are held accountable for both by the taxpayers. Delivering PV could come at the cost of financial and time saving, as seen from the findings of this study. This does not mean that

public service managers are not expected to achieve efficiency. However, their accountability toward cost saving does not sit at the same level since there is no taxation in the Sultanate. The second difference is associated with culture: while Western societies take an individualistic stand toward value, Middle Eastern societies tend to be more collective. Therefore, legitimacy can easily be established in this context. The third contrast concerns the political structure; the Sultanate political structure is highly centralised, where the Sultan controls decision making. Thus, Royal Decrees can unify any potential division in the public opinion of all stakeholders. This is not the case in an established democracy where there are veto points in the government system and fragmented political groups who can influence decision making (Bryson et al., 2017).

The difference in the challenges facing PV creation in emerging democracy and an established democracy may suggest that the authorising environment for PV creation should be thought as a situational heuristic device which can be used by public service agencies first to identify what is valuable for the society and then how it can be achieved. The literature also suggests that time is also an important dimension, as PV perceptions can change over time (Moore, 2013; Bryson et al., 2017). Legitimacy and authority may be influenced by political structure, national culture, or economic conditions, and how it changes over time. Hence, fighting *wasta* can be a legitimate public value today, but it may not necessarily legitimise similar PV initiatives in 50 years. This understanding suggests that the PV creation literature should focus on the methods and tools which allow public service agencies to create the required authorising environment for PV creation, rather than debating the relative merits of different political structures. This can be achieved by unpacking how legitimacy and authority are achieved in different contexts.

For contexts with similar monarchical power and cultural and social practices, problem-solving and identifying challenges at the national level can be the starting point to obtain the required legitimacy. Empowering the authorising environment with the highest state authority support may be required to enable the creation of PV. This suggests that the authorising environment is a tool which can be used to create the required legitimacy and authority for PV-based initiatives. It is influenced by social, economic, and political factors, which are dynamic and can change over time.

### **7.1.2 Who is the Key Arbiter of PV?**

One of the ongoing debates about PV creation is identifying the key arbiter. The arbiter debate concerns who is best to judge what constitutes PV. Initially, Moore (1995) gave the accountability of PV creation to the public managers; public service managers can decide on what constitutes a PV. However, Rhodes and Wanna (2007, p. 406) rejected the idea of public service manager playing the role of *'Platonic guardian deciding the public interest'*. They think that Moore overstretched the responsibility of public service managers beyond the orthodox administrative responsibility and got them involved in politics (Rhodes and Wanna, 2009). In later studies, Moore concedes that it is inappropriate for a public manager to decide on behalf of the public (Benington and Moore 2011; Moore, 2013; Moore, 2014). As shown in Table 7.1, Moore's definition of the public references all the actors who play a role in the creation process which includes public service managers, political representatives, formal and informal overseers, and citizens. However, several researchers still believe that Moore's initial argument is valid (Dahl et al., 2014; Hartley et al., 2015). Dahl et al. (2014) believe that accountability sits with the

public managers because the PV creation process depends on how they engage the political process. The empirical findings of Hartley et al. (2015) in Australia, New Zealand and the UK are in agreement with Dahl et al. (2014) and they call for public managers to enhance their political skills to be able to influence decision-making across all stakeholders. These studies do not see elected politicians as the best candidates to make the call on what constitutes PV because their political position is not clear on what they want to deliver (Hartley et al., 2015).

| Table 7.1: Authorising Environment Groups (adapted from Moore, 2013, p. 115) |   |                                     |  |
|--|---|-------------------------------------|--|
| Stakeholder group  | Definition  | Involvement                         | Equivalent groups in findings of an emerging democracy   |
| Public Managers  | Chief elected executive, a political appointee, senior civil servants | Implementation/ Post-implementation | HEAC Management, Higher Education Institutions Representative, Ministry of Education Representative (Implementation and Post-implementation) |
| Formal Overseers   | Courts, Legislators, Budget Office, Personnel Office                  | Implementation/ Post-implementation | State Audit Team, Grievance Committee (Post-implementation)  |
| Informal Overseers   | Interest Groups, Media  | Implementation/ Post-implementation | Consultative Council (Post-implementation)   |
| Citizens   | Voters and Tax payers   | Implementation                      | Citizens (Post-implementation) (No Tax Payers)   |
| Clients  | Beneficiaries Obligates   | Post-implementation                 | Students and Parents (Post-implementation)   |

This debate has introduced two schools of thought when it comes to the key arbiter for PV creation. The first school does not recognise the public service manager as the

platonian guardian of PV creation believing that “in a democracy, the prospect of public servants exercising political astuteness makes us nervous. It feels like bureaucrats engaging in Machiavellian manoeuvres, manipulating the government and perhaps pursuing their own agenda at the expense of the public” (Hartley et al., 2015, p. 209). The second school believes that this debate is about “the politics/administration dichotomy” (Hartley et al., 2015, p. 207). They argue that public managers are the best candidate to judge what constitutes PV, but they need to have political astuteness to be able to deal with the public and elected politicians. Prebble (2018) seconds this opinion stating that the collective term *public* does not advance the public value theory because it creates complexity around the decision-making required for PV creation and hinders exploration of how public managers and policymakers can deal with a diverse public.

In an attempt to extend Moore’s PV Strategic Triangle and resolve this debate, Bryson et al. (2017) introduced a multi-actor theory of PV co-creation. Their extended framework argues that PV creation involves a different and complex map of actors where each actor should have a strategic triangle in play. “Each actor may rely on their own strategic triangle as a guide to practical reasoning, while also explicitly or implicitly making use of a shared strategic triangle as an action-oriented resource (or burden) that can help inform the efforts of the different actors to obtain power and influence in the co-produced, but often still contested processes of public value creation” (Bryson et al., 2017, p. 642). They argue that each actor may need to obtain an authorising environment, build the required operational capacities, and define their PVs. Although these arguments might be valid at and support PV arbitration by public service managers, it still does not answer how public

service managers can authorise and legitimate PV initiative without being influenced or supported by a political authority?

In an emerging democracy, the findings of this study show that the public manager played the role of platonic guardian of PV in the implementation stage. In this case, there was no evidence of citizens and clients' involvement during the implementation stage. During the implementation phase, it was only the government public managers who defined the objectives and the organisation PV-based vision. Therefore, public service managers became "important agents in helping to discover and define what would be valuable to do" (Moore, 1995, p. 21).

Considering the characteristics of the ruling government, one would expect this to be a top-down approach where the state authority mandates the public service managers to undertake any reform. The findings show that the whole idea started with public service managers, and it was not a top-down approach. The state authority did not mandate this reform; it was suggested by admission service managers at the MHE. The fact that these public managers were able to create the required authorising environment to get the required institutional arrangements and operational capabilities is a sign of their political astuteness in making the reform happen. It is also a sign of their attentiveness to what constitutes a PV in this context. This is line with the findings from Hartley et al. (2015) where public service managers in Australia, New Zealand, and the UK are found to be the best to identify what constitutes PV if they have political astuteness. This is also in agreement with Bryson et al. (2017) suggestion for public service managers to create the required authorising environment.



The involvement of formal overseers, informal overseers, clients and citizens was seen only during the post-implementation phase. The HEAC's engagement with citizens resulted in recommendations and observations that may or may not be actioned by public service managers. For example, implementation of SMS to increase accessibility and hence enhance transparency and fairness was implemented whereas recommendations for changing the design of the search engine and anonymisation was not implemented. Anonymisation was seen as an important improvement to enhance users' perceptions of fairness. It was not implemented as suggested by HEAC informants because the HEAC needed to upgrade the technology, which required both financial resources and competent software developers. Thus, evidence suggests that the collaboration between the consultative council and citizens in the post-implementation stage played a role in shaping what constitutes a PV. Although fighting *wasta* and enabling informed choice were the main objectives across all stakeholders, the different interpretations resulting from users' interactions with EAS and their engagement with HEAC has shaped how EAS enhanced the achievement of these values. A good example can be seen in the change of maximum allowed number of choices policy; it kept changing based on users' recommendations. The findings from the post-implementation stage are in line with Moore's recent call to involve all the stakeholders to decide what constitutes PV (Moore, 2013).

The findings of this study suggest that public service managers can initially make the call on what constitutes PV. However, it also suggests that both citizens and government officials play a role in shaping how PV is delivered and interpreted throughout the service lifecycle. This suggests the importance of having a broader understanding of what

constitutes PV. The existing literature suggests that PV creation is a complex process with three complex dimensions: pluralistic characteristics, complex stakeholders and time. The case study showed how the arbitration of PV moved from the public service managers to the public. However, public service managers still played a role in enabling citizens to participate in the arbitration of PV through their decision-making on (i) enabling public engagement, (ii) what business changes to consider, and (iii) what technology changes to implement. For example, there were a few recommendations from citizens to improve perceptions of fairness, transparency, and informed choice such as flexible search engines and record anonymisation. However, these recommendations were not implemented because of limited resource availability. This may position them as the key arbiters of PV in this context.

These findings are in line with the school of thought supporting the public service manager to decide what constitutes PVs (Dahl et al., 2014; Hartley et al., 2015; Prebble, 2018). It is also in line with the recent criticism on identifying the collective term 'public' as the key arbiter of PV as an unsuccessful concept that does not advance the theory of PV (Prebble, 2018). Positioning the public service manager as the key arbiter PV allows academics and practitioners to advance the PV theory (Prebble, 2018). Hence, PV research should focus on how public service managers can create the authorising environment. We should not be fixated on the authorising environment being shaped by the political structure.

## **7.2 Managing Operational Capabilities**

Operational competency is one of the three dimensions in the PV Strategic Triangle. These capabilities and practices can be processes, policies, procedures, public

engagement, human resources, financial resources and organisational culture (Moore, 1995, 2013; Bryson et al., 2017). The PV Strategic Triangle focuses on the relationship between the authorising environment and operational capabilities where public managers need to ensure that operational capability is feasible to produce PV (Moore, 1995, 2013, 2014). Bryson et al. (2017), however, criticises the model for being silent on organisational practices and capabilities. Thus, the second research question in this study investigated how operational capabilities are managed to enable e-government PV creation. Answering this question allows public service managers to understand how to align their organisational capabilities to produce PV. This research question is addressed by first discussing the list of identified operational capabilities (organisation vision, financial and HR resources, alignment of processes and policies, organisational culture and public engagement), and second exploring the relationships between the operational capabilities identified.

### **7.2.1 PV-Based Vision**

The organisation vision played a role in legitimising the educational reform, defining the required authority and identifying the required business and technological changes. The admission service managers in the MHE based their proposal to centralise the admission service in Oman through the electronic system on an objective to fight *wasta*, enable informed decisions and reduce costs as shown in Chapter 6. This allowed them to build the required authorising environment to institutionalise the HEAC and mobilise the required resources. Then, their interpretation of their objectives and their motives resulted in a PV-based vision focusing on fairness, transparency and informed choice. In

organisational research, vision is considered an effective guiding force, and hence, it is suggested that the organisation should have a value-driven vision to maximise its success (Collins and Porras, 1991). The findings are consistent with these calls as the PV-based vision played a key role in reminding operational staff of their main objectives. The finding is also consistent with Moore's (2013) call for the alignment of the organisation vision and mission with the citizens' goals to acquire legitimacy and support.

### **7.2.2 Process and Policy Alignment**

The findings from this study showed that HEAC had to redesign its admission process to be aligned with their objectives. Human intervention was minimised to ensure that the process was not biased and it could be automated. HEAC policies were designed to ensure the availability of information and enforce the principle of a fair and transparent system. HEAC also designed new processes (grievance and auditing processes) to ensure all students were treated fairly. Such democratic processes allowed the operational staff to operate within a democratic framework (Bryson et al., 2017), which consequently influenced how the organisation dealt with users' recommendations. The findings from the case study gave an example of these processes: Grievance and Auditing. Again, the organisation vision should be reflected in the design of the new processes. A good example is the grievance committee representation to include citizens' representatives (*Shura* Council members). Therefore, the HEAC annually evaluated its processes, policies and practices, technology and users' perceptions of the created values as suggested by the literature (Moore, 2013; Bryson et al., 2017) to align the organisation operational capabilities with its objectives.

### **7.2.3 Structural Changes**

Moore (2013) also suggests the need to consider structural changes within the organisation. As shown in Figure 7.1, structural changes were the first change, which took place leading to the centralisation of all admission services and the institutionalisation of HEAC. This step was necessary to implement educational reform. Besides, there were some changes in the roles and responsibilities of the awareness team. Their responsibility shifted from training end-users to managing HEAC Social Media accounts and implementing online awareness session. This is in line with Bryson et al.'s (2017) call to consider the practice of redesigning organisational and institutional settings when attempting PV creation.

### **7.2.4 Human and Financial Resources**

Human and financial resources also were cited throughout the findings chapter in relation to the challenge for the HEAC to upgrade the technological features of the EAS. This evidence highlights the importance of human and financial resources in the PV creation process. The case study findings did not only confirm the importance of the organisation operational capability; they also reveal that these capacities are changing over time and are influenced by the authorising environment, technology and citizens' perceptions. The authorising environment may influence the availability and sustainability of the organisation's HR and financial resources. Informants always referenced HR and financial resources as challenges in the post-implementation stage. The HEAC was not able to sustain the required resources to advance and upgrade the system to meet the recommendation raised by the end-users, which could have had a positive impact on

users' perceptions. Therefore, public service organisations should aim for creating an authorising environment that ensures a sustainable flow of required resources, not only during the implementation of the e-government solutions. This is a practical example of how the authorising environment influences the availability of operational capabilities. It also emphasises the significance of sustained authority to maintain required resources for PV creation as referred to by PV literature (Moore, 1995; Benington and Moore, 2011; Moore, 2013; Bryson et al., 2017).

### **7.2.5 Organisational Culture**

The case study findings presented two key components in the organisation culture: 1) a teamwork environment and 2) a democratic decision-making process. Teamwork allowed the operational staff to support each other in delivering the organisation's planned objectives, whereas democratic decision making allowed staff at all levels to participate in the assessment and improvement of the admission service. This element is important to create a learning organisational culture (Garwin, 1993). Organisational learning culture "reinforces a culture of reflection and learning and mutual accountability" (Moore, 2013, p. 297). Although Moore (2013) cites organisational learning culture as an important step to maintain continuous improvement, he focuses on the availability of performance management systems, mutual accountability and involvement of the entire organisation in reviewing existing policies and procedures. Democratic decision making was not addressed in Moore's list of key elements in creating an organisational learning culture. This might be justified by the fact that this may be given in an established democracy.

### **7.2.6 Public Engagement**

Most informants valued public engagement as they believed it allowed the organisation to capture users' perceptions, suggestions, recommendations and complaints. Public engagement enabled the HEAC to develop the electronic system (EAS) further to match users' expectation and perceptions of created public values. The HEAC used different channels to engage with citizens and end-users such as Public TV programs, surveys, Social Media, and face-to-face interaction using the Ministry of Higher Education Service Desk. Evidence was shown of recommendations that were implemented due to end-users and citizens' recommendation as reported in the findings chapter. Public engagement is significant in the PV creation process because it develops the role of citizens as reporters and evaluators of the delivered service and develops a poetical role of citizens as co-producer (Moore, 2013). However, Moore places it under the authorising environment dimension, and it is the "link to operational capacity" (2013, p. 420). This difference can be justified by his later belief of PV arbitration by the public as discussed in Section 7.1. Yet, it does not eliminate the significance of public engagement in the PV creation process.

### **7.2.7 Management Framework for Operational Capabilities**

The previous subsections discussed the list of operational capabilities identified from the findings and contextualised them in relation to the extant literature. They demonstrated how the findings confirm the significant role of operational capabilities in PV creation process. This section discusses how these capabilities are managed.

This study confirms the significance of operational capabilities in PV creation process, and introduces a structured approach to manage these capabilities. This study shows how these capabilities may be categorised as either business changes or business enablers. Such understanding allows practitioners to operationalise and manage operational capabilities. This understanding is in line with Ward et al. (1999) call for developing a change management framework to increase the potential of success for a change when implementing IT-based projects. This also in agreement with the overall principles of benefits management and specifically Benefit Dependency Network (BDN) in IT projects (Peppard et al., 2007). BDN identifies two types of changes: business changes and enabling changes. Business changes refer to permanent changes to working practices, processes, or relationships whereas enabling changes are “one-off” changes that work as pre-requisite to making business changes and hence enablers for the changes (Peppard et al., 2007). Examples of these enabling changes are training and performance management systems (Peppard et al., 2007). Although this study agrees with the overall principles of BDN, it does not agree with Peppard et al. claim that business changes “cannot be made until the new IT capabilities are available for use” (2007, p.6). In fact, this case study shows that business changes may need to be executed before the implementation of IT capabilities. This study also re-labels enabling changes as business enablers. This re-labelling is because in this study they not only enable the changes; they also enable the delivery of the planned benefits. Lastly, the findings of this study also provide evidence for a recursive relationship between the business changes and business enablers where the business enabler are also improved by the business changes. Business changes are not only to enable the creation of PV through e-government, but



also to improve the organisation’s operational capabilities, and hence improve its business enablers. This recursive relationship between the business changes and enabler may drive a continuous improvement process, as suggested by the case study findings. The improvement process is iterative and should continue throughout the service lifecycle. This may be reasoned to the pluralism characteristics of PV (Bozeman, 2007) and the dynamism of the authorising environment (Moore, 2013; Rosenbloom, 2017; Fukumoto and Bozeman, 2018). Besides, the rapid advance of technology creates parallel organisational transformation (Morton, 1991), which suggests continuous evaluation of changes in technology.

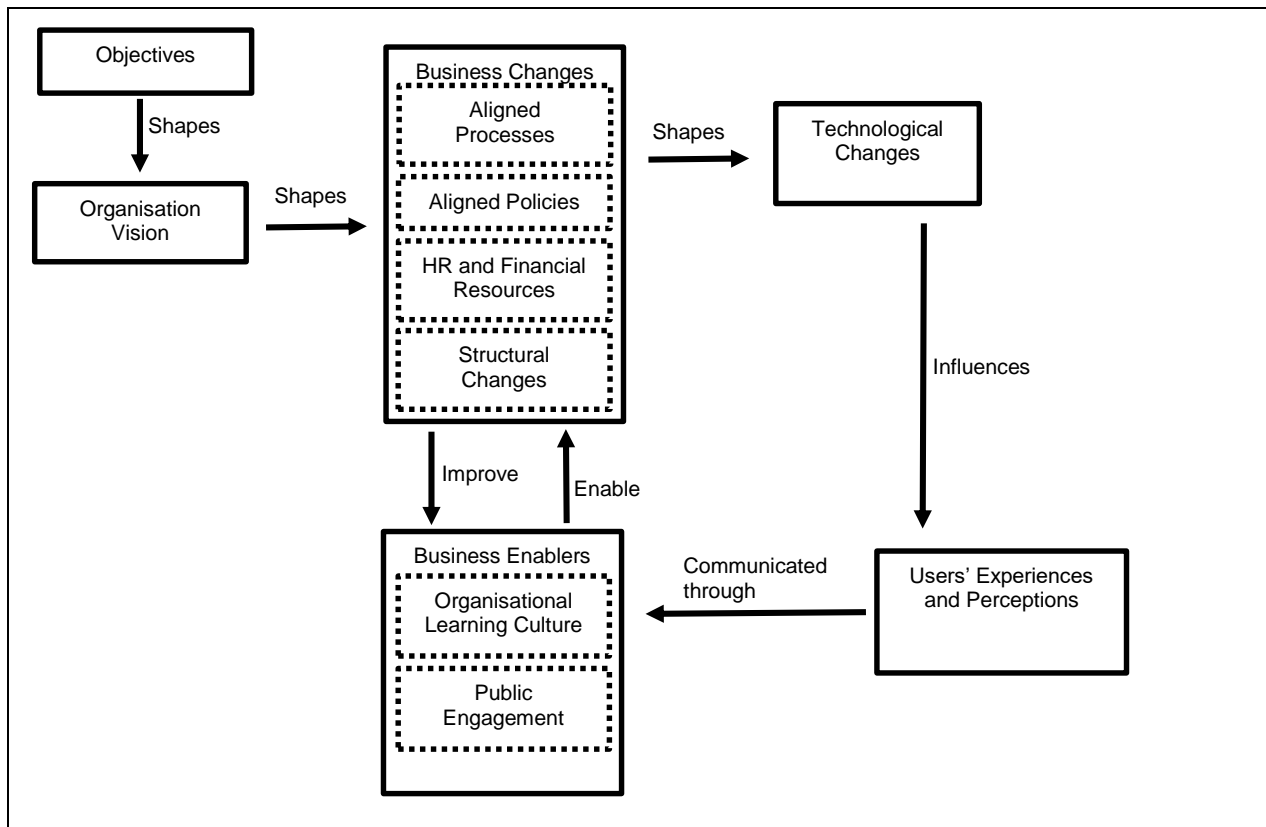


Figure 7.1: Operational Capabilities Management Model for E-government PV Creation

The case study findings empirically demonstrate the role of operational capabilities in the creation of PV. Organisation vision, policy and processes alignment, organisational culture and public engagement have been listed as a key component of organisational capabilities to create PV (Moore, 1995, 2013; Bryson et al., 2017). These findings are in line with previous studies that investigated the required operational capability for PV creation. However, previous frameworks addressing PV creation model (Moore, 1995; Moore, 2013; Bryson et al., 2017) only provide guidance in term of elements of operational capabilities that may be important to PV creation. They do not offer the mechanism through which these elements could be managed. This study presents a structured framework that enables managers to identify and manage PV creation required operational capabilities. These findings allow public managers to administer operational capabilities in a structured way. The availability of these elements does not necessarily result in PV creation. Public service managers need to be aware of how to manage these capabilities to create PV through e-government. Thus, the findings from this case study not only highlight the significance of operational capabilities in the PV creation process, but they also present a better understanding of the relationships between the operational capabilities and how they can be managed to enhance and maximise positive perceptions of created PV.

### **7.3 How is PV Enacted into e-Government Technological Design?**

The previous section demonstrated how operational capabilities could enable PV creation. However, this still does not answer how PV is enacted into e-government technological design. Grimsley and Meehan (2007) show that e-government can mediate PV creation

through three main design areas that can influence user experience: informedness, control and influence. These areas are mainly related to information availability, information consistency, responsiveness and multiple platform capability. Karkin and Janssen (2014) evaluated website transparency in Turkey using criteria such as information quality, performance and support for different web browsers. They concluded that the low realisation of transparency was due to two main reasons: the objective of creating PV was not considered, and the design process did not consider how to create these values. Luna-Reyes et al. (2017) also introduced ease of use and security as important technical dimensions to enable transparency realisation. However, their study did not show how the users and citizens perceptions of PV are operationalised and incorporated into e-government design.

The findings of this study show that EAS design has evolved and its technical features are changing, as shown in Appendix 10.5 and Chapter 6. The development of these technical dimensions was the result of a continuous improvement cycle where the organisation aimed to match the design of the electronic system to the interpretation and perceptions of the end-users and citizens. Initially, the organisation created its own interpretation of its objectives. These initial interpretations and understanding of the organisation objectives resulted in features related to automation, information availability, system access availability and accessibility. As shown in Table 7.2, the findings revealed that these technology artefacts influenced users' perceptions and resulted in positive perceptions of the associated public values.

On the other hand, negative perceptions of created public values were associated with technology artefacts that were not considered during the implementation stage such as anonymisation and ease of use. Although system auditability was not considered during the implementation stage, it was implemented when the HEAC implemented the SMS service. Focus group informants appreciated this implementation and associated it with positive perceptions of fairness and transparency. However, not all suggested improvements identified post-implementation were implemented. For example, end-users believed that the system ease of use could be improved by implementing drag and drop facilities to enable them to easily navigate through the list of available choices when making implementing their informed decision. The HEAC informants stated that features such as drag-and-drop could not be implemented on the portal because it required financial and HR resources to upgrade the technology. However, the HEAC implemented this feature on the mobile service application. Although the implementation of the feature in the mobile application improved EAS ease of use and allowed users to implement their informed choice, mobile application support for information richness was limited, and hence, may have effected users' perceptions of fairness and transparency. Implementing this feature in the EAS portal, which supported information richness, could have enabled better perceptions of the created PVs. Thus, the capability of the chosen technology artefacts may also play a role in enable/disable PV creation. Other negative perceptions were reasoned to the lack of some specific features which limited students' abilities to implement their informed choices. For example, the number of choices allowed was limited when the EAS launched. User perceptions have led to changes in the admission

policies, which consequently changed the design of EAS. At the time of writing the system does not restrict students' choice because of an open registration policy.

In sum, many factors play a role in PV-based technology design, but this study categorises them as follows: 1) interpretation, understanding and meanings associated with the targeted PV by both service providers and service beneficiaries, 2) available resources which include HR, financial and technological capabilities, and 3) existing processes and policies.

This study confirms the role of automation, information availability, system availability and system accessibility in the creation of PV through e-government. These findings are summarised in Table 7.2. This study adds two technology artefacts which were not listed in the e-government literature: system auditability and anonymisation. However, comparison of the identified technical dimensions to those identified by the literature is not discussed here because of the pluralistic characteristics of PV (Bozeman, 2007; Williams and Shearer, 2011), and hence such association is only valid in its context (Bozeman, 2007). Thus, the interpretation of the list of the technical features and design may differ from one case to another.

| Table 7.2: Public Value Creation and Technological Design and Features Summary |   |   |  |                              |  |
|--|---|---|--|------------------------------|--|
| Technological Dimension  | Description   | Associated Public Value                         | End Users Perceptions  | Considered in Implementation | Previous PV Studies  |
| Automation   | The ability of the system to conduct the business process without human intervention    | Transparency<br>Fairness,<br>Informed<br>Choice | Mostly<br>Positive   | Yes                          | Manders-Huits (2011):<br>Fairness and equality                                   |
| Information Availability   | The ability of the system to enable information availability and richness               | Transparency<br>Fairness<br>Informed<br>Choice  | Mostly<br>Positive   | Yes                          | Grimsley and Meehan, (2007): Trust<br>Karkin and Janssen (2014):<br>Transparency |
| System Availability  | Refers to the system reliability being continuously available                           | Transparency<br>Informed<br>Choice              | Mostly<br>Positive   | Yes                          | Karkin and Janssen (2014):<br>Transparency                                       |
| System Accessibility   | Users ability to access the system regardless of their location or disability condition | Transparency<br>Fairness<br>Informed<br>Choice  | Mostly<br>Positive but<br>those who<br>live in<br>remote area<br>showed<br>negative<br>perceptions | Yes                          | Grimsley and Meehan, (2007): Trust   |
| System Auditability  | The ability of the system to record audit trails and share them with end-users.         | Transparency<br>Fairness                        | Mostly<br>Positive   | No                           |  |
| Anonymisation  | Refers to the system ability to hide the identity of the service beneficiaries          | Transparency<br>Fairness                        | Mostly<br>Negative   | No                           |  |
| Ease of Use  | A user-friendly design that allows end-users to navigate through the system easily      | Transparency<br>Informed<br>Choice              | Mostly<br>Negative   | No                           | Grimsley and Meehan, (2007): Trust<br>Luna-Reyes et al. (2017):<br>Transparency  |

For example, implementation of automation may vary from one implementation to another. From a technical design perspective, automation implementation can be achieved at different scales. Sheridan (1992) proposes a scale from 1 to 10, as shown in Table 7.3.

| Scale | Description   |
|-------|---|
| 1     | The computer offers no assistance; a human must do it all                 |
| 2     | The computer offers a complete set of action alternatives, and            |
| 3     | Narrows the selection down to a few or,                                   |
| 4     | Suggests one, and   |
| 5     | Executes that suggestion if the human approves, or                        |
| 6     | Allows the human a restricted time to veto before automatic execution, or |
| 7     | Executes automatically, then necessarily informs the human, or            |
| 8     | Informs after execution only if asked, or                                 |
| 9     | Informs after execution if the computer decides to                        |
| 10    | The computer decides everything and acts autonomously, ignoring the human |

The fact that automation worked, in this case, does not necessarily mean that full automation would enable other contexts to create their version of fairness. For example, the UK education system has a fair-access aim to increase the admission rate for underprivileged and minority groups (Adnett et al., 2011). Thus, the government needs contextual information about the applicant for fair admission decision-making (Boliver, 2013). Fairness is defined differently in these two contexts and cannot be designed in the same way. Implementing the highest level of automation may not be possible for the case of Universities and Colleges Admission Service (UCAS) in the UK because “there is, as yet, no established method of factoring context into the assessment” of potential applicants (Boliver, 2013, p. 346). This suggests that there is no specific implementation design; hence, the technical implementation of PVs cannot be universalised which is in

line with claims about the difficulty to universalise moral values technical design (Yetim, 2011) and the contextualisation nature of PV (Bozeman, 2007).

### **7.3.1 PV Enactment Model**

Technology shapes users' experiences and perceptions through the meaning they generate when interacting with system features or artefacts. This experience influences their perceptions of PV. Once the service provider captures these perceptions, they will be interpreted into a technical design by the IT team, and hence, those meanings are enacted into technology artefacts. Hence, every stakeholder attaches meaning to the used technology artefact (De Waal et al., 2016). The implementation of the identified technical dimensions is also influenced by organisation policies, processes, and resources. Thus, e-government PV design depends on the organisation's assumptions, beliefs, understanding, processes, policies, resources, and end-users' perceptions of the created PV. This is in line with Willis et al., (2018) explanation that an IT outcome is mediated by various interpretive schemes, norms and resources. An example of an interpretive scheme would be the organisation's interpretation of its objectives (fighting waste and informed decision) to the three public values (fairness, transparency, and informed choice). Another example of interpretive scheme is the HEAC interpretation of fairness as minimising human intervention and hence the implementation of full automation. Resources refer to available HR, finance and technologies (e.g. websites, SMS services, mobile application, and social media). Norms are the organisation's policies, processes and procedures. Willis et al.'s (2018) argument is based on the enactment model developed by Orlikowski (2000), but they use the term *resources*



instead of *facilities*, which they argue is more inclusive. Orlikowski (2000) uses the term *facility* to describe the IT-specific properties, hardware component and information content that provides means for the actors to accomplish their goal. Yet, the term resources can be extended to include other resources such as HR capabilities and financial resources as shown by the findings and suggested by Willis et al., (2018).

In line with Willis et al.'s (2018) justification, public value is incorporated into a technical design by enacting the organisation objectives, policies, and processes into a technical design. This enactment is carried out by human agency represented by top management, operational admission staff and the IT team who may have similar or different interpretive schemes. This may justify the significance of teamwork and democratic decision making culture to synchronise their interpretive schemes and hence enact the right meanings and perceptions into the technology. The enacted design is also influenced by the availability of resources (HR capabilities, financial resources and technological capabilities) and organisational norms (laws, policies, processes). Then, the enacted e-government solution and the implemented technological artefacts and features influence users PV perceptions as depicted in Figure 7.2. End-users create their own meanings and interpretations of PV (De Waal et al., 2016) through the technology-in-practice structure as suggested by Willis et al., (2018). Their perceptions are likely to be positive if their interpretations are convergent with service providers' interpretations and specifically their interpretive schemes. Once their perceptions are communicated to the service provider they influence the organisation interpretive scheme and so forth. Therefore, e-government PV enactment model provides an answer for Karkin and Janssen (2014) call for a PV based technical design.

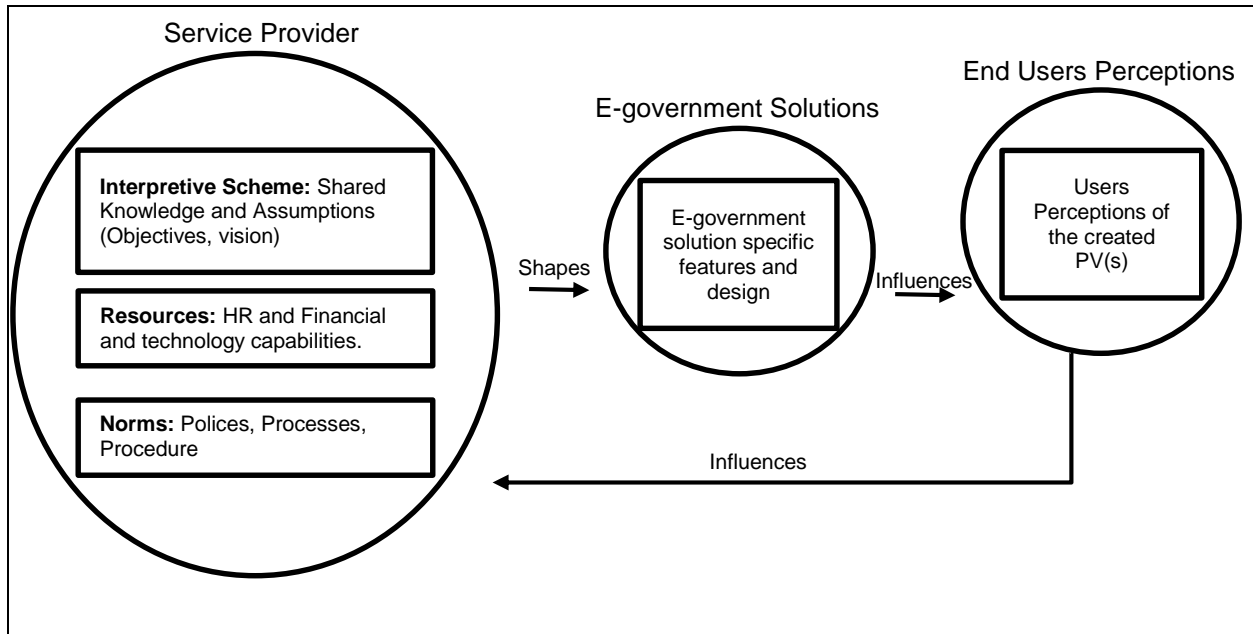


Figure 7.2: E-government PV Enactment model

## 7.4 How does E-government Enable Public Value Creation?

The overarching question of this study was how does e-government enable PV creation? This section summarises the propositions derived from the previous discussion sections and provides a model for the e-government PV creation process as a possible answer to the overarching research question.

### 7.4.1 Authorising environment

This study proposes that the authorising environment is identified and created by public service managers. The required authority and legitimacy are influenced by the political structure, social practices and culture and economic conditions. Public service managers should have political astuteness to ensure that their strategy is supported by all stakeholders and sustainable across the service lifecycle.

### **7.4.2 Operational Capabilities**

The operational capabilities refer to the organisation interpretive schemes (objectives, visions, assumptions, beliefs), resources (HR, financial, technology capabilities), and norms (policies, processes, procedures). The organisation operational capabilities are influenced by the authorising environment and user's perceptions. The authorising environment plays a role in support the organisation required resources and changes. Depending on the complexity of the required changes, different levels of authorising environment may be needed. User perceptions of the created PV values also influence the organisation and may lead to changes in its capabilities.

Using a change management framework to manage the operational capabilities seems to be effective in maximising the positive realisation of the planned public values. Therefore, public managers need to be aware of the required business changes and enablers to continuously improve users' perceptions of created PV. This is not limited to the business changes identified in this study, and may include other changes or enablers such as training and performance management changes.

### **7.4.3 E-government Design and Features**

The design of the electronic service is the result of the enactment process described in section 7.3. The enactment process is iterative, where the service provider creates a conceptual map of the planned public values, and translates their meaning into technical dimensions. In so doing, they develop a technical design that helps them to achieve their assumptions and beliefs. The implementation of these technical dimensions is also

influenced by organisation resources and norms that should be managed by public managers to ensure that they minimise the gap between the organisation PV perceptions and end-users PV perceptions. Over time, the organisation interpretive schemes are influenced by end-users' perceptions where the alignment between these perceptions lead to enhancing e-government design and features, and hence, create positive perceptions of created PV.

#### **7.4.4 Extending the Theoretical Framework**

Based on the propositions discussed above, the initial research theoretical framework (see Figure 3.6) can be extended into the e-government PV creation process model shown in Figure 7.3. This model answers how e-government may enable PV creation in an emerging democracy using the detailed relationships shown below:

- 1- Public value-based objectives allow the public manager to acquire legitimacy and sustained authority
- 2- The authorising environment influences the organisation decision, resources, and business changes
- 3- Once the authorising environment is acquired, then the organisation can translate its objectives into a PV-based vision
- 4- The vision should be used as the guiding force for the operational staff, and it shapes the required business changes and business enablers.
- 5- Business changes and enablers are the results of the organisation enactment of its interpretation of its objectives and vision (interpretive schemes), resources (HR competency, financial resources, technology capabilities), and norms (laws, policies, etc.). The recursive relationship between these two elements is important to sustain the ongoing improvement process.

- 6- The designed technology is shaped by the enactment process as described in the previous step.
- 7- E-Government solutions influence users' perceptions of the created PV.
- 8- Consequently, these perceptions influence the ongoing enactment process explained in step 6.

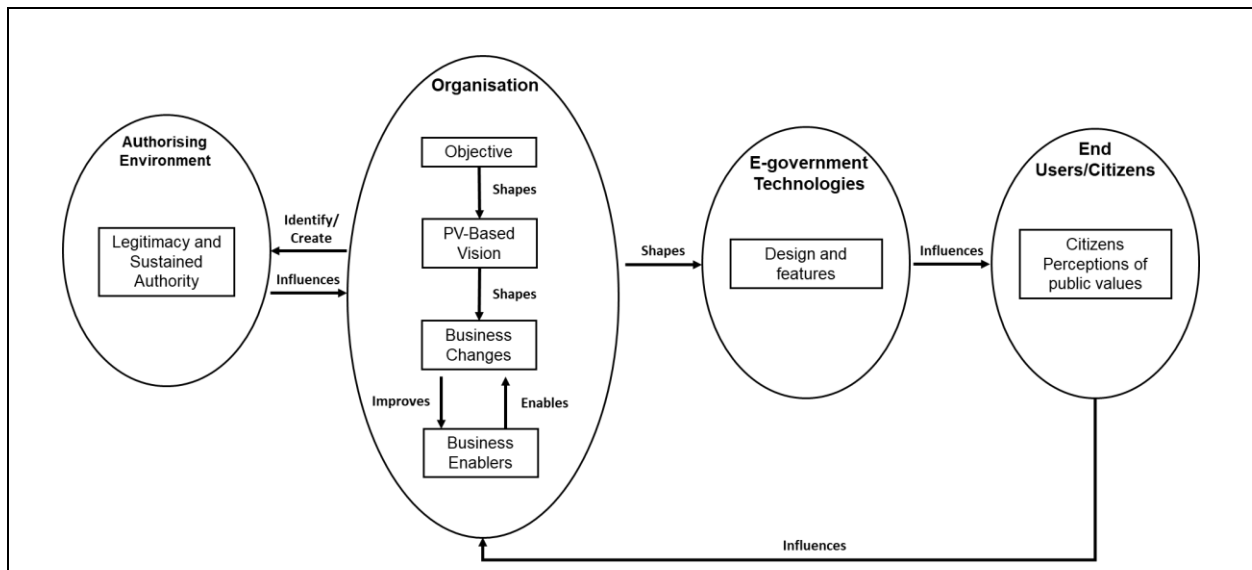


Figure 7.3: E-government PV Creation Process Model

The e-government PV creation process model extends previous technology enactment models (Fountain, 2001; Cordella and Iannacci, 2010). The Fountain Technology Enactment Model focuses on the conditions under which the use of IT might result in changes in public agencies (Danziger, 2004). As shown in Figure 7.4, the Fountain Technology Enactment Model lists objective IT as an element in the model. This element is different from the organisation objectives presented in the findings chapter. Objective IT refers to the array of material such as hardware, software, network capacity and capabilities (Duhamel et al., 2014). Hence, IT objective refers to technology artefacts capacity and capability, which is equivalent to the term *facility* (Orlikowski, 2000).

However, in line with Willis et al., (2018) this study argues that hardware and software facilities and their capabilities are just resources which the organisation can utilise and reconfigure during the enactment process.

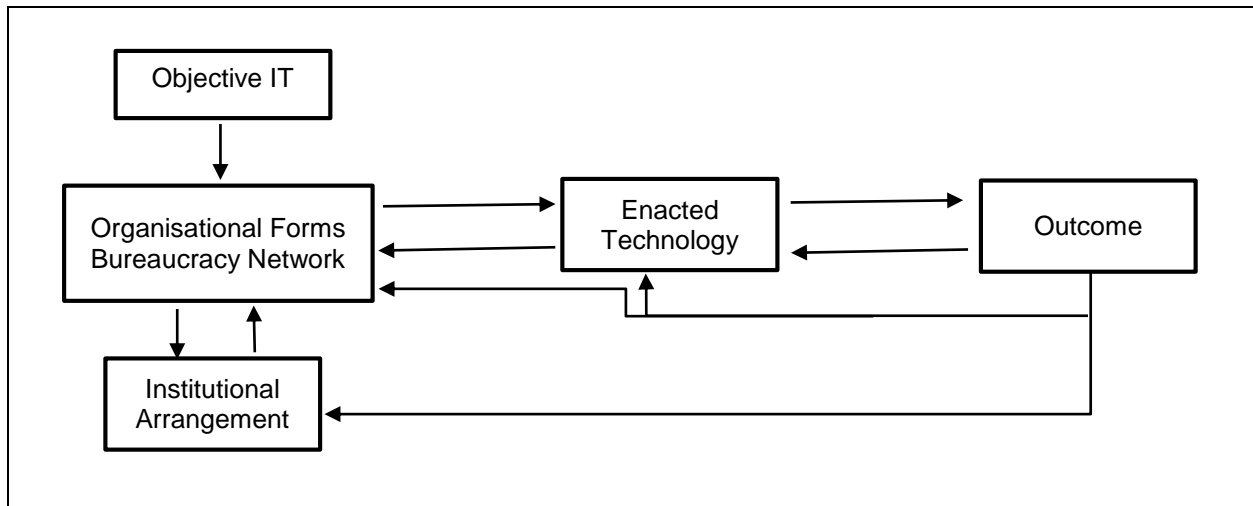


Figure 7.4: Technology Enactment Model (Fountain, 2001)

The e-government enactment framework (see Figure 7.5) was developed to address the abstraction in the duality of technology model (Cordella and Iannacci, 2010). Cordella and Iannacci (2010 p. 63) argues that “characteristics of the technology cannot be considered objective, and independent from e-government policies that influence their design, but deeply embedded and shaped by them in a mutual cycle of co-shaping”. The e-government enactment model addresses the relationship between e-government design and e-government policies, and only focuses on how the policy shapes and is shaped by the outcome. This study extends this model and positions the enactment of policy as a business change, which also includes other changes such as organisational structures, processes, and procedures.

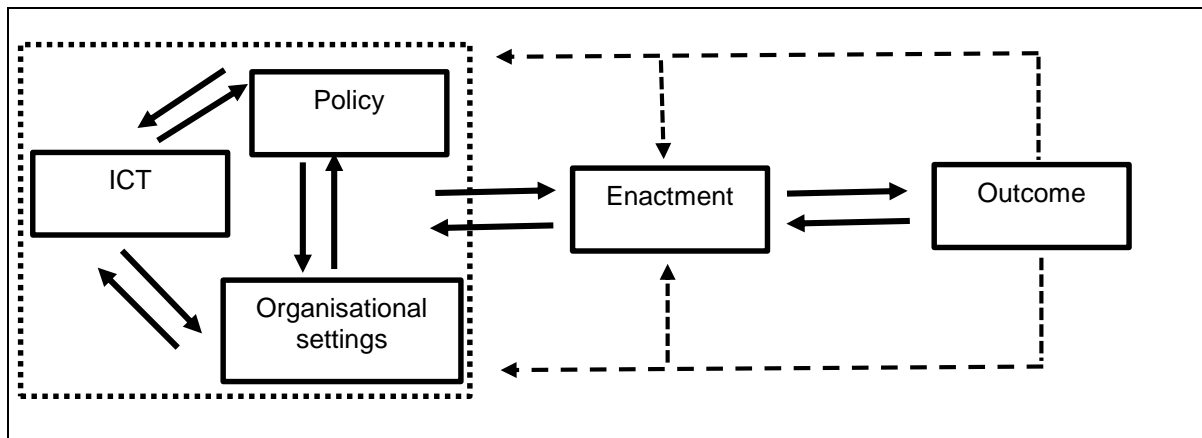


Figure 7.5: E-government Enactment Model (Cordella and Iannacci, 2010)

Unlike the previous model, the E-government PV process creation model (see Figure 7.3) presents simplified linear relationships between all key dimensions in the creation process. This model also integrates the political dimension as well as the influence of external factors such as culture under the authorising environment dimension. Besides, the e-government PV creation model not only empirically demonstrates how e-government can enable and facilitate PV creation; it also explains the bi-directional arrows presented in Moore's PV Strategic Triangle (Moore, 1995). The new model developed from this study (see Figure 7.3) presents linear relationships between the key elements related to the e-government PV creation process. In so doing, the PV creation model answers the overarching research question, *how does e-government facilitate PV creation?*

## 7.5 Chapter Summary

This chapter presented an answer to the research overarching questions and the three sub questions identified in chapter 3. The findings were contextualised in the extant literature related to the PV authorising environment, operational capability and the technological dimensions of e-government. Having presented the model which explains

how e-government may enable PV creation, next chapter presents the conclusion chapter which highlight research summary, contributions, limitations, and future research.



## 8. Conclusion

This final chapter presents the overview of the study, theoretical and practical contributions and discusses the research limitations and future recommendations.

### 8.1 Overview of the Study

The literature review on e-government PV shows an area which is understudied. The focus of e-government PV studies is the development of an evaluation framework to assess the success of e-government projects based on PV. The PV model creation literature shows a debate on the applicability of PV as a concept in different political systems. Moreover, there is an ongoing debate about the best arbiter for PV creation. Although the literature suggests that organisational properties and technology play a role in enabling PV co-creation, it still does not explain how this is done. More specifically, existing literature treats technology as a black box and does not explain how is public value incorporated into e-government technical design. Yet, IS theories which suggest that technology shapes and is shaped by both organisational properties and outcome, do not explain how this works when it comes to PV as an outcome. Thus, consideration of sociotechnical IS theories when investigating PV creation can bring more insight on how technology enables PV creation. To address this gap, it was decided that a context such as Oman with a different political system can bring insight to the ongoing debate, and position the technological dimension of e-government as a separate dimension in the PV creation process.

The overarching research question raised by the research is *How does e-government enable public value creation?* The main aim of the study is to investigate PV creation

through e-government in Oman by incorporating the main dimensions in the PV creation process, and emphasising the role of technology as a separate dimension. To answer the research question, an extensive literature review of e-government, general PV, e-government PV, and PV creation models was conducted. Consequently, a research model was developed through the integration of a PV creation model (PV Strategic Triangle, Moore, 1995), and the IS model (Duality of Technology, Orlikowski, 1992). Extending Moore model with Orlikowski allowed the researcher to focus his data collection and analysis across the service lifecycle starting with *service-in-design* until *service-in-use*. The developed model resulted in three sub-questions, which were design to explain PV creation through e-government use:

*RQ1- How is the authorising environment obtained in an emerging democracy?*

*RQ2- What are the required operational capacities and practices in an emerging democracy, and how are they operationalised?*

*RQ3- How is public value incorporated into e-government technical design?*

An in-depth qualitative single case study was selected to allow the research to answer the above exploratory questions. Multi-qualitative methods were used to capture and collect the data from all stakeholders to enable holistic investigation of the creation process. Interviews were conducted with the service providers along with organisation archived documents. Focus groups were conducted with the end-users to not only triangulate the data but to holistically understand the full cycle of the PV creation process.

The findings from the case study presented a heuristic model for the e-government PV creation process. The model unpacks the creation process vertically and horizontally.

Vertically, it explained the components of the four main dimensions in the creation process: authorising environment, operational capabilities, technology, and PV as an outcome. Horizontally, it explains the relationship between the four dimensions through a continuous cycle of improvement. The details of these findings are described in the next section.

## 8.2 Reflection on Study Findings

Using the doctoral research process, as seen in Figure 8.1, this section reflects on the research findings and presents a summary of the findings in relation to the existing literature. Specifically, this section aims to explain the relationship between the e-government Public Value Creation Framework (see Figure 3.6) and the e-government PV Creation Process Model (see Figure 7.3).

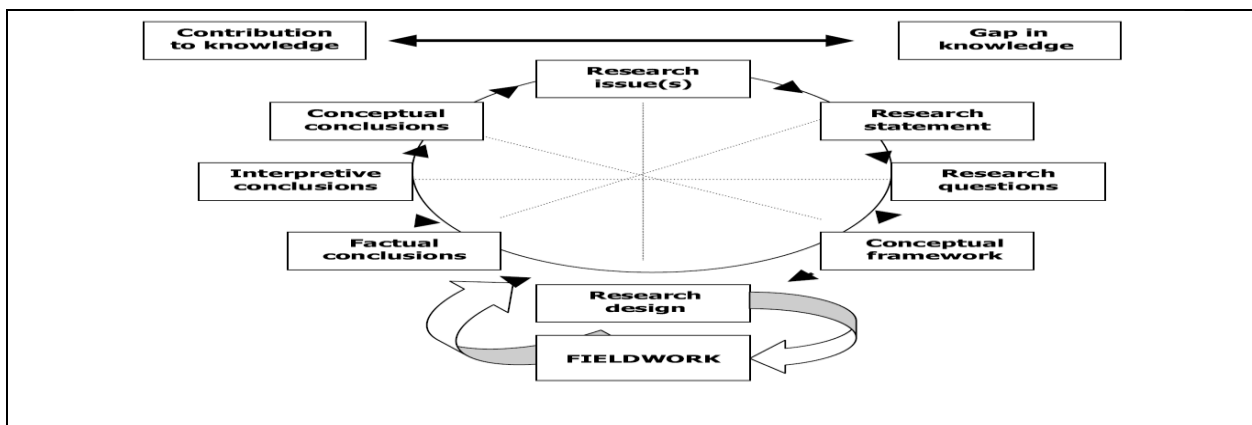


Figure 8.1: Doctoral Research Process (Leshem and Trafford, 2007, p.102)

The initial literature review shows a lack of studies that focus on the creation of PV using e-government. The overarching research question aims to address this gap. Following

literature reviews of related research and publications, it was decided that the PV Strategic Triangle by Moore (1995) is the appropriate theoretical lens through which to explore the PV creation process. Since the study aims to understand the role of technology in the creation process, the triangle was integrated with the appropriate IS model (Duality of Technology, Orlikowski, 1992), leading to the preliminary conceptual framework presented in Chapter 3 (see Figure 3.6 ).

Developing a conceptual framework is seen as an important step for the researcher to take, beyond the description and the emergence of themes, into an active engagement with reality and a more profound understanding of the whole story (Rees and Gatenby, 2014). Therefore, through this theoretical lens, three sub-questions were developed to further understand the key elements involved in the creation of public value. The questions are related to the key elements of e-government PV creation: authorising environment, operational capability and technology. The three questions were designed to address the gaps identified by the literature review.

Moreover, Leshem and Trafford view the conceptual framework as a device to make sense of the research data and provide insight into the research topic. They believe it acts as a catalyst that raises the researcher's level of thinking "from the simple and descriptive via analysis to conceptualising the research itself" (Leshem and Trafford, 2007, p.100). Therefore, the concept of a duality of technology was used as an analytical tool, as explained in Chapter 4. It also allowed the researcher to use the dimension of time to investigate the evolution of e-government design and features throughout its lifecycle.

The framework is applied to synthesise public value based educational reform in the Sultanate of Oman.

The initial conceptual framework presents a high-level abstraction of the relationships between the key dimensions in the e-government PV creation process. It presents a two-way interaction between the four main dimensions (the authorising environment, operational capabilities, e-government solutions and public value as an outcome). However, the initial conceptual framework does not show the details of these dimensions, nor does it explain the two-way relationships. As the context is a critical dimension of PV studies, the individual subcomponents of the key elements of the e-government PV creation framework were induced from the research data. The findings from this research explain the high abstraction of the bi-directional relationships as an iterative process in which the e-government PV creation process is operationalised and simplified into the heuristic process ( see Figure 7.3). The research findings also present new subcomponents within the key elements of the e-government PV creation model, as shown in Table 8.1. According to Dubois and Gadde (2002, p. 556), “The successive refinement of concepts implies that they constitute input, as well as output of an abductive study”. Therefore, the detailed heuristic process, presented at the end of Chapter is a result of the analysis done using the initial conceptual framework developed in Chapter 3, the data collected using the methodology described in Chapter 4, and the discussion of the findings reported in Chapter 6.

| Table 8.1: Reflection of Study Findings |   |   |
|---|---|---|
| PV Creation Elements                    | Existing Studies  | This Study Findings   |
| Authorising Environment                 | <p>Existing literature shows that acquiring the authorising environment in established democracies can be a complex task. Moreover, there is a debate on the suitability of the Strategic PV Triangle in other political settings.</p> <p>In addition, there is an ongoing debate about the public service manager being the key arbiter for PV creation.</p>   | <p>The triangle works in an emerging democracy where the political structure is highly centralised. It shows that acquiring the authorising environment is far less complex than it is in established democracies.</p> <p>In the context of Oman, the PV public manager played the role of the PV arbiter and the initiative was seen as a success</p>  |
| Operational Capabilities                | <p>Human and Financial Resources</p> <p>Competencies and Skills</p> <p>Operational policies and procedures</p> <p>Organisational Learning Capabilities: Performance Management Capabilities</p> <p>Engagement Capabilities</p>  | <p><b><u>Business changes:</u></b></p> <p><u>Operational processes and policies</u></p> <p><u>Organisational structural changes</u></p> <p><b><u>Business Enablers:</u></b></p> <p><u>Organisation Culture: Democratic decision-making and a friendly working environment</u></p> <p><u>Public Engagement</u></p>   |
| e-government (Technology)               | <p>All e-government PV-related studies agree that technology enables PV creation. However, the existing PV creation research does not address how e-government enables PV creation, as discussed in the literature review.</p> <p>The literature reviews show that technical dimensions, such as automation level, system accessibility, system availability, ease of use and information availability can influence PV creation.</p> | <p>The findings from this study confirm the enabling role of technology in the creation model and it shows that technology can shape perceptions of the created PV and is shaped by the interpretation of those who design and manage e-government technologies.</p> <p>The findings confirm the role of automation level, system accessibility, system availability, ease of use and information availability in enhancing PV creation. This study reveals two more technical dimensions: system auditability and anonymisation.</p> |

### **8.3 Theoretical Contributions**

Whetten (1989) argues that who, where, and when questions are not sufficient in pointing out the limitations in theory or contributing to further knowledge. Furthermore, he argues that answering questions such as how and why are more fruitful when demonstrating theoretical contributions. Accordingly, answering how e-government enables PV creation in an emerging democracy helps contribute to PV and e-government research, which is presented in this section.

This research contributes to PV theory by bridging some of the current gaps in the knowledge and understanding of e-government PV creation, specifically in regard to understanding how e-government facilitates PV creation in an emerging democracy. Since the development of PV models in Western established democracies, the PV creation process has not received any attention in other contexts with different political systems and social conditions. Therefore, in the absence of empirical studies, these frameworks have limited explanatory power in other contexts, such as Oman. As a Middle Eastern country, Oman's political structure and its social and cultural practices allow for the investigation and synthesis of the PV Strategic Triangle and bring new insights to PV creation models. More importantly, the findings of this research reject the claims made by other studies that attribute the success of PV solely to the political settings of democratic societies. This case study shows that it is possible to have an organisation based on democratic institutional principles in non-democratic or emerging democracies. The findings of this research also suggest that creating an authorising environment in this context is in fact less complex than it is in established democracies. As a result, claims

about the inappropriateness of the PV Strategic Triangle in different political contexts may have based their claims purely on the political structure and did not consider other factors associated with cultural differences and the service providers' institutional settings.

Moreover, the literature review conducted highlights several gaps and implicit biases in the extent of PV research. The bias of PV literature toward established democracies has been seen as a hindrance to the advancement of PV theory. In particular, the assumption of the authorising environment being determined by the political settings of the context has created debate around the suitability of PV theory to various established democracies, such as America, Australia, and the UK. This belief has understated the role of the organisation and its settings in creating and acquiring the authorising environment, and may have prevented PV studies from advancing the overall body of PV theory (Prebble, 2018). In addition, the findings of this case study suggest that the authorising environment does not only manifest from the political system, as suggested by the ongoing debate around the suitability of PV in different political systems. Rather, this case study demonstrates how the authorising environment should be used as a situational tool to acquire the required legitimacy and authority. Besides the political system, other factors, such as social practices, can also play a role in defining the suitable authorising environment, which is supported by Bryson et al. (2017), who suggest that different authorising environments can exist at different levels, time, and arenas. Therefore, the understanding of the authorising environment in PV theory should reach beyond the political context and consider the dynamism of all possible determinants, such as the political system, social and cultural practices, and economic conditions.



Another theoretical contribution of this work relates to the authorising environment and specifically the key arbiter of PV. This study empirically verifies the proposition made by recent studies about public service managers being the appropriate arbiters for PV creation (Dahl et al., 2014; Hartley et al., 2015, Hartley et al., 2019). This study also confirms the accuracy of this proposition, at least in an emerging democracy, and presents empirical evidence as to how public managers can create the right authorising environment. Moreover, the findings of this research demonstrate how a public manager could create the required authorising environment through their awareness of and attention to social and economic conditions. In this case, the public service managers focused on problematic cultural practices (*wasta*), and used them as a means to gaining their legitimacy and authority. These kinds of understandings help to shift the focus of PV research and may help advance PV theory. Furthermore, this area of research helps to create new ideas for future research, such as investigating the role of leadership in creating or destroying public value, as suggested by Hartley et al. (2019).

The above theoretical contributions were mostly related to the debate surrounding the authorising environment, which is only one aspect of PV theory. This study also contributes to e-government PV research and PV theory by developing a heuristic process model for PV creation through e-government. This model provides new insight into the mechanism through which e-government architecture might promote the creation of PV. As this area is understudied, however, the existing models narrowly focus on service outcomes (Grimsley and Meehan, 2007), technology (Karkin and Janssen, 2014), or statistically investigate the relationships between organisational settings, technology, and public value. This study extends these studies by presenting a comprehensive

framework that addresses the relationship between all key elements in PV creation (the authorising environment, organisational settings, technology, and PV). Moreover, the e-government PV creation process model extends Moore's PV Strategic Triangle (1995), and explains the bidirectional recursive relationships presented by the Moore model (1995). In addition, it generates new knowledge not only by positioning technology as a key element, but also by refining Moore's model to linear relationships instead of bidirectional abstract relationships. This addresses one of the shortcomings of the PV strategic triangle, which concerns the high abstraction of the framework (Rhodes and Wanna, 2007; Meynhardt, 2009). The linear relationships presented in this framework opens the door for future studies to validate them in similar or different contexts.

Furthermore, the e-government PV creation model helps to address another shortcoming of PV theory. Bryson et al. (2017) highlight the inability of the model in establishing how to operationalise organisational capabilities to create PV. Existing studies have also listed the individual capabilities that public managers need to obtain in order to be able to produce PV (Moore, 1995; Benington and Moore, 2011; Moore, 2013); however, having the required resources and capabilities may not result in the expected values. Accordingly, this study not only confirms the importance of the operational capabilities identified throughout the literature review, but also provides the mechanisms through which public service managers can operationalise their capabilities and competencies to enhance PV creation through e-government. Moreover, this study introduces a structured framework to operationalise the organisational capabilities identified by earlier PV research and in this study. In addition, this study explains how an organisational learning culture can be achieved in an emerging democracy by identifying two organisational culture components:

democratic decision-making and teamwork. To the author's best knowledge, these two components of the organisational culture were not evident in PV literature as existing PV literature primarily focuses on performance management and mutual accountability to create an organisational learning culture.

Finally, this study helps validate the significance of technological dimensions in enabling PV creation as established by previous scholarly works (Grimsley and Meehan, 2007; Hossain et al., 2011; Karkin and Janssen, 2014; Luna-Reyes et al., 2017). It also extends previous studies by introducing two technological dimensions: anonymisation and auditing, which can also be added to the PV evaluation frameworks and tested in similar or different contexts.

## **8.4 Practical Contributions**

The findings of this study contributes a number of practical contributions for stakeholders who deals with public service delivery as presented in the below subsections.

### **8.4.1 Implications for Public Service Strategists and Managers**

The study provides a heuristic process mode for PV creation through e-government. The model can be used by public service managers as a guideline when planning IT projects with an aim to create PV. It also helps them to have a better understanding of the PV creation process and how e-government facilitates the process. The model can also be used as a checklist to assess the requirements for PV creation through e-government and to enhance the management of the existing operational capabilities and competencies. Understanding when business and technological changes are required

can always be assessed in relation to organisational vision. Thus, public service managers can refine and communicate their vision to the different operational teams.

The new insights from the case study can be used by public service managers in Oman or similar contexts to implement not only educational reforms; they can be used to implement similar reforms in other public administration services. Services with similar characteristics could make use of the heuristic E-government PV model. This can be effective as *wasta* is widespread throughout the public sector in the GCC countries, as highlighted in Chapter 5. Public service strategists developing a national-level strategy aiming to create PV can use the E-government PV Model as a guideline. In doing so, they need to think at the national level and identify potential arrangements for the right authorising environment. If this is to be done in a context with competition for political power, then the strategist should also identify potential conflicts to ensure sustained authority. The appointed public service managers (implementers of the strategy) need to have political astuteness and ensure that the strategy is supported by all stakeholders. They also need to be aware of business enablers and how they can operationalise the required operational capacities. Finally, the strategist needs to identify the most fruitful business changes, such as digitisation, organisational structure, process, and policy changes. Determining the right changes is situational and should always be in sync with strategic PV-based objectives.

#### **8.4.2 Implications for Software Developers**

The findings of the study demonstrate a practical example of how PV-oriented design can be used by a system analyst/architect when designing IS solutions. It answers the call of

Karkin and Janssen (2014) for a PV-oriented design when developing electronic services for public agencies.

The findings of this study suggest that software developer should consider the right software development methodology when designing. The findings present a need for a methodology which is aligned with the iterative improvement process shown by the findings. PV-based e-government solutions are influenced by many complex dimensions such as authorising environment, operational capabilities, and users' perceptions of the created PV. These requirements can be mapped to the principles of Value Sensitive Design (VSD) methodology known in the computer interaction research domain. Traditional software development methodologies are not suitable in cases with unclear, complex requirements and unpredictable outcomes (Alshamrani and Bahattab, 2015). Unlike the known software development methodologies, VSD carries an iterative investigation and analysis method looking at the planned PV conceptually, empirically, and technically. Table 8.2 explains what is required in each investigation, starting with value identification until value technical conceptualisation. These investigations need to be applied iteratively (Yetim, 2011). The findings from this case study presented a similar iterative process that exists across the service life cycle and not only the project implementation stage, which is in agreement with VSD principles adopting the VSD when designing PV-based e-government solutions allows academics and practitioners to answer the question about how PVs are incorporated into a technical design. Using the e-government PV creation model within the structured VSD approach during the implementation and post-implementation stages allow public IT team to continually

enhance the e-government design and features, and hence minimise the gap between the service provider perceptions and citizens' perceptions of PV.

| Investigation | Elements   |
|---------------|--|
| Conceptual    | <ul style="list-style-type: none"> <li>• Value identification</li> <li>• Stakeholder identification</li> <li>• Harms and benefits identification</li> <li>• Map harms and benefits to values</li> <li>• Identify potential value conflict</li> </ul>   |
| Empirical     | <ul style="list-style-type: none"> <li>• Focus on human response to technical artefacts</li> <li>• How stakeholders apprehend individual values in the e-interactive context</li> <li>• How do organisations appropriate value consideration in the design process</li> <li>• Use mixed methods (surveys, focus groups .etc)</li> </ul>  |
| Technical     | <ul style="list-style-type: none"> <li>• Proactive design of the systems to support values identified in the conceptual investigation</li> <li>• Retrospective analysis of how existing technological properties, features and underlying mechanisms support or hinder these values</li> <li>• May also involve empirical activities but with the focus on technology</li> </ul> |

## 8.5 Reflection on the Sociotechnical Perspective

The findings of the study provide support for the richness of the sociotechnical perspective as a lens to explain and investigate the role of technology in value creation and specifically, in PV creation. The sociotechnical perspective allows the researcher to carry out a holistic investigation of input, output and outcome at the same time. Other perspectives would either focus on organisational, or technological, perspectives. This is not to say that they are not suitable for studying the creation of PV. However, the bi-directional relationships in most PV strategic models are best investigated holistically to see the nature of these relationships in a given case. Therefore, this study contributes to

method by exploring how well the sociotechnical integrated research framework demonstrates a richer example of the mechanisms through which e-government facilitates the creation of PV.

Moreover, the richness of the integrated conceptual framework, developed in Chapter 3, is evident from its ability to capture the events, changes and outcomes across time. The discontinuity of time and space brings a strong analytical dimension when investigating PV creation through e-government. This is not to say that time is not mentioned in the PV literature. PV creation processes change over time because of changes in the political setting and organisational properties overtime, when managing PV-based initiatives (Moore, 2013; Page et al., 2015; Rosenbloom, 2017; Fukumoto and Bozeman, 2018). However, the added value of using the duality of technology is in its structured approach, using time as an analytical dimension, and in its ability to explain the creation and the recreation of practices across time using the time-space discontinuity (Brooks, 1997). Public value creation shapes, and is shaped, by the authorising environment, organisational properties, HR and financial resources and technology. The time dimension allows the researcher to have a richer understanding of what influences users' perceptions of PV in a complex system where all dimensions can change over time.

## **8.6 Research Limitations and Recommendations for Future Research**

Highlighting research limitations opens new avenues for future research. Reporting the limitation of any study includes reporting the systematic bias that the researcher could not control during the study (Price and Murnan, 2004). This section reports the study limitations and makes recommendations for future research.

In this case study, students do not get to use the system during the academic year, and hence, they do not get to see the improvements in the technical artefacts. Their perceptions could be influenced if they are continuously witnessing the development of the service. Not all Government-to-Citizens e-services have the same frequency of stakeholder dynamism. Some would have the same users for many years. For example, parents who use Ministry of Education portal may use the service for a duration up to 12 years. Thus, their interpretation may be influenced by their constant frequency of usage. Such limitations open the door for future research into how the frequency of usage can influence their perceptions of e-government PV over time. The literature shows that frequency of use can influence ease of use (Adams et al., 1992). Hence, those services which are used constantly by the same users over a long period could present different perceptions and interpretations.

The findings show that the PV creation process is an iterative process which takes place over time. Any of the four dimensions in the creation process can change over time. The source of the authorising environment can change due to changes in the politicians or the system. Human actors' perceptions can also change over time because they are influenced by what they learn over time. The data collection catered for interviewing informants and participants who experienced the system at different time intervals to cater for changing perceptions over time and triangulated this information with existing archived documents. This does not mean that those informants and participants answers were not influenced by other factors, such as their trust in the government or technological advancements. For example, the drag and drop facility, which was believed to improve ease of use for students was always referenced with features seen in smartphones. Lack



of these features 20 years ago might not have been seen as a challenge to easily implementing students informed choice.

The choice of research methodology is always driven by the aim of the research. A single exploratory case study is used in this study. One of the known issues with a single case study is the limited ability to generalise the findings in another context. Yet, the findings from the case study can be compared and tested in similar contexts such as the GCC countries which have a similar political system and share similar economic and social conditions. Moreover, the E-government PV Creation Model can be tested in other regions with different contexts to examine the possibility of generalising the model. Besides, future quantitative research may be conducted to verify the proposition and the relationships introduced by the E-government PV process creation model.

The findings of this study show that sourcing and creating the authorising environment for PV creation is a relatively less complex task than in an established democracy. These findings cannot be generalised to other contexts where the political structure is decentralised with a competing partisan system. The characteristics of ruling regimes in the GCC countries may not be the same in other centralised political systems where political tension exists between the ruling parties and their citizens. In addition, the economic conditions in the GCC countries are known to be better than other countries in the Middle East. Thus, sourcing legitimacy by solving cultural and social challenges may not have the same legitimacy. Other countries may have different types of corruption, such as bribery. These differences can bring more insight into the creation model. Hence, there is a need to conduct similar studies in other contexts around the world.

The interpretive philosophical stand adopted in the research may have influenced the data collection and analysis process. In a qualitative study, bias can be introduced through the gathered data and the interpretation of the researcher (Yin, 2011). To avoid leading questions, interviews and focus groups and their translation were reviewed by PhD holders and academics who speak Arabic and English. The translated versions were also reviewed by the research supervisors. Throughout the data collection and analysis, the researcher discussed and reviewed themes and code with colleagues and supervisors to minimise personal bias. Bias issues can also be caused by not preparing for the interview and not testing the questions (Chenail, 2011). As suggested by Chenail (2011), the pilot interviews were conducted to assess the planned protocol and identify any ambiguity and potential biases.

## 9. References

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## 10. Appendixes

### 10.1 List of Archived Documents

| Documents                             | Access Date | Author     | Date       | Keywords             | Ref-Code | Type of Work | Year       |
|---------------------------------------|-------------|------------|------------|----------------------|----------|--------------|------------|
| StatisticalRep2007-2008En             | 20/11/2017  | HEAC       | 2007-2008  | Admission Report     | Src1     | Report       | 2007       |
| StatisticalRep2008-2009               | 20/11/2017  | HEAC       | 2007-2009  | Admission Report     | Src2     | Report       | 2008       |
| StatisticalRep2009-2010               | 20/11/2017  | HEAC       | 2007-2010  | Admission Report     | Src3     | Report       | 2009       |
| StatisticalRep2011-2012               | 20/11/2017  | HEAC       | 2007-2011  | Admission Report     | Src4     | Report       | 2011       |
| StatisticalRep2014-2015               | 25/11/2017  | HEAC       | 2007-2012  | Admission Report     | Src5     | Report       | 2014       |
| StaticalRep2010-2011                  | 25/11/2017  | HEAC       | 2007-2013  | Admission Report     | Src6     | Report       | 2010       |
| StaticalRep2012-2013                  | 25/11/2017  | HEAC       | 2007-2014  | Admission Report     | Src7     | Report       | 2012       |
| StaticalRep2013-2014                  | 25/11/2017  | HEAC       | 2007-2015  | Admission Report     | Src8     | Report       | 2013       |
| StaticalRep2015-2016                  | 25/11/2017  | HEAC       | 2007-2016  | Admission Report     | Src9     | Report       | 2015       |
| StaticalRep2016-2017                  | 25/11/2017  | HEAC       | 2016-2017  | Admission Report     | Src10    | Report       | 2016       |
| StaticalRep2017-2018                  | 3/1/2019    | HEAC       | 2017-2018  | Admission Report     | Src26    | Report       | 2018       |
| sumof admission                       | 25/11/2017  | Unassigned | Unassigned | Admission Report     | Src11    | Report       | Unassigned |
| About Us-Englsh                       | 12/4/2017   | HEAC       | 2017       | Website Page         | Src12    | Website      | 2017       |
| HESS SMS services                     | 12/4/2017   | Unassigned | 2017       | Website Page         | Src13    | Website      | Unassigned |
| Home                                  | 12/4/2017   | Unassigned | 2017       | Website Page         | Src14    | Website      | Unassigned |
| Open data                             | 12/4/2017   | Unassigned | 2017       | Website Page         | Src15    | Website      | Unassigned |
| e-Accessibility+Policy(Ver1.0)_Arabic | Unassigned  | ITA        | Unassigned | Accessibility Policy | Src18    | Policy       | Unassigned |
| e-participation policy                | Unassigned  | ITA        | Unassigned | Participation Policy | Src19    | Policy       | 2012       |
| Regulation-2011                       | 30/11/2017  | HEAC       | 2011-2012  | Admission Policy     | Src20    | Policy       | 2011       |

|  |            |      |           |                  |       |           |      |
|--|------------|------|-----------|------------------|-------|-----------|------|
| Regulation-2017                              | 30/11/2017 | HEAC | 2017      | Admission Policy | Src21 | Policy    | 2017 |
| Social+Media+Guidelines+v.3                  | 30/11/2017 | ITA  | 2016-2017 | Process          | Src22 | Guideline | 2016 |
| Analysis_of_Students_questionnaire_2011-2012 | 6/12/2017  | HEAC | 2011-2012 | Survey Results   | Src23 | Report    | 2011 |
| Analysis_of_Students_questionnaire_2014-2015 | 6/12/2017  | HEAC | 2014-2015 | Survey Results   | Src24 | Report    | 2014 |
| Analysis_of_Students_questionnaire_2015-2016 | 1/4/2018   | HEAC | 2014-2015 | Survey Results   | Src25 | Report    | 2016 |
| Student Guides 2006-2018 (10 guides)         |            | HEAC | 2006-2018 | Students Guide   | Src27 | Guideline |      |

## 10.2 Interviews and Focus Groups Questions

| Senior Management |  |  |
|-------------------|--|--|
|                   | Interview Questions English  | Arabic   |
| 1                 | What are your responsibilities in HEAC service?  | ما هي الأعمال التي تقوم بها من خلال مركز القبول الموحد؟  |
| 2                 | Who are the beneficiaries of this service?   | من هم المستفيدين من هذه الخدمة؟  |
| 3                 | Why did the ministry invest in the HEAC electronic service?  | لماذا إستثمرت الوزارة في تطوير خدمة القبول الموحد؟   |
| 4                 | How were the citizens' requirements captured?  | كيف تم توثيق متطلبات المستفيدين؟   |
| 5                 | How were the training carried out for the operation team and service users?                          | كيف تم تدريب فريق العمل ومستخدمي الخدمة؟   |
| 6                 | How did HEAC affect your role and responsibilities?  | كيف أثر نظام القبول الموحد على مسؤولياتك وأعمالك اليومية؟  |
| 7                 | How did the HEAC service affect your organisation? Any changes because of HEAC?                      | كيف أثرت خدمة مركز القبول الموحد على المؤسسة التي تعمل بها، وما هي التغييرات التي حدثت بالمؤسسة؟ |
| 8                 | What changes has HEAC service processes and policies undergone since electronic service is launched? | ما هي التغييرات التي حدثت لإجراءات وسياسات الخدمة منذ البدء في استخدام نظام القبول الموحد؟       |
| 9                 | What information has been added to HEAC system since its first launch? And Why?                      | ما هي التغييرات التي حدثت للبيانات المستخدمة منذ البدء في استخدام نظام القبول الموحد؟ ولماذا؟    |
| 10                | What are the technological Features that have been added on the system since its launch?             | ما هي التحديثات والمميزات الفنية التي طرأت على النظام؟   |
| 11                | Did the system impact the decision-making process? Yes, How? No Why?                                 | هل أثر النظام على عملية صنع القرار؟ نعم كيف. لا لماذا؟   |
| 12                | How do you measure the success of the HEAC?  | كيف يتم قياس نجاح نظام القبول الموحد؟  |
| 13                | What are the benefits expected from using the system?  | في رأيك، ما هي الفوائد المرجوة من استخدام النظام؟  |
| 14                | What are the benefits which have been achieved through the system?                                   | ما هي الفوائد التي تحققت من خلال النظام؟   |
| 15                | Are there any disbenefits resulted from HEAC system? If yes, what are they?                          | هل كان لتفعيل مركز القبول الموحد أي نتائج سلبية؟ وما هي هذه النتائج إذا كانت الإجابة نعم؟        |
| 16                | How do you assess the achieved benefits?   | كيف يتم تقييم الفوائد المتحققة؟  |

|    |  |   |
|----|--|---|
| 17 | How do you ensure that service beneficiaries realised the desired benefits?  | كيف يمكن التأكد من أن المستفيدين من الخدمة حققوا الفوائد المرجوة؟   |
| 18 | How do you get beneficiaries suggestions and observation? How these suggestions impact service development?  | ما هي الية الحصول على مقترحات المستفيدين؟ وما هو تأثيرها على تطور الخدمة؟   |
| 19 | In your opinion, why does HEAC use social media networks?  | في رأيك لماذا يستخدم مركز القبول الموحد وسائل التواصل الاجتماعي؟  |
| 20 | How did HEAC affect service beneficiaries' viewpoint on government services?   | كيف أثر مركز القبول الموحد على وجهة نظر المستفيدين حول الخدمات الحكومية؟  |
| 21 | In your opinion, does <i>wasta</i> exist in HEAC admission process? Why?   | في رأيك، هل توجد الوساطة في عملية القبول الموحد؟ لماذا؟   |
| 22 | Does HEAC system impact <i>wasta</i> ? Yes How, No Why?  | هل أثر نظام القبول الموحد على الوساطة؟ نعم كيف، لا لماذا؟   |
| 23 | Does <i>wasta</i> impact HEAC system? Yes How, No Why?   | هل أثرت الوساطة على نظام القبول الموحد؟ نعم كيف، لا لماذا؟  |
| 24 | Does <i>wasta</i> impact realisation of HEAC benefits? Yes how, No Why?  | هل أثرت الوساطة على عملية تحقيق الفوائد المرجوة من النظام؟ نعم كيف، لا لماذا؟   |
| 25 | Did HEAC result in realisation of any social benefit? such as, transparency, trust, responsiveness, Informedness, engagement, fairness? Yes how, No Why? | هل تحققت الفوائد الاجتماعية التالية من خلال النظام ولماذا؟ الشفافية - الثقة - الإستجابة - توفر المعلومات - المشاركة - العدل؟ نعم كيف. لا لماذا؟ |
| 26 | Does the centre measure the extent to which social benefits are realised? Yes, how, No Why?  | هل يقوم المركز بقياس مدى تحقق الفوائد الاجتماعية؟ وكيف؟   |
| 27 | How does HEAC system deliver these social benefits?  | كيف يمكن لخدمة القبول الموحد توفير المنافع الاجتماعية؟  |
| 28 | What is the technological artefact that helps in realising these social benefits?  | ما هي المميزات الفنية التي تساعدك على عملية تحقيق المنافع المعنوية ولماذا؟  |
| 29 | What are the challenges that might face the HEAC service delivery of social benefits?  | ما هي التحديات التي تواجه خدمة القبول الموحد في سبيل تحقيق المنافع الاجتماعية؟  |
| 30 | How can the realisation process of the HEAC social benefits be improved?   | في رأيك، كيف يمكن تحسين عملية تحقيق المنافع الاجتماعية من خدمة القبول الموحد؟   |

| <b>Admission Office Staff</b> |  |  |
|-------------------------------|--|--|
|                               | <b>Interview Questions English</b>   | <b>Arabic</b>  |
| 1                             | What are your responsibilities in HEAC service?  | ما هي مسؤولياتك في خدمة القبول الموحد ؟  |
| 2                             | Does the service meet all your requirements and why?   | هل يلبي النظام جميع متطلباتك ؟ ولماذا  |
| 3                             | Have you been trained on how to use the service?   | هل تلقيت تدريباً لإستخدام الخدمة؟  |
| 4                             | How was the training impact benefits realisation process?  | كيف أثر التدريب على عملية تحقيق الفوائد؟   |
| 5                             | How did HEAC affect your role and responsibilities?  | كيف أثر نظام القبول الموحد على مسؤولياتك وأعمالك اليومية؟  |
| 6                             | How did the HEAC service affect your organisation? Any changes because of HEAC?                      | كيف أثرت خدمة مركز القبول الموحد على المؤسسة التي تعمل بها، وما هي التغييرات التي حدثت بالمؤسسة؟ |
| 7                             | What changes has HEAC service processes and policies undergone since electronic service is launched? | ما هي التغييرات التي حدثت لإجراءات وسياسات الخدمة منذ البدء في استخدام نظام القبول الموحد؟       |
| 8                             | Did the system impact the decision-making process? Yes, How? No Why?                                 | هل أثر النظام على عملية صنع القرار؟ نعم كيف. لا لماذا؟   |
| 9                             | How do you measure the success of the HEAC service?  | كيف تقيس نجاح نظام القبول الموحد؟  |
| 10                            | What are the desired benefits from using the HEAC Service?   | ما هي الفوائد المتوقعة من استخدام نظام القبول الموحد؟  |
| 11                            | What are the benefits that have been realised from using the service? Why                            | ما هي الفوائد التي تحققت من استخدام نظام القبول الموحد ؟ لماذا؟                                  |
| 12                            | What are the benefits that have not been realised from using the service? Why?                       | ما هي الفوائد التي لم تتحقق من استخدام نظام القبول الموحد ؟ ولماذا                               |
| 13                            | Are there any disbenefits resulted from HEAC system? If yes, what are they?                          | هل كان لتفعيل مركز القبول الموحد إي نتائج سلبية ؟ وما هي هذه النتائج إذا كانت الإجابة نعم؟       |
| 14                            | Do you share your suggestions with the HEAC? Yes How? NO why?  | هل تقوم بمشاركة مركز القبول الموحد بمقترحاتك ؟ وكيف؟ ولماذا إذا كانت الإجابة ب لا؟               |
| 15                            | Does the HEAC take users' suggestions seriously? Why?  | هل تعتقد أن مركز القبول الموحد يهتم بمقترحات المستخدم ؟ ولماذا؟                                  |
| 16                            | Why does the HEAC have social media accounts?  | لماذا يوجد لدى مركز القبول الموحد مواقع التواصل الإجتماعي؟                                       |
| 17                            | How does HEAC affect service beneficiaries' viewpoint on government services?                        | كيف أثر مركز القبول الموحد على وجهة نظر المستفيدين حول الخدمات الحكومية؟                         |
| 18                            | In your opinion, does favouritism exist in HEAC admission process? Why?                              | في رأيك، هل توجد مفاضلة في عملية القبول الموحد؟ لماذا؟   |
| 19                            | Does HEAC system impact favouritism ? Yes How, No Why?   | هل أثر نظام القبول الموحد على المفاضلة للأهل والأصدقاء ؟ نعم كيف، لا لماذا؟                      |
| 20                            | Does favouritism impact HEAC system? Yes How, No Why?  | هل أثرت المفاضلة للأهل والأصدقاء على نظام القبول الموحد؟ نعم كيف، لا لماذا؟                      |



|    |  |  |
|----|--|--|
| 21 | Does favouritism impact realisation of HEAC benefits? Yes how, No Why?   | هل أثرت المفاضلة للأهل والأصدقاء على عملية تحقيق الفوائد المرجوة من النظام؟ نعم كيف، لا لماذا؟                                     |
| 22 | Did HEAC result in the realisation of any social benefit? such as transparency, trust, responsiveness, Informedness, engagement, fairness? Yes, how, No Why? | هل تحققت القيم التالية من خلال النظام ولماذا؟ الشفافية - الثقة - الإستجابة - توفر المعلومات - المشاركة - العدل؟ نعم كيف. لا لماذا؟ |
| 23 | Did you realise any other social benefits? How?  | هل تحققت لك فوائد إجتماعية أخرى من خلال النظام؟ كيف؟   |
| 24 | What are the technological artefacts that help in realising these social benefits?   | ما هي المميزات الفنية التي تساعدك على عملية تحقيق المنافع الإجتماعية ولماذا؟   |
| 25 | What are the technological artifact that help in realising these social benefits?  | ما هي المميزات الفنية التي تساعدك على عملية تحقيق المنافع المعنوية ولماذا؟   |
| 26 | What are the challenges which face HEAC delivery of these social benefits?   | في رأيك، ما هي التحديات التي تواجه نظام القبول الموحد في توفير هذه الفوائد الإجتماعية؟   |
| 27 | Do you have any suggestions to improve the realised social benefits from the HEAC? What are they?  | هل توجد أي إقتراحات لتحسين الفوائد الإجتماعية المستفادة من خدمة القبول الموحد؟ ما هي؟  |

| IT Team |  |  |
|---------|--|--|
|         | Interview Questions English  | Arabic   |
| 1       | What are your responsibilities in HEAC service?  | ما هي الأعمال التي تقوم بها بمركز القبول الموحد؟   |
| 2       | Who are the beneficiaries of this service?   | من هم المستفيدين من هذه الخدمة؟  |
| 3       | How was the service developed and implemented?   | كيف تم تطوير وتفعيل الخدمة من الناحية الفنية؟  |
| 4       | How were citizens' requirements captured?  | كيف تم توثيق متطلبات المستخدمين؟   |
| 5       | How was training carried out for the operations team and end-users?  | كيف تم تدريب فريق العمل التشغيلي وكذلك مستخدمي الخدمة؟   |
| 6       | How did the HEAC affect your role and responsibilities?  | كيف أثر نظام القبول الموحد على مسؤولياتك وأعمالك اليومية؟  |
| 7       | What information has been added to HEAC system since its first launch? And Why?  | ما هي التغييرات التي حدثت للبيانات المستخدمة منذ البدء في استخدام نظام القبول الموحد؟            |
| 8       | How many technology releases have you had since the electronic service is developed? What are the added features and their causes?           | كم عدد الإصدارات التقنية للنظام منذ تم تطوير الخدمة الإلكترونية؟ ما هي الميزات المضافة وأسبابها؟ |
| 9       | How do you measure the success of the HEAC service?  | كيف يمكن الحكم على نجاح نظام القبول الموحد؟  |
| 10      | What are the benefits expected from using the system?  | في رأيك، ما هي الفوائد المرجوة من استخدام النظام؟  |
| 11      | What are the benefits which have been achieved through the system?   | ما هي الفوائد التي تحققت من خلال النظام؟   |
| 12      | Are there any disbenefits resulted from HEAC system? If yes, what are they?  | هل كان لتفعيل مركز القبول الموحد أي نتائج سلبية؟ وما هي هذه النتائج إذا كانت الإجابة نعم؟        |
| 13      | Is there a relation between the characteristics of technical systems and the process of achieving the desired benefits from the system? Why? | هل يوجد ارتباط بين مميزات النظم الفنية وعملية تحقيق الفوائد المرجوة من النظام؟ ولماذا؟           |
| 14      | What technological artefact help enabling benefit realisation? And why?  | ما هي المميزات الفنية التي تساعد على عملية تحقيق المنافع ولماذا؟                                 |
| 15      | How do you assess the achieved benefits?   | كيف يتم تقييم الفوائد المتحققة؟  |
| 16      | How do you ensure that service beneficiaries realised the desired benefits?  | كيف يمكن التأكد من أن المستفيدين من الخدمة حققوا الفوائد المرجوة؟                                |
| 17      | How do you get beneficiaries suggestions and observation? How these suggestions impact service development?                                  | ما هي آلية الحصول على مقترحات المستفيدين؟ وما هو تأثيرها على تطور الخدمة؟                        |
| 18      | In your opinion, why does HEAC use social media networks?  | في رأيك لماذا يستخدم مركز القبول الموحد وسائل التواصل الاجتماعي؟                                 |
| 19      | How did HEAC affect service beneficiaries' viewpoint on government services?   | كيف أثر مركز القبول الموحد على وجهة نظر المستفيدين حول الخدمات الحكومية؟                         |
| 20      | In your opinion, does <i>wasta</i> exist in HEAC admission process? Why?   | في رأيك، هل توجد الوساطة في عملية القبول الموحد؟ لماذا؟  |
| 21      | Does HEAC system impact <i>wasta</i> ? Yes How, No Why?  | هل أثر نظام القبول الموحد على الوساطة؟ نعم كيف، لا لماذا؟  |

|    |  |  |
|----|--|--|
| 22 | Does <i>wasta</i> impact HEAC system? Yes How, No Why?   | هل أثرت الوساطة على نظام القبول الموحد؟ نعم كيف، لا لماذا؟   |
| 23 | Does <i>wasta</i> impact realisation of HEAC benefits? Yes how, No Why?  | هل أثرت الوساطة على عملية تحقيق الفوائد المرجوة من النظام؟ نعم كيف، لا لماذا؟  |
| 24 | Did HEAC result in realisation of any social benefit? such as, transparency, trust, responsiveness, Informedness, engagement, fairness? Yes how, No Why? | هل تحققت القيم التالية من خلال النظام ولماذا؟ الشفافية - الثقة - الإستجابة - توفر المعلومات - المشاركة - العدل؟ نعم كيف. لا لماذا؟ |
| 25 | Does the centre measure the extent to which social benefits are realised? And how?   | هل يقوم المركز بقياس مدى تحقق الفوائد المعنوية؟ وكيف؟  |
| 26 | How does HEAC system deliver these social benefits   | كيف يمكن لخدمة القبول الموحد توفير المنافع المعنوية؟   |
| 27 | What are the technological artifacts that help in realising these social benefits?   | ما هي المميزات التقنية التي تساعدك على عملية تحقيق المنافع المعنوية ولماذا؟  |
| 28 | What are the challenges that might face the HEAC service delivery of social benefits?  | ما هي التحديات التي تواجه خدمة القبول الموحد في سبيل تحقيق المنافع المعنوية؟   |
| 29 | How can the realisation process of the HEAC social benefits be improved?   | في رأيك، كيف يمكن تحسين عملية تحقيق المنافع المعنوية من خدمة القبول الموحد؟  |

| Students Focus Groups |  |  |
|-----------------------|--|--|
| N                     | Interview Questions English  | Arabic   |
| 1                     | When and Why did you use HEAC system?  | متى ولماذا استخدمت نظام القبول الموحد؟   |
| 2                     | What are the desired benefits from using the HEAC Service?   | ما هي الفوائد المتوقعة من استخدام نظام القبول الموحد؟  |
| 3                     | Does the service meet all your requirements and why?   | هل يلبي النظام جميع متطلباتك؟ ولماذا   |
| 4                     | Have you been trained on how to use the service?   | هل تلقيت تدريباً لإستخدام الخدمة؟؟   |
| 5                     | How was the training impact benefits realisation process?  | كيف أثر التدريب على عملية تحقيق الفوائد؟   |
| 6                     | How do you measure the success of the HEAC service?  | كيف تقيس نجاح نظام القبول الموحد؟  |
| 7                     | What are benefits that have been realised from using the service? Why  | ما هي الفوائد التي تحققت من استخدام نظام القبول الموحد؟ ولماذا؟  |
| 8                     | What are the benefits that have not been realised from using the service? Why?   | ما هي الفوائد التي لم تتحقق من استخدام نظام القبول الموحد؟ ولماذا  |
| 9                     | Are there any disbenefits resulted from HEAC system? If yes, what are they?  | هل كان لتفعيل مركز القبول الموحد إي نتائج سلبية؟ وما هي هذه النتائج إذا كانت الإجابة نعم؟  |
| 10                    | Do you share your suggestions with the HEAC? Yes How? NO why?  | هل تقوم بمشاركة مركز القبول الموحد بمقترحاتك؟ وكيف؟ ولماذا إذا كانت الإجابة ب لا؟  |
| 11                    | Does the HEAC take users' suggestions seriously? Why?  | هل تعتقد أن مركز القبول الموحد يهتم بمقترحات المستخدم؟ ولماذا؟   |
| 12                    | Why does the HEAC have social media accounts?  | لماذا يوجد لدى مركز القبول الموحد مواقع التواصل الإجتماعي؟   |
| 13                    | How did the HEAC affect your views on government services?   | كيف أثر مركز القبول الموحد على وجهة نظرك حول الخدمات الحكومية؟   |
| 14                    | In your opinion, does favouritism exist in HEAC admission process? Why?  | في رأيك، هل توجد مفاضلة في عملية القبول الموحد؟ لماذا؟   |
| 15                    | Does HEAC system impact favouritism ? Yes How, No Why?   | هل أثر نظام القبول الموحد على المفاضلة للأهل والأصدقاء؟ نعم كيف، لا لماذا؟   |
| 16                    | Does favouritism impact HEAC system? Yes How, No Why?  | هل أثرت المفاضلة للأهل والأصدقاء على نظام القبول الموحد؟ نعم كيف، لا لماذا؟  |
| 17                    | Does favouritism impact realisation of HEAC benefits? Yes how, No Why?   | هل أثرت المفاضلة للأهل والأصدقاء على عملية تحقيق الفوائد المرجوة من النظام؟ نعم كيف، لا لماذا؟   |
| 18                    | Did HEAC result in realisation of any social benefit? such as, transparency, trust, responsiveness, Informedness, engagement, fairness? Yes how, No Why? | هل تحققت لك الفوائد الإجتماعية التالية من خلال النظام ولماذا؟ الشفافية - الثقة - الإستجابة - توفر المعلومات - المشاركة - العدل؟ نعم كيف. لا لماذا؟ |
| 19                    | Did you realise any other social benefits How?   | هل تحققت لك فوائد إجتماعية أخرى من خلال النظام؟ كيف؟   |
| 20                    | What are the technological artifacts that help in realising these social benefits?   | ما هي المميزات الفنية التي تساعدك على عملية تحقيق المنافع المعنوية ولماذا؟   |

|    |   |  |
|----|---|--|
| 21 | What are the challenges which face HEAC delivery of these social benefits?                        | في رأيك، ما هي التحديات التي تواجه نظام القبول الموحد في توفير هذه المنافع الإجتماعية؟ |
| 22 | Do you have any suggestions to improve the realised social benefits from the HEAC? What are they? | هل توجد أي إقتراحات لتحسين الفوائد الإجتماعية المستفادة من خدمة القبول الموحد؟ ما هي؟  |

### 10.3 Interviewees/Focus Group List

| Table 10.1: Interview List Organisations |   |            |                                |
|--|---|------------|--------------------------------|
| N  | Interviewee   | Duration   | Location                       |
| 1  | Former HEAC General Manager   | 90 minutes | Muscat-Office                  |
| 2  | Former Project Manager  | 50 minutes | Phone                          |
| 3  | Head of Admission   | 70 minutes | HEAC                           |
| 4  | Awareness Specialist  | 51 minutes | HEAC                           |
| 5  | IT Team lead  | 57 minutes | HEAC                           |
| 6  | Grievance Committee Member  | 65 minutes | Ministry of Education)         |
| 7  | Admission Specialist  | 48 minutes | HEAC                           |
| 8  | Head of Electronic Management                                       | 74 minutes | HEAC                           |
| 9  | Statistics Specialist   | 64 minutes | HEAC                           |
| 10                                       | Carrier Awareness Specialist 1                                      | 79 minutes | School - Muscat                |
| 11                                       | Carrier Awareness Specialist 2                                      | 51 minutes | School - Muscat                |
| 12                                       | Head of Statistics  | 45 minutes | HEAC                           |
| 13                                       | Software Developer  | 28 minutes | HEAC                           |
| 14                                       | Admission Specialist + Former HEAC Admission Specialist (2006-2013) | 90 Minutes | Military Technological College |
| 15                                       | Admission Specialist  | 40 Minutes | Sultan Qaboos University       |
| 16                                       | Admission Specialist  | 30 Minutes | Ministry of Health             |
| 17                                       | Head of Admission (follow up)                                       | 20 minutes | HEAC                           |
| 18                                       | Head of Electronic Management (follow up)                           | 15 minutes | HEAC                           |
| 19                                       | A student who studied the system abroad                             | 45 minutes | UK                             |
|  |   |            |                                |

| Table 10.2: Focus Group List (Users) |                 |                       |                                  |
|--------------------------------------|-----------------|-----------------------|----------------------------------|
| FG #                                 | Size:<br>Gender | Duration<br>(Minutes) | Location                         |
| 1                                    | 5 M             | 69                    | Ministry of Defence              |
| 2                                    | 6 M: 6 F        | 51                    | Sohar Applied College of Science |
| 3                                    | 3 M: 3 F        | 73                    | Sohar Applied College of Science |
| 4                                    | 2 M: 2 F        | 58                    | Middle East College (Private)    |
| 5                                    | 3 M             | 47                    | Sultan Qaboos University         |
| 6                                    | 5 M: 2 F        | 66                    | Higher Technological College     |
| 7                                    | 5 F             | 48                    | Sultan Qaboos University         |
| 8                                    | 5 M             | 58                    | Sultan Qaboos University         |
| 9                                    | 2 M: 3 F        | 53                    | Sultan Qaboos University         |
| 10                                   | 4 M             | 52                    | Military Technological College   |
| 11                                   | 3 M             | 50                    | Military Technological College   |

## 10.4 Consent Form



The Production of Public Value through E-government in the Sultanate of Oman

### INFORMED CONSENT FORM (to be completed after Participant Information Sheet has been read)

#### Taking Part

Please initial box

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethics Approvals (Human Participants) Sub-Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study, have the right to withdraw from this study at any stage for any reason, and will not be required to explain my reasons for withdrawing.

I agree to take part in this study. Taking part in the project will include being interviewed and audio recorded.

#### Use of Information

I understand that all the personal information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others or for audit by regulatory authorities.

I understand that anonymised quotes may be used in publications, reports, web pages, and other research outputs.

I agree for the data I provide to be securely archived at the end of the project.

\_\_\_\_\_  
Name of participant [printed]

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Researcher [printed]

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



استمارة الموافقة على المشاركة في مقابلة لبحث الدكتوراة

عنوان البحث: المنافع المستفادة من استخدام الحكومة الإلكترونية بسلطنة  
عمان: مركز القبول الموحد

- أنا على دراية بأنني لست ملزماً بالمشاركة في الدراسة. ولي الحق في الانسحاب من هذه الدراسة في أي مرحلة ولأي سبب، ولن يكون مطلوباً مني شرح أسباب انسحابي
- أوافق على المشاركة في هذه الدراسة. وستشمل المشاركة في البحث إجراء مقابلة مسجلة صوتياً
- أوافق بأن المعلومات سوف تستخدم لمشروع البحث فقط وستحاط بسرية تامة مع عدم الإشارة إلى هوية المشارك أو اسمه.
- أنا أوافق على اقتباس المعلومات التي أظلي بها في رسالة البحث مع عدم الإشارة إلى هويتي الشخصية
- أن أوافق على أن البيانات التي أقدمها سوف يتم أرشفتها بأمان من خلال الجامعة بعد فترة المشروع

|         |         |        |
|---------|---------|--------|
| _____   | _____   | _____  |
| التاريخ | التوقيع | الاسم  |
| _____   | _____   | _____  |
| التاريخ | التوقيع | الباحث |

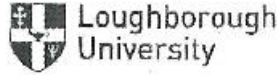
## 10.5 HEAC Changes Chronological Map

| Year      | Change  | Type                  | Rationale  |
|-----------|---|-----------------------|--|
| 2006      | HEAC was launched   | All                   | Centralise the higher education admission services in the Sultanate of Oman  |
| 2008      | <p><b>Training Type and Volume:</b> First year it was an inclusive training and awareness for all stakeholders. Later years, awareness and training were given only to those directly using the system</p> <p>Ministry of Education: established carrier Awareness Directory which manages training and awareness for students starting from grade 10 until grade 12. The Sultanate adopted a new training approach: Train the trainer.</p> | Organisational        | Assumption: Public became aware of the system  |
| 2007      | <b>Admission Requirement Percentage</b> was centralised in 2007 and one formula was used to calculate student competitive grades  | Policy                | To enable students to easily make an informed decision   |
| 2008      | Admission Report: HEAC started publishing detailed admission reports in 2008 showing previous year admission statistics, number of offered seats, and minimum accepted competitive grade.   | Technology            | HEAC believed that this increased citizens trust   |
|           | Students Data: email address became a mandatory field   | Policy and Technology | Higher education required this field to be mandatory.  |
|           | Disable access to previous years admission reports  | Policy and Technology | Enable Informed Choice   |
|           | Surveys-Frequency: Changed from yearly surveys to every two or three years depending on changes taken place.  | Policy                | Linked to the stability of the system; if there no changes then there is no need to survey students (INT6)                       |
| 2007      | Implementing SMS services: Added after a year of the go-live to allow all students to be able to register. The technology was added to close the digital gap and increase system accessibility  | Technology            | 3000 students were not able to register using HEAC system. Grievance committee recommendation (INT5, INT7)                       |
| 2009-2017 | <p>Maximum Allowed Choices: maximum allowed choices has been changing since 2009</p> <p>2006-2008: 20 programmes</p>  | Policy                | <p>Maximum allowed choices policy changed due to two external forces:</p> <p>Increase in the offered educational programmes.</p> |

|      |   |                                 |  |
|------|---|---------------------------------|--|
|      | 2009-2011: 30 Programmes<br>2011-2017: 40 Programmes<br>2017- : Open  |                                 | Citizens represented by the consultative parliament  |
| 2009 | Addition of a new department responsible for higher education statistics and introduction: HEAC Higher Education Statistical System                               | Organisational<br>Technological | Collect and publishes data of the higher education in Oman. Data are accessible via the portal and SMS services  |
| 2010 | Accepting disabled students through HEACs   | Policy<br>Technology            | This group was not considered when HEAC was established. They put pressure on HEAC to be accepted through the system   |
| 2011 | Launching Grievance Electronic Form   | Technology                      | Ease the grievance for student. The link was easily accessible at the beginning, and HEAC believed that many students applied for grievance even those who do not really need it. The link was moved to a less navigable location  |
| 2013 | Mobile services were launched   | Technology                      | Increase accessibility of the system and add more advanced features  |
| 2013 | Social Media adoption: HEAC started using social media to communicate with users in 2013.   | Technology                      | National level policy developed by Information Technology Authority, so this was a compliance with national policy (INT and INT 10)  |
| 2014 | Disable access to previous years Admission Report   | Technology/<br>Policy           | Enable students to make an informed decision regarding their choices and not be confused with old statistics.  |
| 2017 | Programmes Search Engine filters allowed students to search available programmes based on subjects. Searching using educational institute was disabled (INT-KHAL) | Technology                      | This was validated and discussed with HEAC deputy head of admission. According to HEAC, this change allows students to make an informed decision regarding their chosen educational programmes. However, students have different preferences and choice was not realised by those who are influenced by institute reputation, location and programme features. |

## 10.6 Ethical Clearance Form

Ethics Approvals (Human Participants)  
Sub-Committee



### Ethical Clearance Checklist

|   |     |
|---|-----|
| Has the Investigator read the 'Guidance for completion of Ethical Clearance Checklist' before starting this form? | Yes |
|---|-----|

|  |    |
|--|----|
| Does the study require NHS approval?<br><i>Please complete a copy of the checklist providing a brief project description in the additional information section. Please send this to the Secretary of the Ethics Approvals (HP) Sub-Committee before starting your NHS application.</i> | No |
|--|----|

#### Project Details

|   |
|---|
| 1. Project Title: The Realization of Public Value through E-government: a Structuration Perspective |
|---|

#### Investigator(s) Details

|  |   |
|--|---|
| 2. Name of Investigator 1:<br>Khalid AL Rawahi   | 10. Name of Investigator 2:                         |
| 3. Status: FGR student   | 11. Status: Choose an item                          |
| 4. School/Department:<br>Business and Economics  | 12. School/Department:                              |
| 5. Programme (if applicable):<br>Centre for Information Management   | 13. Programme (if applicable):                      |
| 6. Email address:<br>k.al-rawahi@lboro.ac.uk   | 14. Email address:<br>Click here to enter text.     |
| 7a. Contact address:<br>Flat 7, New Ashby Court, Loughborough,<br>LE114EQ  | 15a. Contact address:<br>Click here to enter text.  |
| 7b. Telephone number:<br>07490277967   | 15b. Telephone number:<br>Click here to enter text. |
| 8. Supervisor:<br>No   | 16. Supervisor:<br>Choose an item                   |
| 9. Responsible Investigator: Yes   | 17. Responsible Investigator: Choose an item        |
| List all other investigators (name/email address):<br>Dr. Crispin Coombs : C.R.Coombs@lboro.ac.uk<br>Professor: M. N. Ravshankar M.N.Ravishankar@lboro.ac.uk |   |

## 10.7 Analysis Diagrams and Tables Samples

This appendix present samples of the generated diagrams, tables, and comments during the analysis stage.

### 10.7.1 Analysis Data: Diagrams

| Name  | Nodes | References | Created On  |
|-------|-------|------------|-------------|
| INT1  | 116   | 275        | 10/3/2017 1 |
| INT10 | 110   | 303        | 10/3/2017 1 |
| INT11 | 71    | 173        | 10/3/2017 € |
| INT12 | 61    | 162        | 10/3/2017 1 |
| INT13 | 67    | 180        | 10/3/2017 1 |
| INT14 | 32    | 53         | 10/3/2017 1 |
| INT15 | 72    | 161        | 10/3/2017 1 |
| INT16 | 128   | 407        | 10/3/2017 1 |
| INT17 | 19    | 26         | 10/15/2017  |
| INT18 | 14    | 24         | 10/15/2017  |
| INT2  | 130   | 433        | 10/1/2017 € |
| INT3  | 106   | 268        | 10/3/2017 1 |
| INT4  | 97    | 206        | 10/3/2017 1 |
| INT5  | 154   | 407        | 10/3/2017 1 |
| INT6  | 96    | 218        | 10/3/2017 1 |
| INT7  | 129   | 332        | 10/3/2017 1 |
| INT8  | 54    | 129        | 10/3/2017 1 |
| INT9  | 101   | 325        | 10/3/2017 1 |

Figure 10.7.1: Number of Codes Per Interviews

| Nodes                          |         |            |     |
|--------------------------------|---------|------------|-----|
| Name                           | Sources | References |     |
| Business Changes               |         | 14         | 60  |
| Organizational Change          |         | 9          | 33  |
| Technological-Changes          |         | 12         | 27  |
| Business Enablers              |         | 17         | 99  |
| Engagement                     |         | 17         | 68  |
| Organization Cultural          |         | 11         | 31  |
| Business Processes             |         | 30         | 161 |
| Admission-Process              |         | 24         | 72  |
| Auditing-Process               |         | 14         | 27  |
| Grievance-Process              |         | 17         | 62  |
| Motivation                     |         | 4          | 17  |
| PV Preceptions                 |         | 35         | 508 |
| Fairness                       |         | 31         | 128 |
| Orgnization                    |         | 24         | 78  |
| Users                          |         | 11         | 50  |
| Informed-Choice                |         | 26         | 247 |
| Transparency                   |         | 32         | 133 |
| State Authority                |         | 15         | 49  |
| Technology Role in PV Creation |         | 39         | 419 |
| Accessibility                  |         | 20         | 52  |
| Automation                     |         | 24         | 78  |
| Ease of Use                    |         | 21         | 83  |
| ICT readiness                  |         | 11         | 37  |
| Information Availability       |         | 27         | 81  |
| Relibaility                    |         | 3          | 3   |
| Responsivness                  |         | 19         | 44  |
| Security                       |         | 16         | 41  |
| Anonymity                      |         | 7          | 8   |
| Auditability                   |         | 10         | 25  |
| Wasta Perceptions              |         | 22         | 141 |

Figure 10.7.2: Themes and Sub Categories List

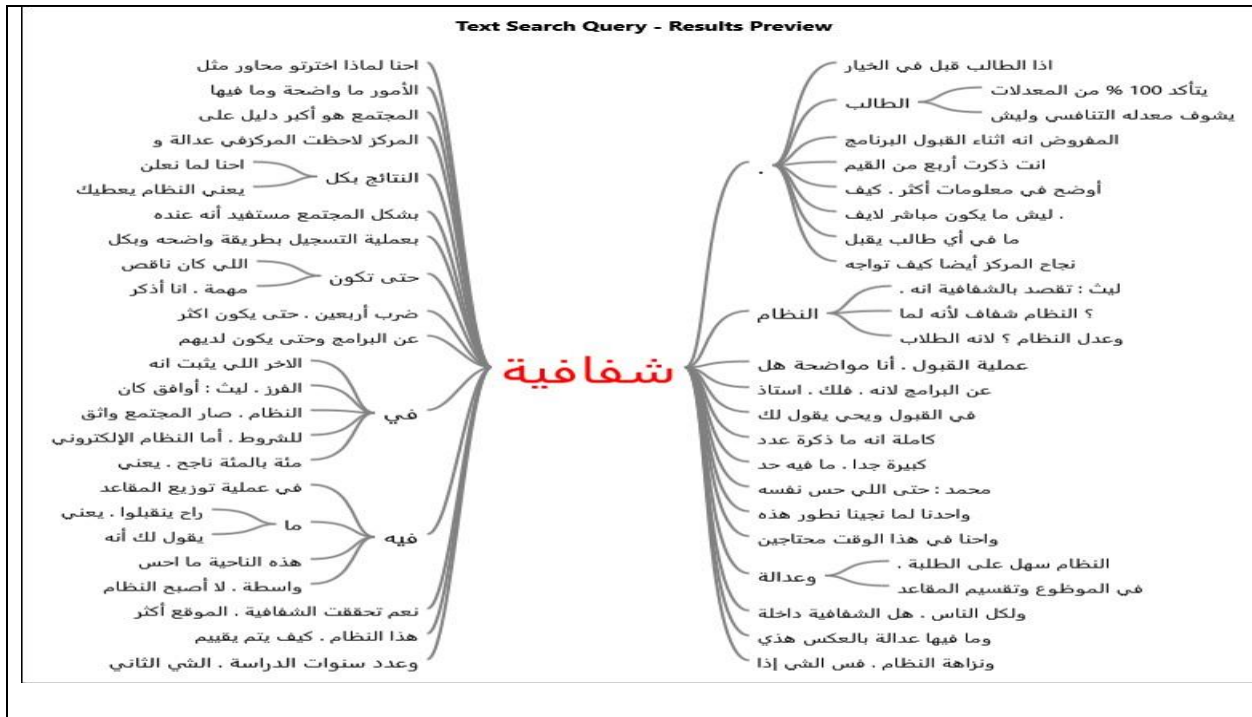


Figure 10.7.3: Transparency Tree

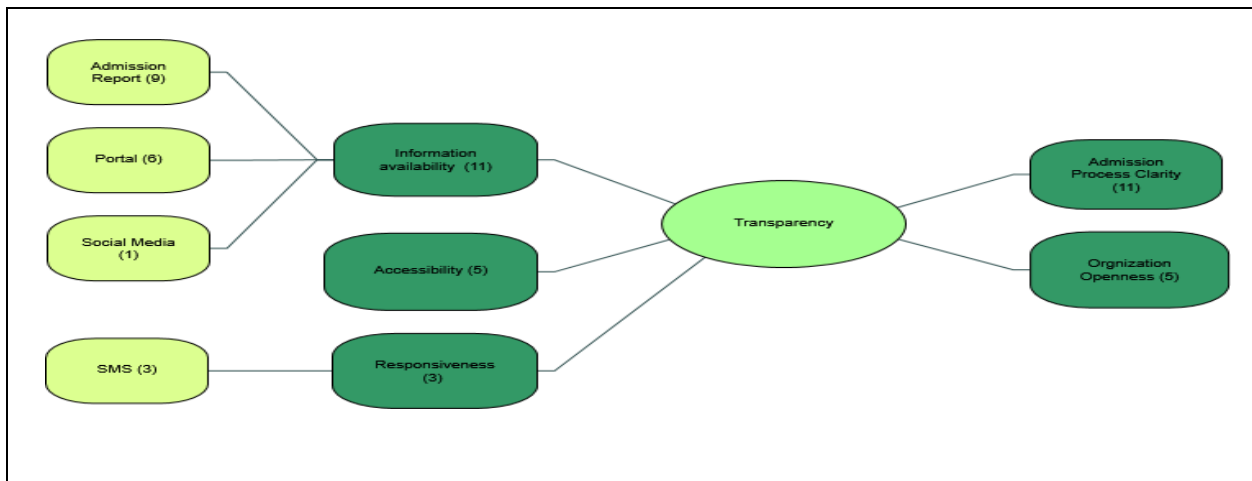


Figure 10.7.4: Transparency Perceptions: Organisation Perspective

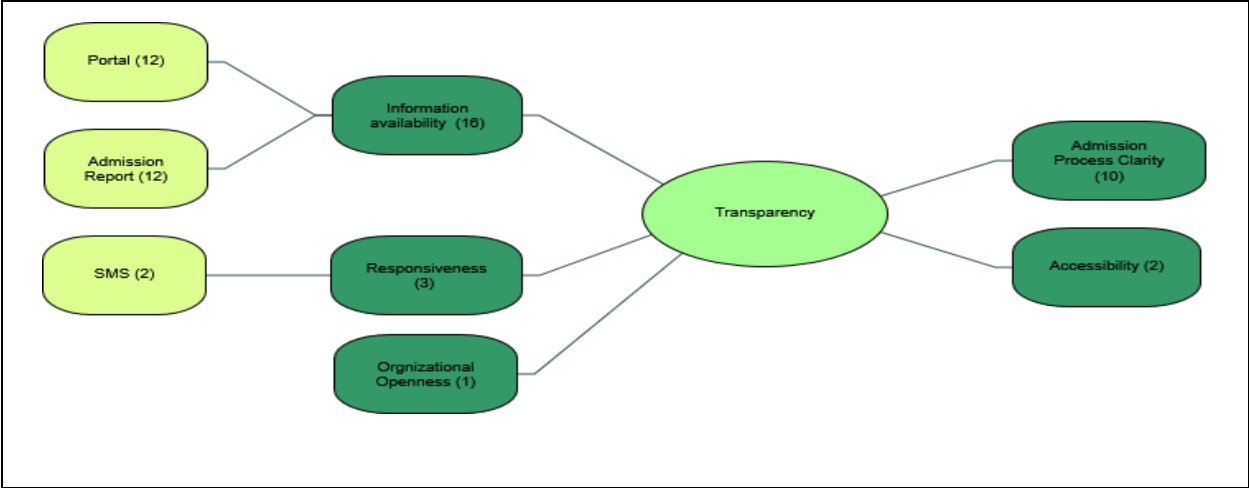


Figure 10.7.5: Transparency Perceptions: Students Perspective

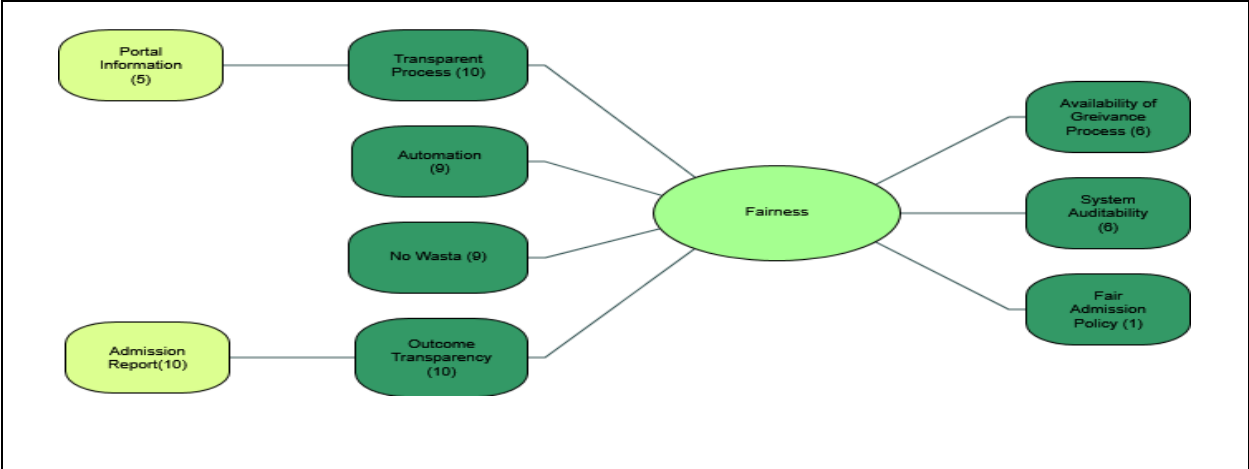


Figure 10.7.6: Fairness Perceptions: Organisation Perspective



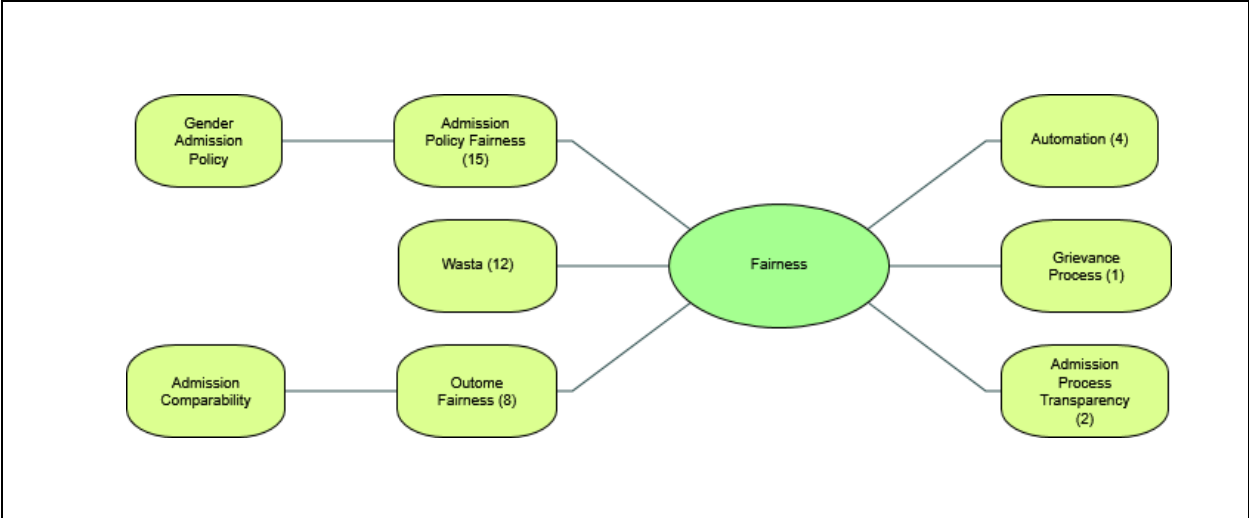


Figure 10.7.7: Fairness Perceptions: Students Perspective

## 10.7.2 Analysis Data: Tables

| Table 10.7.2: Planned Public Values by Sources- Documents |           |   |   |                                    |
|---|-----------|---|---|------------------------------------|
| Planned PV  | Documents | Publication Date                              | Document Type   | Publisher                          |
| Choice  | 1         | 2011  | Survey Report   | HEAC                               |
| Digital-Inclusion   | 1         | 2010  | Accessibility Policy  | ITA                                |
| Equality  | 4         | 2010<br>2011 and 2014<br>2017                 | Accessibility Policy<br>HEAC Surveys (2)<br>HEAC Portal                                     | ITA<br>HEAC<br>HEAC                |
| Fairness  | 6         | 2006<br>2010<br>2011 and 2014<br>2016<br>2017 | HEAC Logo Accessibility Policy<br>HEAC Surveys (2)<br>Social Media Guideline<br>HEAC Portal | HEAC<br>ITA<br>HEAC<br>ITA<br>HEAC |
| Informedness  | 5         | 2006<br>2010<br>2011 and 2014<br>2017         | HEAC Logo<br>Accessibility Policy<br>HEAC Surveys (2)<br>HEAC Portal                        | HEAC<br>ITA<br>HEAC<br>HEAC        |
| Participation   | 5         | 2012<br>2011 and 2014<br>2016<br>2017         | E-participation Policy<br>HEAC Surveys (2)<br>Social Media Guideline<br>HEAC Portal         | ITA<br>HEAC<br>ITA<br>HEAC         |
| Responsiveness  | 4         | 2012<br>2011 and 2014<br>2016                 | E-participation Policy<br>HEAC Surveys (2)<br>Social Media Guideline                        | ITA<br>HEAC<br>ITA                 |
| Transparency  | 6         | 2006<br>2011 and 2014<br>2016<br>2017         | HEAC Logo<br>HEAC Surveys (2)<br>Social Media Guideline<br>HEAC Portal (2)                  | HEAC<br>HEAC<br>ITA<br>HEAC        |
| Trust   | 1         | 2016  | Social Media Guideline  | ITA                                |

Table 10.7.2: Transparency Perceptions Organisation Perspective by Sources

| <b>PV</b>                | <b>Operational</b>  | <b>Management</b>  | <b>Documents</b>   | <b>Other organisations</b>  | <b>Students</b>   |
|--------------------------|---|--|--|---|---|
| Transparency Perceptions | <p>Information availability (INT 1, INT3)</p> <p>Admission Process (INT 3, INT8, INT10)</p> <p>Accessibility (INT3, INT10)</p> <p>Results Comparison Capability (INT 3)</p> | <p>Information Availability (INT2, INT 5, INT7, INT9)</p> <p>Admission Process (INT2, INT4, INT5, INT7, INT11)</p> <p>Organisation Openness: (INT 4, INT 5, INT7)</p> <p>Accessibility (INT2, INT 5, INT9)</p> <p>Results Comparison Capability (INT5)</p> <p>Responsiveness (INT9, INT11)</p> | <p>Information Availability (Src 1-10, Src 12, Src 20, Sr 21, Src23, Src 24)</p> <p>Admission Process Transparency (Src 12, Src 23, Src 24)</p> <p>Open Data Strategy (Src 15)</p> | <p>Information Availability (INT 11, NT 13, INT14, INT 15, INT 16)</p> <p>Admission Process Transparency (INT12, INT 15, INT 16)</p> <p>Organisation Openness (INT 15, INT 16)</p> <p>Responsiveness (INT 16)</p> <p>Accessibility (INT 15)</p> | <p>Information availability (FG1.1FG1.5, FG3.3, FG3.4, FG4.4, FG7.1, FG7.2, FG7.5, FG8.3, FG9.1, FG9.3, FG9.4, F10.3, F11.1, F11.3)</p> <p>Admission Process (FG1.3, FG4.1, FG9.1, FG9.3, FG11.2)</p> <p>Responsiveness (FG6.3, FG7.1, FG7.2)</p> |

| Table 10.7.3: Challenges Organisational Perspective by Group |            |             |                    |     |
|--|------------|-------------|--------------------|-----|
|  | Management | Operational | Other-Organisation | Sum |
| Direct-Communication-with-Students                           | 0          | 1           | 1                  | 2   |
| Human-Intervention   | 0          | 0           | 1                  | 1   |
| ICT-Infrastructure-Readiness                                 | 1          | 1           | 0                  | 2   |
| Job-Market-Information                                       | 1          | 0           | 2                  | 3   |
| Lack-of-Awareness  | 4          | 2           | 6                  | 12  |
| Power-Limitation   | 3          | 3           | 4                  | 10  |
| Process-Challenges   | 1          | 0           | 0                  | 1   |
| Resources  | 4          | 2           | 2                  | 8   |
| Technology-Limitation  | 3          | 3           | 2                  | 8   |
| User-Practices   | 1          | 2           | 1                  | 4   |

| Table 10.7.4: Surveys 2011 and 2014 Reports Comparison |   |  |
|--|---|--|
|  | 2011 (10922 students)   | 2014 (43190)   |
| Response Rate  | 10.95%  | 24.1%  |
| Self-Registration                                      | 42.41%  | 38.5%  |
| Read Student Guide                                     | 97%   |  |
| Registration Channel                                   | <b>Portal:</b> 89.35%<br><b>SMS:</b> 10.65%<br><b>Mobile Service:</b> Not available       | <b>Portal:</b> 95%<br><b>SMS:</b> 2.5%<br><b>Mobile Service :</b> 2.6%   |
| Clarity of student Guide                               | <b>Yes:</b> 88.5%<br><b>No:</b> 8.44%   | 88.7%  |
| Clarity of Programme Requirements Info                 | 85.52%  | 87.5%  |
| Clarity of Admission Process Info                      | -   | 87.6%  |
| Clarity of Registration Screens Info                   | 85.42%  | 83.6%  |
| Clarity of Competitive grade calculation information   | 70%   | 68.8%  |
| Use Portal as source of Info                           | <b>Yes:</b> 80.76%<br><b>No:</b> 18.77 %  | <b>Easy:</b> 73.9%<br><b>Difficult:</b> 26.1%  |
| Use SMS as source of Info                              | <b>Yes:</b> 37.90%<br><b>No:</b> 61.63%   |  |
| Received HEAC awareness SMS                            | <b>Yes:</b> 94.13%<br><b>No:</b> 5.40%  |  |
| Use of Social Media for Awareness                      | <b>Yes:</b> 37.90%<br><b>No:</b> 61.63%   | <b>Yes:</b> 22.4%<br><b>No:</b> 77.4 %   |
| Ease of Registration                                   | <b>Yes:</b> 82.66%<br><b>No:</b> 17.34%   | <b>Yes:</b> 69.5%<br><b>No:</b> 30.5% (42% noted that calculation of competitive grade was not easy on the student guide)<br>(48% faced difficulties getting information from the portal)<br>(32% found it difficult to use the registration screen) |
| HEAC Fairness  | <b>Positive:</b> 51.94%<br><b>Negative:</b> 47.59%  | <b>Positive:</b> 51%<br><b>Negative:</b> 49%   |
| HEAC admission process Transparency                    | <b>Positive:</b> 60.76%<br><b>Negative:</b> 38.78 % <b>(46.56% did not get admission)</b> | <b>Positive:</b> 57.8%<br><b>Negative:</b> 42.2%   |
| Admission Policy Satisfaction                          | <b>Yes:</b> 80.09%<br><b>No:</b> 19.44%   |  |

|                       |   |  |
|-----------------------|---|--|
| <p>Recommendation</p> | <p>HEAC only listed their recommendation based on the survey results and they are directed toward the students.</p> <ul style="list-style-type: none"> <li>- Students need to reference students guide</li> <li>- Students should know how to calculate their competitive grade</li> <li>- Students need to engage with HEAC social media and portal</li> <li>-Students should comply with admission policy timeline</li> </ul> | <p>HEAC listed students' different recommendation related to admission policies, programmes requirements, and the technology artefacts. These are documented in the recommendation table</p> |
|-----------------------|---|--|

| Table 10.7.5: Themes and Sub-Themes Sample |   |  |
|--|---|--|
| Theme                                      | Sub Theme   | Meaning  |
| Organisational Culture                     | Democratic Decision Making  | The organisation showed democratic and participatory culture between its employees.                |
|  | Cooperative and Friendly Work Environment   |  |
| State Authority                            | Royal Decree to Institute HEAC  | Informants refer to the royal decree influence to institute HEAC and empire their decision-making. |
|  | Empower Decision Making   |  |
| Fairness Perception                        | Equality<br>No <i>Wasta</i><br>Policy Fairness<br>Outcome Fairness  | Informants different perceptions of Fairness   |
| Transparency Perceptions                   | Information Availability<br><br>Organisation Openness<br><br>Admission Process Clarity<br><br>Responsiveness<br><br>Accessibility | Informants different perceptions of Transparency   |
| Informed Choice                            | Information Availability  | Informants different perceptions of informed choice  |
|  | Ease of Use   |  |
| Business Enablers                          | Public Engagement<br>Organisation Culture   | Usually, informants refer to these as success factors  |
| Business Changes                           | Policy Changes<br>Process Changes<br>Technology Changes   | Type of Business Changes   |
| EAS components                             | Registration Screens, Portal, SMS Services, Mobile Application Service, Admission Reports   | Technology Artefacts composing EAS   |
| Business Processes                         | Admission, Grievance, Auditing  | HEAC Business Process  |

## 10.8 E-government Public Value Literature Review Summary



| <b>N</b> | <b>Significance</b>  | <b>Criticism</b>   | <b>Methodology</b>            | <b>Theory/Framework</b>                    | <b>Analytical Method</b> | <b>Sources</b>               |
|----------|--|--|-------------------------------|--|--------------------------|------------------------------|
| 1        | The theoretical study reasons the creation of public value to three factors: high-quality service, achievement of outcomes, and trust which is similar to Kelly et al. (2002)                          | The paper is a theoretical paper which only explains the abstract and generic level how public value can be created using Kelly et al. framework.  |                               | Kelly et al. (2002)                        |                          | Kearns (2004)                |
| 2        | Expanded Kelly's et al. PV framework by adding satisfaction as a separate dimension. The framework added direct benefits that lead to PV creation: well informedness, personal control, and influence. | Although the production framework emphasizes the importance of technology and how its embedded values can impact the creation of public value, it does not examine the institutional properties and focus its contextualization on projects documentation. | Mixed Method                  | Moore (1995) and Kelly et al. (2002)       |                          | Grimsley and Meehan (2007)   |
| 3        | Yu   | The framework present a broad composition of public value looking at different types of values (Service, citizens, business, government, employee, administration, society)  |                               |  |                          | Yu (2008)                    |
| 4        | The in-depth qualitative paper extended Fountain Technology Enactment model (2001) investigating the values embedded organisation policies and values inscribed and in the design of e-government      | Although the paper criticised the objectivity of technology enactment model, it only shows how organisational policies shape technology design   | Qualitative Single Case study | Fountain Technology Enactment model (2001) |                          | Cordella and Iannacci (2010) |
| 5        | The study proposed a framework to assess service quality impact public value creation: Information quality, system quality and service quality   | The paper focuses on service quality dimension and outcomes. Trust as a dimension within the   |                               | PV Moore (1995)<br>Kelly et al. (2002)     |                          | Omar et al. (2011)           |

|   |  |  |                       |  |                      |                            |
|---|--|--|-----------------------|--|----------------------|----------------------------|
|   | dimension impact on outcome and trust.   | framework usually creates confusion as trust is also considered an input and outcome. The study focus on impact of service quality on public value as an outcome and does not explain how public is created.   |                       | IS Success Model by DeLone and McLean (2003) |                      |                            |
| 6 | The studies identified the factors influence evaluation of public value of e-government (Information quality, user orientation, service delivery, efficiency, responsiveness, and environmental sustainability   | Besides the context being different, the study is one-sided as it only focused on citizens' perception on what influenced public value creation through e-government. In addition, the pluralism of public value could impact the definition of public value for each participant.   | Quantitative Surveys  | Moore's PV Theory                            |                      | Karunasena and Deng (2012) |
| 7 | The paper is one of the few papers which uses structuration perspective to investigate E-government and value creation. This paper developed a causality framework using the structures identified by the structuration theory. This was linked to assimilation variable to enable public value creation | Similar to other paper, the interplay between the main actors is lost. The research method is not exploratory, and it presented the relationship between the social structure, the constructs, and the outcome as a linear relationship which may conflict with the basis of structuration. The duality concept is lost. The impact of public value on the service providers and | Quantitative, Surveys | Structuration and I assimilation literature  | Statistical Analysis | Hossain et al. (2011)      |

|    |   |  |                         |                                  |                                      |                            |
|----|---|--|-------------------------|----------------------------------|--------------------------------------|----------------------------|
|    |   | service quality is not examined.   |                         |                                  |                                      |                            |
| 8  | A theoretical framework shows through literature review how public value perspective is required to study how IT enable government services showing the differences between NPM and NPV   | The study serves as an introduction to PV, but it is only a literature review and does not present a model on how e-government public value is created.  | Literature review       |                                  |                                      | Cordella and Bonina (2012) |
| 9  | This paper makes a remarkable observation on the position of public value being a mean to an end rather than an end in itself. It introduced a six-step implementation framework work for open government using public value as a mean. In addition, The paper agrees with Foundtain (2005) that e-government organisation structural changes could hardly be achieved the e-government and it is the outcome which drives the structural change. | Main focus on the organisational structure and public value. It does not address exactly address public value creation and it focuses on organisation structural changes drivers.                                  | Literature review       | Relates to Moore's PV Theory     | No Data analysis (theoretical paper) | Harrison et al. (2012)     |
| 10 | Proposed a conceptual framework on measuring public value which has wide range of indicators : both utilitarian and deontological indicators  | The study is based on existing literature reviews and specific toward evaluation of PV. It does not examine the process of creation nor the impact of technology. Furthermore, it does not empirically measure PV. |                         | PV framework (Kelly et al. 2002) |                                      | Bai (2013)                 |
| 11 | Introduced performance assessment framework using structuration view using duality of technology.   | Paper concentrated on social actors investigating their meaning of performance dimension. This very narrow usage of structuration. Social  | Qualitative, Interviews | Duality of Technology            |                                      | Barbosa et al. (2013)      |

|    |   |  |                                 |   |  |                           |
|----|---|--|---------------------------------|---|--|---------------------------|
|    |   | structure is not clearly represented nor is how technology enacted these values and goals investigated.  |                                 |   |  |                           |
| 12 | Evaluated website design using PV perspective and three criteria for website evaluation: Content, usability and quality. It also introduced PV measurement framework using six PV categories: accessibility, citizen engagement, transparency, responsiveness, dialogue, and balancing of interests               | The research is very objective as it only evaluates technological features without trying to understand the perception of citizens to validate the results. PV indicators are also limited to six categories. The paper highlighted a narrow view of PV creation through e-government because many websites design focus on usability rather than PV creation. |                                 | Website Analysis using PV theory and usability model. |  | Karkin and Janssen (2014) |
| 13 | The paper developed from public value literature a framework which shows how IT resources may lead to the creation of organisational capabilities (Public service delivery, public engagement, co-creation, resources acquisition, and public-sector innovation which could enhance the creation of public value. | The paper builds upon Moore's PV triangle (1995). Yet, Moore's paper in 2014 in which Moore re-defined the authorising environment to include citizens. The capabilities introduced by this paper are relevant and they enable public sector to reach to the public.   | Public value Literature Review, | Mainly Moore (1995)                                   | No Data Analysis (theoretical Framework) | Pang et al. (2014)        |
| 14 | Identified public administration (PA) value position for senior managers and identified the impact of senior managers' priorities on e-government design in the context of Denmark. The   | The research viewpoint is centred on public administration managers. It directly links PA managers' position to E-government   | Mixed Methods                   | Public Administration Theory                          |  | Rose et al. (2015)        |

|    |   |  |                       |  |  |                          |
|----|---|--|-----------------------|--|--|--------------------------|
|    | study gives enriched conceptualization of PA and E-government value paradigms.  | value without exploring its impact on e-government design or operational actors.   |                       |  |  |                          |
| 15 | Introduced PV as a framework for decision making and analytical tool for IT projects. The paper uses PV to identify stakeholders and map them to different categories of expected values: social, economic, ideological, political.   | The paper broadly shows the six steps of the analytical process without identifying the roles and responsibility. In addition, the paper focuses on planning and analysis aspects of PV with no link to outcomes or verification of improvements   | Case Study            | Moore's PV Theory                            |  | Cook and Harrison (2015) |
| 16 | Measuring the success of e-government using public value approach. The study was done in the US showing how success can be measured using Net Benefit of efficiency, effectiveness, and social values. These results are in line with Moore (2014) balanced definition of public value to include economic, social, and political. The study introduced important dimension when assessing citizens' perceptions which their interaction level: Passive, Active, Participatory. | This study is similar to Omar et al. (2011) with the older one investigating service quality and the Scott et al. study measuring success. The study focuses on measuring E-government success. As noted by the authors, generalisability of the findings could be difficult as the study investigated US Web 2.0 which differs from users, government policies, and technology features in other countries. Third limitation of the study is sampling focused on experienced users where their experience would | Quantitative, Surveys | Moore's PV Theory<br>Mclean IS success Model |  | Scott et al. (2016)      |

|    |  |   |                           |  |                              |                          |
|----|--|---|---------------------------|--|------------------------------|--------------------------|
|    |  | affect their perception of public value; measuring perceptions of users with different level of experience could results in different findings.   |                           |  |                              |                          |
| 18 | The paper introduces important dimensions borrowed from Uncertainty Reduction Theory finding that transparency and trust can reduce uncertainty toward adoption of e-government. It also links these means to two technological features: Information Quality and Channel Characteristics. Although the paper does not take about e-government value creation, it associated two public values with technical characteristics. | Although the paper introduces two e-government public values, its definition of e-government is out of date. In addition, the contextualization and pluralism characteristics of PV makes it challenging to map transparency to existing literature without testing their validity. Hence, interview could have helped in assessing transparency and trust constructs accuracy. | Mixed Methods:<br>Surveys | Uncertainty Reduction Theory               | Statistical methods          | Venkatesh et al. (2016)  |
| 19 | A case study was carried in Mexico aimed at understanding the creation of public value by introducing a model to think of public value in an operational way. The study adapted a model from marketing research investigating citizens' behaviour throughout service stages.   | The study investigated a case which maturity can be questioned. The service does not involve citizens transacting with the service with no human intervention. The paper does not organisational strategy toward public value creation.   | Citizens Focus Groups     | Marketing Behaviour Model                  |                              | Luna-Reyes et al. (2016) |
| 20 | Investigation of smart cities initiative for open data and how it enhanced public value. The paper showed that Smart city initiative may enhance public value  | The paper had one general proposition which was related to public value creation arguing the  | Case study - Interviews   | Proposition Derived from Literature review | Content Analysis – Deductive | Pereira et al. (2017)    |

|  |   |  |  |  |  |  |
|--|---|--|--|--|--|--|
|  | and it can also lead to unintended results. It argues that the organisation needs to be aware of the data usage as it could be misused. | misuse of the data could lead to unintended outcome. The research method also investigated three initiatives using seven interviews which undermine the credibility of the findings especially when the scope and population of stakeholders' involvement is not highlighted |  |  |  |  |
|--|---|--|--|--|--|--|