

UAE PPF 2020 Proceedings

Selected Conference Papers



الحكومة المرنة والاستعداد للمستقبل
Agile Government: Becoming Future-Proof





Agile Government:

Becoming Future-Proof

UAE Public Policy Forum

Proceedings Report

Mohammed Bin Rashid School of Government

17-18 February 2020 Dubai, United Arab Emirates



Table of Contents

Agile Government: Becoming Future-Proof

Introductory Remarks - Prof. Melodena Stephens.

Expert Viewpoint: The Evolution of Future Government - Prof. Raed Awamleh.

Featured Papers

1. Management of Country Reputation and Image: A Proposed Road-map
Dr. Hossam Mohamed Elhamy, Zayed University, UAE
2. Managing Regional Risk and Volatility - An Agile Approach to Creating the Public Value of Security
Dr. Kristian Alexander, Zayed University, UAE.
3. The Agile COPSS: The Invisible Hand to Managing Innovation
Prof. Sid Ahmed Benraouane, University of Minnesota, USA; & Colonel Dr. Salah Rasheed AlHamran, Dubai Police, UAE.
4. Agile Government and the Challenge of AI
Prof. Dr. Dirk Nicolas Wagner, Karlshochschule International University, Germany
5. Case Studies of Data Visualization in Agile Policy Making
Dr. Jose Berengueres, UAE University & Ferran Pujol, Expert Partner, McKinsey, Santiago, Chile.
6. Sport and Culture Infrastructure as Government Service: How to Secure Sustainable Planning and Agile Governance
Prof. Dr. Louise Bielzer, Reinhold-Würth-University of the University of Heilbronn, Germany.
7. Using Behavioural Insights to Address an Agile Government's Structural Tension
Himanshu Vashishtha, SixthFactor Consulting; Arun Joshi, SixthFactor Consulting & Omneya Omar, SixthFactor Consulting. Islamic Banking, Efficiency and Social Welfare: A Machine-Learning, Agent-Based Study
Stathis Polyzos, Aristeidis Samitas, Costas Siriopoulos, College of Business, Zayed University, UAE.

Agile Government: Becoming Future-Proof: Introductory Remarks

The world is in an unpredictable state. The frequency of crises and the scale of these events are increasing. We are facing the largest refugee crisis in the history of mankind (Syria and Venezuela). The World Bank has highlighted the biggest buildup in borrowing in the past 50 years signaling concerns of an economic recession. The effects of global warming and our consumption economies are making itself felt strongly in the unpredictable weather patterns. With an even more connected world, pandemics are a rising concern. And of course, those of us in the UAE know we live in one of the most volatile regions in the world. These are just some issues to worry about at the macro-level. There are more stressors at the micro-level for the government to manage.

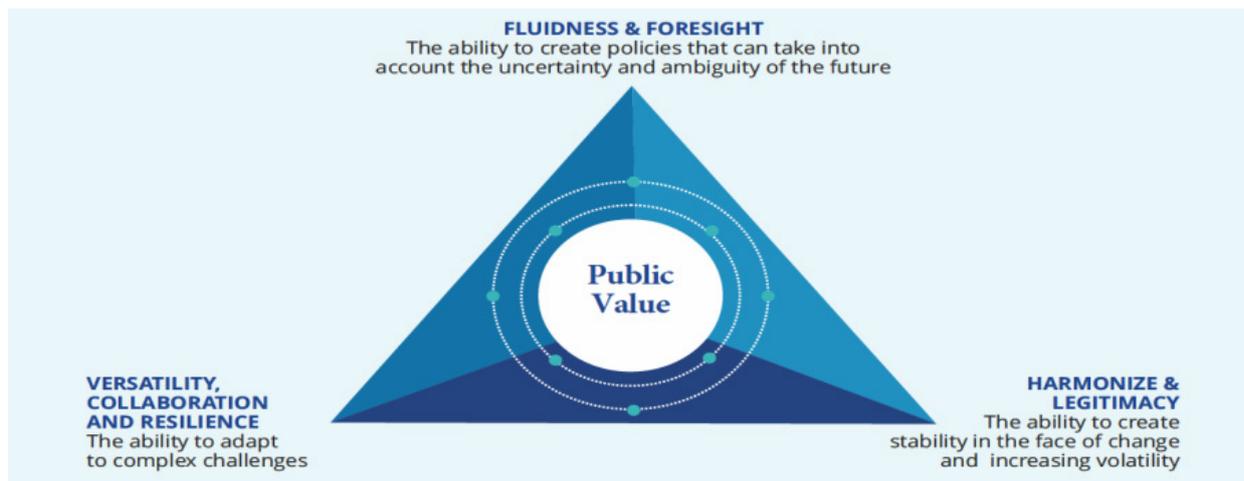
Agile government is a concept that is needed to make governments future-proof and contribute to the welfare of 7.6 billion global citizens. The agile government is an ideal state where governments create public value by resolving three key areas of tension (see Exhibit 1):

(1) The creation of policies that are adaptable enough to manage the uncertainty and ambiguity of the future yet not so vague that they are misinterpreted. This requires foresight and up skilling of skills;

(2) The ability to adapt to complex challenges or wicked problems - the tension lies in that fact that these problems are not easy to understand yet often the time to solve them is limited. This also implies that there is a need for constant experimentation and an ability to learn from failure - not easy when governments are reluctant to accept mistakes;

(3) The ability to create stability in the face of change and increasing volatility. Governments are about creating trust and at times the need to react does not allow enough time to get everyone on board with a decision. Governments then need a reservoir of trust in a world of increasing frequency of crises.

Exhibit 1: Agile Government



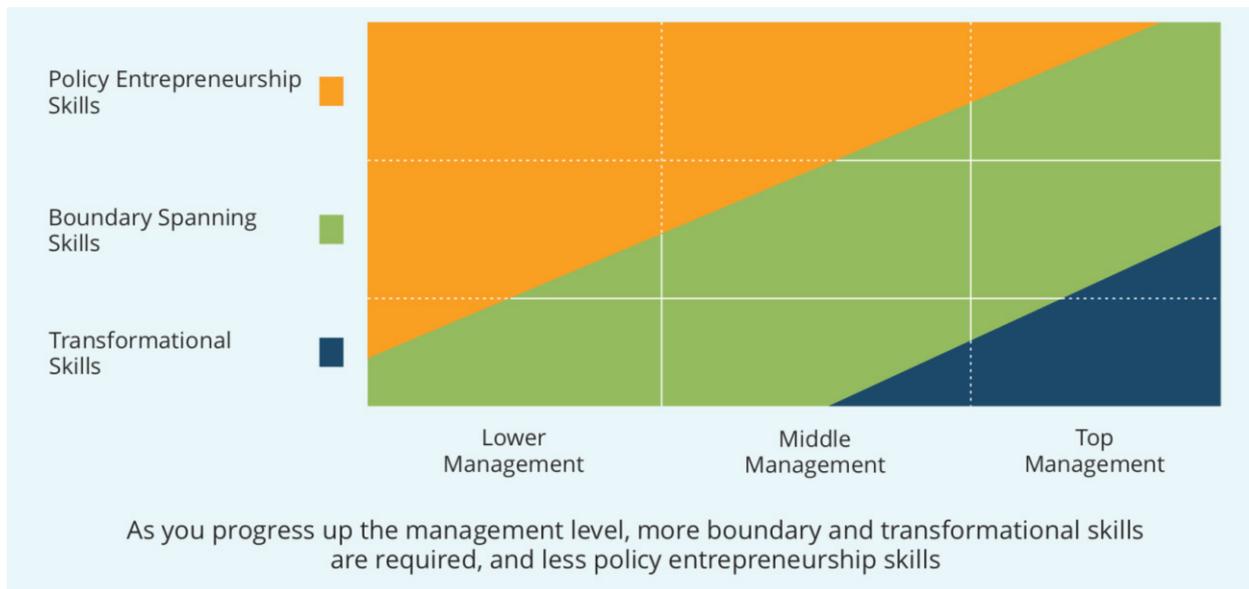
Adapted: Stephens et al (2019)

While this is easy to state on paper, most agile governance experiments have been limited to small departments or silos. Scholars have been debating the reinvention of government since the 1960s and the same problems arise: too bureaucratic! Too slow! Too much duplication leading to inefficiency and wastage of resources! Not enough focus on public value! There has been a high failure with e-government projects worldwide (close to 50%), suggesting that agile transformations are not going well. Yet there are many lessons in statecraft from which we can learn or adapt.

One of the challenges governments face is that with shifting agendas, they may forget to show that the results obtained are worth the costs of attaining the results. And future-oriented governments face the challenge of translating “big scary bets down into small testable bites” in an acceptable timeframe for its citizens. This requires skillful articulation of goals and its translation into visible outcomes so that the citizens do not lose interests.

Our first foray into the complexity of this topic was to identify the skills associated with an Agile Government. This was done with the Dubai Future Academy last year. Surprisingly, in the many studies published of future skills, what we found was that there was very little agreement on what skills will be required for future needs. Hence, through the workshop, it was concluded that what was needed was a bundle of three skills on top of literacy skills for agile government employees: policy entrepreneurship skills, boundary spanning skills and transformative skills (see Exhibits 2 & 3).

Exhibit 2: Agile Government Skills per Management Level



Source: Stephens, Spraggon and Vammalle (2019)

This area of public management is a new evolving field and one that the Mohammed Bin Rashid School of Government felt was timely to be brought into focus. The purpose of this conference is to push the boundaries of knowledge and share and disseminate information. This conference will bring together thought leaders from around the world - UAE, KSA, UK, Denmark, Estonia, France and USA to present some of their initiatives in agile government and their learnings - what worked and what did not. We will explore and debate topics like Agile Skills, Happiness and Wellbeing, Technology and Agile Governance. Issues like co-creation with the private sector, education and the growing importance of soft power will be highlighted. In addition, as the world heads towards the second space race, we will look at it as a new frontier for exploring Earth-related governance issues.

Exhibit 3: Agile Skills - What does the Research Say?

Appendix: Skills Mapping - Public Sector

	Skills Identified for Public Sector	British Council Future Skills (2018)	UAE 12 Advanced Skills for the Future Workforce (2019)	OECD 6 Innovation Skills in Public Sector (2017)	Education 2030 OECD Future of Skills (2018)	OECD High Performing Civil Service (2017)	WEF Future for 2022 (2018)	McKinsey 2030 (2018)	World Government Summit & PWC (2019)	LinkedIn 2020
LITERACY SKILLS (Individual and life long learning)	Growth Mindset	×	✓	×	×	×	✓	×	×	×
	Data Literacy	×	✓	×	×	×	✓	×	×	✓*
	Judgment and Decision Making	✓	×	×	×	×	×	×	×	×
	Scientific Literacy	×	✓	×	×	×	×	×	×	✓*
	Financial Literacy	×	✓	×	×	×	×	×	×	✓*
	Tech Literacy	×	✓	×	×	×	×	×	×	✓*
POLICY ENTREPRENEURSHIP SKILLS (More individual performance skills, and involves founder type skills and self-motivation to succeed)	Adaptability	✓	✓	×	×	×	✓	×	✓	✓
	Insurgency	×	×	✓	×	✓	×	×	×	×
	Enterprising	✓	✓	✓	×	✓	✓	✓	×	✓
	User Centricity	×	×	✓	×	✓	×	×	×	×
	Policy Advisory Skills	×	×	×	×	✓	×	×	×	×
	Commissioning Skills	×	×	×	×	✓	×	✓	✓	×
BOUNDARY SPANNING SKILLS (The ability to connect and work with different groups and individuals to get "buy-in" to deliver results)	Facilitation	×	×	×	×	×	×	×	×	×
	Reconciling Tensions & Dilemma	×	×	×	✓	×	×	×	✓	×
	Problem Solving	✓	✓	×	×	×	✓	×	×	×
	Communication	×	✓	×	×	×	×	✓	✓	×
	Network Management Skills	×	×	×	×	✓	×	×	×	×
	Negotiation	✓	×	×	×	✓	×	✓	×	✓*
	Coordinating with Others	✓	×	×	×	×	✓	×	✓	✓*
	Collaboration	×	✓	×	×	×	×	×	×	✓
	Resourcefulness	×	×	×	×	×	×	×	×	×
	Social & Cultural Awareness	×	✓	×	×	×	×	×	×	×
Improvising	✓	✓	✓	×	✓	✓	✓	×	×	
TRANSFORMATIVE SKILLS This is the ability of a leader to not only articulate path to the future and get buy-in through mentorship, building of teams and facilitating personal growth	High Level Strategic Planning	×	×	×	×	×	×	×	×	×
	Leadership	×	✓	×	×	✓	✓	✓	×	✓
	Complex Problem Solving	×	×	×	✓	×	×	×	×	✓
	Taking Responsibility	✓	✓	×	×	×	✓	×	×	×
	Service Orientation	✓	×	×	×	×	×	×	×	×
	Resilient (overlaps with EI)	×	×	×	×	×	×	×	×	✓*
	Emotional Intelligence	✓	×	×	×	✓	✓	✓	×	✓
	People Centericity	✓	×	×	×	×	×	×	×	×
	Creating Shared Value	×	×	×	✓	×	×	×	✓	×
	Engagement Skills	×	×	×	×	✓	×	×	×	×
	Empathy	×	✓	×	✓	✓	×	✓	×	×
	Advocacy	×	×	×	×	×	×	×	×	✓*
	Storytelling	×	×	✓	×	×	×	×	×	×

* Subset of skills category, implied in qualitative data and research

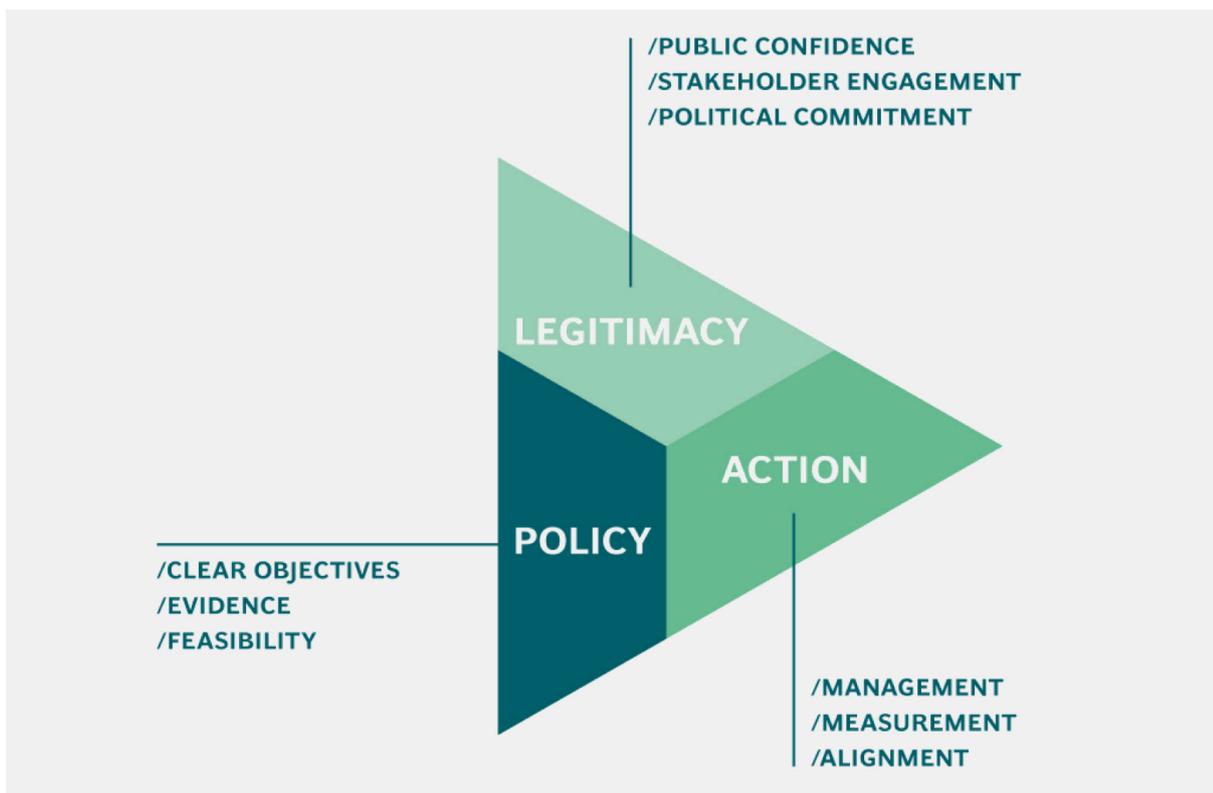
Source: Stephens, Spraggon and Vammalle (2019)

Prof. Melodena Stephens
 UAE PPF Academic Program Chair
 Professor of Innovation Management
 UAE Public Policy
 Mohammed Bin Rashid School of Government
 Dubai - UAE.

The Evolution of Future Government

Worldwide, the governments of the future will look nothing like the government of today simply because of rapid digitalization, increasing citizen voice and empowerment, and the shifting global landscape which seems battered by one crisis after another. If nothing else, globalization has proved how inter-connected the world is. According to the BCG Centre for Public Impact, all governments must be able to account for impact using the following tools: legitimacy, policy, and action (Exhibit 1). This is a complex process because in many places, the government structure is constrained by legacy systems, a bloated workforce that may not have private sector specialization, and poor political will. Further, this last decade, has seen an unprecedented level of volatility and crises that tend to spill across national borders increasing the urgency for change. To ensure that the public impact is at least stable and sustainable, future governments must be cognizant of the external and internal environment.

Exhibit 1: Public Impact Fundamentals



Source: BCG Centre for Public Impact

Externally, the world seems to be reeling from one crisis to another. If you plot the top ten World Economic Forum risks over the last 12 years and add the recent World Government Summit 2071 challenges you will find, that the predictability and consensus of future events is not a skill we excel in - even with the brightest minds (see Exhibits 2, 3 and 4). The year 2020 January began with (1) political instability, (2) the possibility of a pandemic (Novel Coronavirus), (3) natural disasters (volcano and earthquake), (4) locust swarms in East Africa ... and there are still 11 months to go.

Exhibit 2: WEF Most Top Five Most Likely Events (2007-2020)

Likelihood	1	2	3	4	5
2007	Breakdown of critical information infrastructure	Chronic disease in developed countries	Oil Price Shock	China Economic hard landing	Asset price collapse
2008	Asset price collapse	Middle East instability	Failed and Failing states	Oil & gas price spike	Chronic disease in developed countries
2009	Asset price collapse	Slowing Chinese economy (<6%)	Chronic disease in developed countries	Global governance gaps	Retrenchment from globalization
2010	Asset price collapse	Slowing Chinese economy (<6%)	Chronic disease in developed countries	Fiscal crisis	Global governance gaps
2011	Weather (storms & cyclones)	Weather (floods)	Corruption	Biodiversity Loss	Climate Change
2012	Severe Income Disparity	Chronic fiscal imbalance	Rising greenhouse emission	Cyberattacks	Water supply crisis
2013	Severe Income Disparity	Chronic fiscal imbalance	Rising greenhouse emission	Water supply crisis	Mismanagement of aging population
2014	Income Disparity	Extreme weather events	Unemployment or Under-employment	Climate Change	Cyberattacks

2015	Interstate conflict with regional spillover	Extreme weather events	Failure of national governance	State Collapse or Crisis	Unemployment or Under-employment
2016	Large-scale involuntary migration	Extreme weather events	Failure of climate change mitigation or adaptation	Interstate conflict with regional consequences	Major natural catastrophes
2017	Extreme Weather Events	Large-scale Involuntary Migration	Major Natural Disasters	Largescale terrorist attacks	Massive data fraud incidents
2018	Extreme Weather Events	Natural Disasters	Cyberattacks	Data fraud or theft	Failure of climate-change mitigation and adaptation
2019	Extreme Weather Events	Failure of climate-change mitigation and adaptation	Natural Disasters	Data fraud or theft	cyberattacks
2020	Extreme Weather Events	Climate Action Failure	Natural Disasters	Biodiversity loss	Human-made environmental disasters

■ Economic
 ■ Environmental
 ■ Geopolitical
 ■ Societal
 ■ Technological

Source: Adapted from World Economic Forum 2007–2020, Global Risks Reports

Exhibit 3: WEF Most Top Five Events with Most Impact (2007-2020)

Impact	1	2	3	4	5
2007	Asset price collapse	Retrenchment from globalization	Interstate and civil wars	Pandemics	Oil Price Shock

2008	Asset price collapse	Retrenchment from globalization (developed)	Slowing Chinese economy (<6%)	Oil and gas price spike	Pandemics
2009	Asset price collapse	Retrenchment from globalization (developed)	Oil and gas price spike	Chronic Disease	Fiscal Crises
2010	Asset price collapse	Retrenchment from globalization (developed)	Oil price spike	Chronic Disease	Fiscal Crises
2011	Fiscal Crisis	Climate Change	Geopolitical conflict	Asset price collapse	Extreme Energy price volatility
2012	Major systemic financial failure	Water supply crises	Food Shortage Crises	Chronic Fiscal imbalances	Extreme volatility in energy and agriculture prices
2013	Major systemic financial failure	Water supply crises	Chronic Fiscal Imbalances	Diffusion of weapons of mass destruction	Failure of climate-change mitigation and adaptation
2014	Fiscal Crises	Climate Change	Water Crises	Unemployment or Underemployment	Critical infrastructure breakdown
2015	Water Crises	Pandemics	Weapons of Mass Destruction	Interstate onflict with regional consequences	Failure of climate-change mitigation and adaptation
2016	Failure of climate change mitigation or adaptation	Weapons of Mass destruction	Water Crises	Large-scale involuntary migration	Severe energy price shock

2017	Weapons of Mass Destruction	Extreme Weather Events	Water Crises	Major Natural Disasters	Failure of climate-change mitigation and adaptation
2018	Weapons of Mass Destruction	Extreme Weather Events	Natural Disasters	Failure of climate-change mitigation and adaptation	Water Crises
2019	Weapons of Mass Destruction	Failure of climate-change mitigation and adaptation	Extreme Weather Events	Water Crises	Natural Disasters
2020	Climate Action Failure	Weapons of Mass Destruction	Biodiversity loss	Extreme Weather	Water crises

■ Economic
 ■ Environmental
 ■ Geopolitical
 ■ Societal
 ■ Technological

Adapted from World Economic Forum 2007–2016, Global Risks Reports

Exhibit 4: WGS: 2071 Major Global Challenges Necessitating Evolving International Ecosystems (adapted)

Critical Events	2018-2030	2030-2050	2050-2071
Anti-terrorism	✓	✓	✓
Climate-change prevention and management	✓	✓	✓
Regulations of new technologies	✓	✓	✓
Long-term investment of innovation breakthroughs	✓	✓	✓
Cybersecurity	✓	✓	Important
Workforce automation	✓	✓	
Important Events	2018-2030	2030-2050	2050-2071
Cities gaining foreign affairs influence	✓	✓	Critical

International public-private consortium for making new industries affordable	✓	✓	✓
Making healthcare sustainable and affordable	✓	✓	
Rising inequality, economic growth and social inclusion	✓	Critical	Critical

Source: WGS (2018) Government in 2071 p. 125

In the report titled “Government in 2071” by The World Government Summit, citizen needs seem to revolve around the following themes: Education, Health, Environmental Protection, Public order & Security, Economic Affairs, Housing & Mobility, Social protection and Legislation. Their concerns are more immediate and do not always consider megatrends. Managing this divide is not easy especially as governments of today face a number of challenges:

1. slow responsiveness of policy makers to trends and crises: Ministries tend to work in silos when the reality is that the problems they solve are complex and may overlap with multiple entities.
2. poor foresight: Hence policies that take a long time for approval and implementation may not have longevity. Worldwide government spending in R&D has
3. governance and accountability lapses with privatization: Till date the government is still in many economies the largest buyer of goods.
4. complex process with multiple touch points: Often governments are large employers of citizens, and hence need processes that create jobs. While from a customer perspective, there is a need for simplification of the process, using a one stop shop for services. This may mean making complex processes invisible to help streamline the customer experience.
5. duplication of work: Since departments work in silos, there is duplication of work. This is not just a wastage of talent but finite resources like time, money and may result in accountability issues.
6. Poor communication affecting trust and transparency: either messages are mixed, or not clear or not enough - either may affect the perception of trust and transparency.
7. growing need for inter-organizational & inter-governmental collaboration: as seen above, many macro-level risks need multi-organizational collaboration at both national and the international level. The process of doing so need to be

managed across stakeholders minimizing overlap, resources and ensuring relevant national impact.

The UAE is committed to shaping the future of governments and to that end has been holding the World Government Summit series annually since 2013 in Dubai. The platform brings government, business and civil society together with the goal of improving the future for the seven billion people on the planet. The Mohammed Bin Rashid School of Government (MBRSG) which began in in 2005 under the patronage of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai is the first research and teaching institution focused on governance and public policy in the Arab world. The School aims to support good governance in the UAE and the Arab world, and empower future leaders through an integrated system offering academic and training programs, as well as research and studies. The UAE Public Policy Forum is an annual conference held every year under Mohammed Bin Rashid School of Government, focusing on pushing the boundaries of knowledge to better equip the public service. It is an event open to the public and not only host panels, workshops and paper presentations but strives to disseminate the knowledge to a global audience. This year's theme, Agile Government is about spearheading a public sector change in mindset, culture, structure and processes and ensure that public value remains a human-centered activity well into the future.

Prof. Raed Awamleh

Dean

Mohammed Bin Rashid School of Government

Management of Country Reputation and Image:

A Proposed Road-map

Dr. Hossam Mohamed Elhamy, PhD

Assistant Professor

College of communication & Media Sciences

Zayed University, UAE

hossam.hassan@zayed.ac.ae



Abstract

The measurement and management of country reputation is a growing area of research and practice in public diplomacy. In an increasingly globalized world, countries are ever more worried about their reputation and image, and aim at managing and measuring it to gain competitive advantage. The number of countries that consider their reputation, image, and brand as serious strengths and support for their success in the long-term is increasing. This paper examines the concepts of Country Reputation & Country Image addressing the techniques of enhancing and managing them scientifically, specifying the variables and practices affecting country reputation and image, investigating the effects of Country Reputation. The paper presents a proposed roadmap for building and managing country reputation and image in a scientific manner.

Keywords: Country Reputation, Country Image, Management of Country Reputation, Country Reputation measurement.

Author Profile

Dr.Hossam Mohamed Elhamy: Hossam is an Assistant Professor in the College of Communication & Media Sciences at Zayed University, UAE. Hossam holds a PhD in Mass Communication obtained in 2009, and a Master of Mass Communication in 2004 from College of Mass Communication, Cairo University. He has worked at different Arab universities. He also has been a media consultant, lecturer & trainer for several governmental & non-governmental Arab organizations. Dr. Hossam also has worked as a journalist, writer, translator & short story writer. He has published several books, research papers in media and mass communication.

1.0 Introduction

In times of globalization, global media and public increasingly observe countries. Countries usually are rated and compared according to their economic development, political stability, effectiveness, the morality of their national policies, international politics, the attractiveness of their culture (Buhmann, Ingenhoff, White & Kioussis, 2019). Under the conditions of a globalized world and modern media societies, the image of countries is becoming more important compared to territory access and raw materials. As a result, leaders around the world are increasingly concerned about their country's esteem abroad. This has led to the institutionalization of image and communication management practices in various countries, as quantitative measures, indices, and rankings for the country image, brand, and reputation have become tremendously popular (Buhmann, 2016). Therefore, measurement and management of country reputation is a growing area of research and practice in public diplomacy (Kiambi & Shafer, 2017). In fact, countries nowadays are ever more worried about their reputation and aim at managing and measuring it to gain competitive advantage (Passow, Fehlmann & Grahlow, 2005).

2.0 Literature Review

Many studies from different disciplines approached the topic of Country Reputation. Michaelis, Woisetschläger, Backhaus & Ahlert (2008) investigated the effects of country of origin (COO) and corporate reputation on initial trust in a transition economy, and to compare these effects across two service industries. The study found that both reputation and the risk level of service have a significant main effect on initial trust (Ibid). Dimitrova, Korschun, & Yotov (2017) found that there is a relationship between Country Reputation and its export volume. According to this study, each improvement in a world ranking of a country's reputation for products (in a target country) is associated with a 2 percent increase in exports to that particular country (Ibid). Yoo, Lee & Jin (2018) examined the effects of celebrity credibility on Country's Reputation through a comparison of an Olympic star and a political Leader. The findings showed trustworthiness to be the credibility factor with the highest correlation to the country's reputation for the athlete and the political leader alike (Ibid).

Szwajca (2017) analyzed the reasons for the systematically increased interest in the country's reputation at the international level and found that the high importance of the country's reputation is due to a large number of dynamic changes occurring in the social, political, cultural and technological environment. The most important changes include; increase in the impact of various stakeholders (especially media, NGOs, law and regulatory institutions), technological advancement in media and communication fields, as well as deepening globalization processes which generate the need to respect

ethical principles, as well as unification and standardization of activities within global supply chains (Ibid).

In a similar study, Yoo & Jin (2015) studied the effect of the images of China's top leaders on the reputation of the country among residents of Korea, a nation that maintains close ties with China. Results showed a statistically significant decline in China's perceived reputation after exposure to the leaders' images (Ibid). Yousaf and Samreen (2016) examined the influence of information agents and cultural differences in reputation building of Pakistan and its subsequent effects on the tourism prospects of the country. Results determined that the perceptions attributed to Pakistan vary considerably around the world, with more favourable views in China, Middle East, and Africa, but the least affirmative views were in Europe. The perceptions constituted through media have a strong negative influence on the reputation of Pakistan. Lastly, social appeal, cultural appeal, and physical appeal of Pakistan are received and influence the people's intention to visit Pakistan (Ibid). Passow, Fehlmann & Grahlow (2005) studied the reputation and identity of the Principality of Liechtenstein (a German-speaking microstate), then presented a detailed model, enables governments to measure and manage their countries' reputation (Ibid).

3.0 Methods

The main objective of this paper is to: (1) examine the notions of Country Reputation and Country Image, and (2) present strategies and techniques of building, improving and managing Country Reputation and Country Image.

- The paper tries to answer different questions, include:
- What is the meaning and importance of country reputation and country image?
- How Country Reputation is measured?
- What Makes a country most reputable?
- What are the major strategies and techniques necessary for building and managing positive Country Image and Reputation?

To achieve objectives and answer the question, the researcher used methods of literature analysis of country reputation studies, using the Case Study and Case Analysis in analyzing a case in building, improving or managing country reputation. The word "case" in this research means a single instance of an event or phenomenon (Odell, 2001). The case study focused on studying the strategies China has applied to change and manage its reputation in recent years.

4.0 Country Reputation: A Theoretical Framework

4.1 Definition of Country Reputation

Country Reputation in the modern global system related directly to political, social, and economic changes within countries. In addition, Country Image has rapidly become one of the major concepts in political communication and diplomacy, this field aims to measure, build, and manage country image (sometimes called “Nation Branding”). Country Reputation is defined as an aggregate image of a country over a length of time (Yousaf & Li, 2015). Buarque (2017) argued that Country Reputation is a part of public diplomacy. Public Diplomacy is that kind of diplomacy that targets the public in foreign societies instead of relationships between the leaders and representatives of nations. Public Diplomacy is a key instrument of “Soft Power”, which is the ability of a country to get what it wants through attraction rather than coercion. It arises from the attractiveness of a country’s culture,

political ideals, and policies closely related to its image and reputation (Buarque, 2017 a).

The Country Reputation refers to perceptions of a country shared by domestic and international publics based on personal experience and information received (Yoo, Lee & Jin, 2018). The Country Reputation concept shares similarities with “Nation Branding” and is often related to the term “Country Image”, but these concepts are clearly distinguishable from one another. The perception at one point in time is called an “Image” and the perception lasting over time is known as “Reputation”.

The term “Country Image” is defined as the majority of representations of the nation in the mind of individuals. Social and historical factors, geographical position, weather and the media contribute to the definition of this image. Image and reputation are a matter of perception and are not synonyms for reality. Researchers argue that the overall reputation of a nation is a function of its reputation among various stakeholders and multiple categories (Yousaf & Samreen, 2016). Moreover, country image is conceived as a halo construct, evaluating the general characteristics of a country, i.e. economic situation, political stability, governance, tourism, geographical location, leadership style and culture among others.

Another developing field related to the notion country reputation is the term “Nation Branding”. The final aim of a policy of nation branding is to create an ideal positioning clear, simple and above all, differentiated, construed around the emotional features and quality of the country, symbolized both verbally and visually, interpreted by different audiences in a variety of contexts. This complex process could be achieved through applying techniques of branding, communication and marketing for the promotion of country image (Marino & Mainolfi, 2011). “Country Branding” is the deliberate efforts of

countries to create favourable perceptions of various country associations, e.g. tourist attractions, natural resources, history, culture, language, political and economic systems, social institutions, infrastructures and most importantly people (Yousaf & Li, 2015).

4.2 Importance of Country Reputation

In the modern, information, knowledge-based and economy era, one of the most important resources can guarantee strategic advantage and development prospects is reputation. A good reputation has become important for businesses, non-profit organizations, individuals (politicians, scientists, actors, artists, athletes ... etc.), as well as countries and international organizations (Szwajca, 2017). National reputation is a clear indication of the power of a nation as it reflects and - influences - its position in the global arena. The reputational capital of a nation determines its ability to build coalitions and alliances in order to achieve objectives of international policy, to influence consumer perceptions and behaviour in foreign demand, to attract investment and last but not least, to activate processes and channels for inbound tourist flows (Marino & Mainolfi, 2011).

There are a number of reasons motivate a country to convey a better image and reputation of itself. In some cases, image cultivation efforts are preceded by a crisis that requires repairing a nation's image among its international publics. In other cases, countries aim at increasing foreign investments through trade, donor aid, and increase the tourism flow (Kiambi & Shafer, 2017). A country with a good reputation is often perceived as a reliable country to invest in, to go on vacation, to do business with, and to live in (Yousaf & Samreen, 2016). In addition, countries with high levels of prestige can attract other states to support their foreign policy goals. Conversely, states with a negative global image struggle to cultivate international support ("What is the source of China's international prestige and influence?", 2019).

Reputation plays an important role when nations compete for foreign investments, tourism, and trade, and it is a critical element in public relations and diplomacy (Passow, Fehlmann & Grahlow, 2005) Country image and reputation influence: exports, foreign direct investment, the stability of international relations, the prosperity of national tourist industries, the attractiveness of domestic labour markets and education systems, and the degree of a country's political and economic influence in the international system (Buhmann, 2016).

In some cases, there is a kind of associations between organizations reputations and their home country reputation; also some organizations may be more closely associated with their country of origin than others may (Ingenhoff, et al. 2018) Studies argued that when a firm seeks to cultivate a new foreign market or expand its share of an existing market, it might realize that it is influenced by the country-of-origin reputation. If the firm does not have a readily identifiable brand name, then the country-of-origin reputation

associated with the firm could play a mediating role in solving the selection problem faced by the consumer when buying foreign products (Jiménez San-Martin, 2016).

Researchers found significant relations between country-of-origin reputation and purchase behaviour in marketing due to the association between country image and its products. Therefore, there are various pieces of evidence for the existence of the relationship between stereotypes linked to the country of origin and consumer assessment relative to its products in foreign markets (Marino & Mainolfi, 2011).

The country's reputation is associated with social identity, self-categorization, and collective self-esteem. The global reputation of a country has a lasting impression on the national self-image and identity of a country. Social science researchers believe that people's self-view varies in response to the relative social status of their group. Studies argued that the relative global status of a country (Country Reputation) influences, and associated with, citizen self-assessment and evaluations of people (Yousaf & Li, 2015). The citizens of a country with a good reputation feel pride in identifying themselves as nationals of their country, On the other hand, if citizens of countries confronting sustained reputation crisis internalize these stereotypes, it might affect the way they evaluate their country. Members of socially devalued groups find it difficult to attribute affirmative associations in the presence of negative stereotypes of their social group held by others.

4.3 Measuring Country Reputation

Effective management of a country's reputation lies in its ability to measure the perceptions of its target publics. Measuring a country's reputation is one of the first steps toward effective management of its reputation (Kiambi & Shafer, 2017). One of the most methodologically successful attempts to measure country's reputation is the Country Reputation Index (CRI) by Passow et al. (2005), which was based on the Fombrun-Reputation Institute (RI) Corporate Reputation Model (Fombrun and Riel, 1997) and Corporate Reputation Quotient (Yousaf & Samreen, 2016).

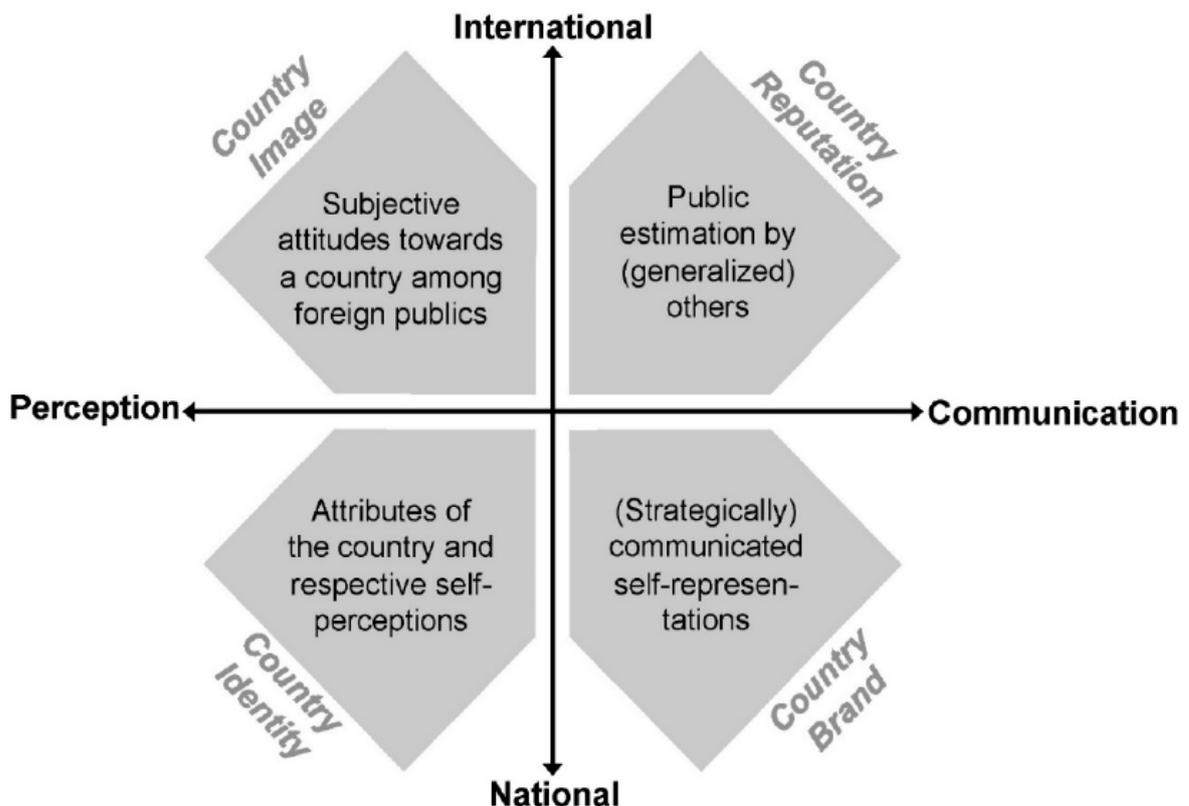
The study of Kiambi & Shafer (2017) Proposed dimensions for measuring the country reputation, these dimensions are security appeal, Emotional appeal, Physical appeal, Leadership appeal, Cultural appeal, Financial/economical appeal, Social/global appeal, Political appeal, people appeal, and sports appeal (Kiambi & Shafer, 2017).

4.4 The process of shaping Country Reputation

Country reputation based on socio-cognitive audience beliefs stems from the top-down and bottom-up dynamics involved in the country image. In other words, reputation is both the process of the diffusion of social assessments and the effect that this dimension has on the epistemic and pragmatic level of an individual's cognitive activity. The reputational component is accordingly, the result of a dynamic process over time, a dependent function of a complex system of interrelations with stakeholders and a specific country, in different contexts (Marino & Mainolfi, 2011).

Country reputation as well is driven by popular public opinion and should be viewed as the product of all the different forms of communication (Yousaf & Samreen, 2016). A conceptual grid uses the primal perspectives (national vs. international) and the constitutive processes (perception vs. communication) as basic criteria of demarcation of constructs. (See Exhibit 1).

Exhibit 1: A coordinative framework of country image, reputation, brand, and identity



Source: Buhmann & Ingenhoff, 2019

In this grid, country image and identity are understood as ‘perceptive constructs’ while country brand and reputation are approached as ‘constructs of representation’, which are formed primarily within public communication processes. Furthermore, country image and reputation are seen to emerge primarily within the sphere of a country’s international public – image on the subjective level, reputation as an emergent public estimation, and both commonly conceptualized as attitudinal constructs.

In addition, this grid also highlights that these four key constructs remain closely and mutually interrelated as a) public communication is individually perceived and individual perceptions become part of public discourse, and b) the constructed lines between the national and the international are permeable in both directions (Buhmann, Ingenhoff, White, & Kioussis, 2019).

5.0 A case of Management of Country Reputation: The Case of China

China’s favorability ratings are mixed at best, and predominantly negative, and declining over time. They have dropped fully 20% from 2009 to 2015. China first began to get interested in using soft power to improve its reputation from the early of the 1990s; it really took hold from the mid-2000s, perhaps 2007 when then-President Hu Jintao gave a speech in which he linked the rejuvenation of the Chinese nation to the ability of China to deploy soft power.

Originally, the Chinese thought you just needed economic and military power to be a global power, but in the early 2000’s they realized that image matters. At that time, China realizes that it is not enough to have economic and military power; it is more effective if you combine that with soft power. Therefore, China believes that it is not going to be a global power unless it has the ability to attract.

Probably the most interesting turning point at that level was when Hu Jintao addressed the 17th Congress of the Chinese Communist Party and said that China needs to invest more in its soft power. According to analysts, China has a strategy called public diplomacy than soft power, as they have taken their domestic propaganda template and apply it globally. China has also spent a lot of money on broadcasting and papers, turning Xinhua and CCTV into global media outlets.

Some analysts believe that China has a three-part strategy. The first is to develop the content of Chinese soft power, and then there is the traditional idea of culture: art, music, literature, Chinese traditional medicine, Confucianism. The third part of the strategy is developing the vehicle or the mechanisms by which China can project this soft power. China and other countries have realized that soft power comes from society. It does not come from the government.

The soft power of the country can be strengthened by policies if policies are seen as legitimate and attractive in the eyes of others. Soft power can be strengthened by the country’s performance. Analysts think that China gets a lot of soft power from its

astonishing record economically; raising hundreds of millions of people out of poverty, many people admire that produces soft power.

In the case of China, the central government has developed top-down strategies for enhancing China's soft power, which in conjunction with public diplomacy, are designed to cultivate a positive international image of China. ("Is China's soft power strategy working? | "ChinaPower Project", 2019).

In addition, China tried to become a good global citizen, and that has helped impress many other countries that China does not represent a threat. China has tried to convince the rest of the world that its ambitions are peaceful and that its ascent will stand as a kind of exception. Chinese diplomats and politicians worked to convince other leaders that cooperating with China would be a very lucrative thing.

The main way China promotes itself and tries to increase its prestige globally is through its sheer scale and economic muscle, it gives it a shock factor, those other countries cannot match. It seeks to present its development model as a very effective alternative to the traditional liberal free trade and democratic model of the West.

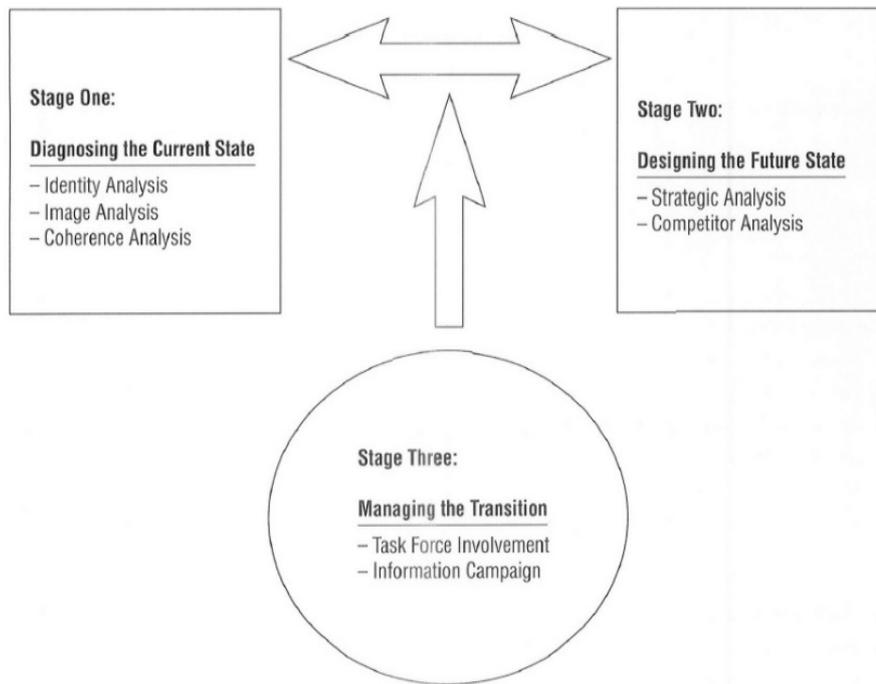
China's military modernization has been very successful in terms of perception, in terms of influence and the way China is viewed in the region, it has really been a game-changer (China Power project, What is the source of China's international prestige and influence?). Ingenhoff et al. (2018) pointed out that the Chinese government had an ambitious move to promote its country image and encourage its global business investments. With initiatives such as The Belt and Road, Chinese companies become increasingly under the spotlight of international media. Both the United States and Europe are important destinations of new China's global strategy (Ibid). The Belt and Road Initiative, which is considered the largest economic proposed path in the world, intended to promote China's economic and foreign policies and promote China's image as an economically advanced power (Liangxiang & Ganardan, 2018). An analytical vision confirms that China did better in Africa and Latin America than it did in its own neighbourhood in Asia. This is because China has problems with some of its neighbours, Japan, Vietnam, India, and the Philippines and so forth, this makes it hard to generate a lot of soft power there.

6.0 A Country Reputation Management: A Proposed Roadmap

An important component in the management of a country's reputation is the understanding and measurement of major factors influencing reputation formation. Actually, this is the only means by which reputation management is possible (Yoo, Lee & Jin, 2018). In terms of conceptualizing and measuring country images, studies often modify and apply models of organizational image and reputation in the analysis of country image and reputation.

Foubrun developed a three-stage model for country reputation management, as shown in Exhibit 2.

Exhibit 2: The three-stage model for country reputation management of Fombrun



Source: Passow, Fehlmann & Grahlow, 2005

According to the three-stage model for country reputation management, stage one will be based on carrying out a diagnostic review of the country's current state, while stage two will identify the desired future. Finally, the third stage is concerned with managing a smooth successful transition from the current status quo to the desired stage (Passow, Fehlmann & Grahlow, 2005).

In this model, stage one serves to examine the country's identity, image and coherence between the two. A detailed situation analysis needs to be conducted examining such areas as economy, political landscape, membership of international organizations, etc. In addition, media and communication analysis and government communication practices analysis may be added.

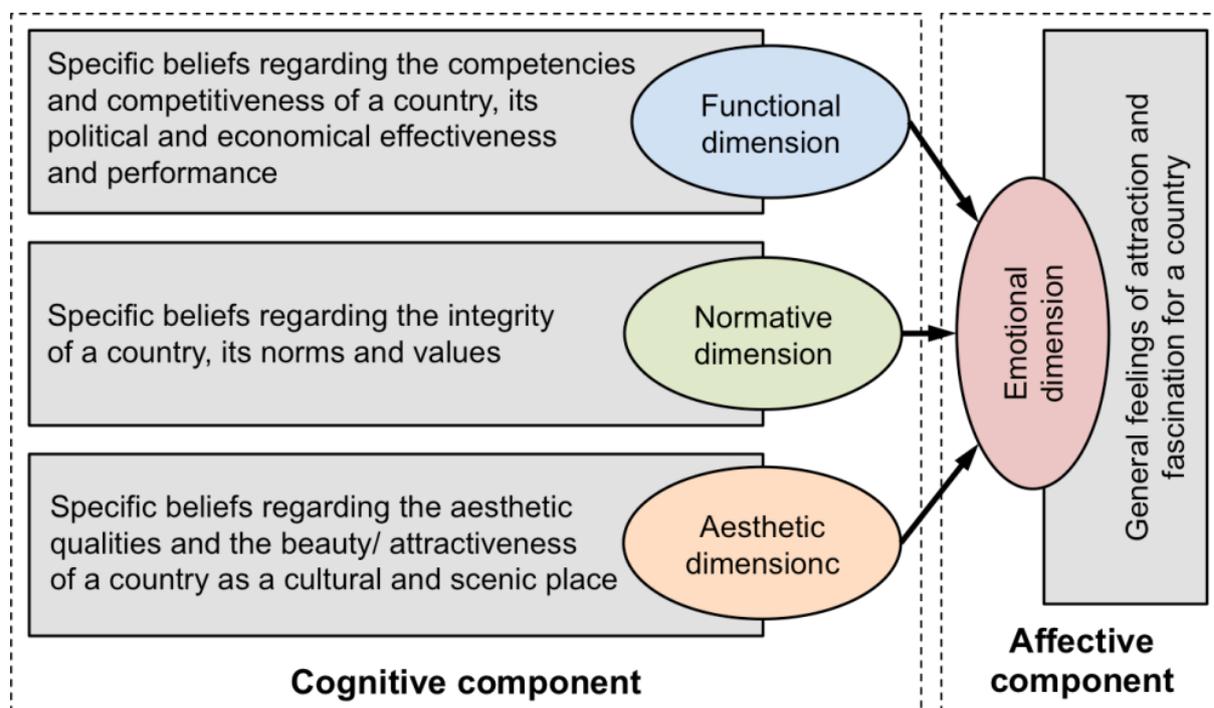
Stage 2 centred on the strategic position through scenario planning, trend analysis and competitive analysis, it serves as well to determine the country's desired future. At this stage, greater attention should be paid to the government's strategic intent, the country's competitive arena and its identity, especially, its uniqueness and core values, self-perception and desired perception.

Finally, stage three focuses on managing the transition from the status quo to the desired future. Fombrun suggests considering a taskforce involvement and an information campaign. This final stage should provide a detailed strategy, along with practical implementation measures (Passow, Fehlmann & Grahlow, 2005).

More recently, a new comprehensive four-dimensional model (4D Model) of the country image was proposed. The 4D Model specifies the construct as a subjective attitude towards a nation and its state, comprising specific beliefs and general feelings in a functional, a normative, anaesthetic, and an emotional dimension (Ingenhoff, et al. 2018).

According to this model, as shown in Exhibit 3, country image is defined as consisting of four different, interrelated dimensions: a functional, a normative, aesthetic and an emotional dimension (Buhmann, 2020).

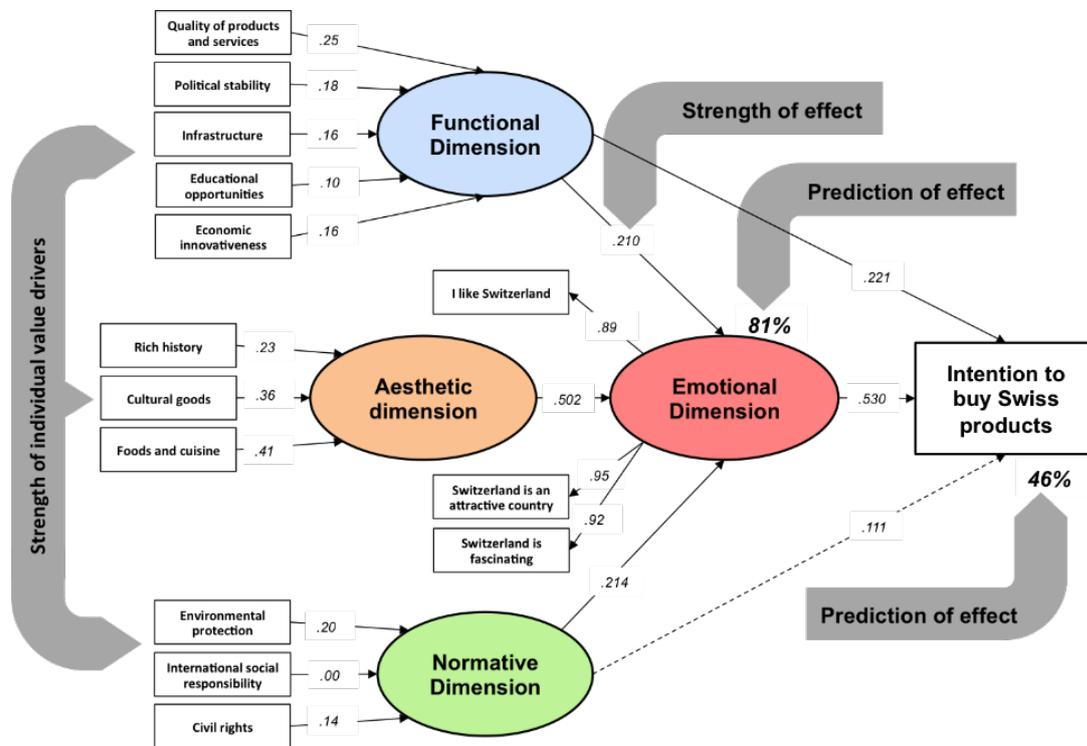
Exhibit 3: The four-dimensional “4-D Model” of country image



Source: Buhmann, 2020

This four-dimensional model can be empirically applied using survey instruments. Based on respective data, statistical analyses can show how functional, normative, and aesthetic beliefs about a country affect the formation of the emotional country image dimension—showing the country’s “ability to attract”. Furthermore, the emotional dimension of the country image mediates the effect of the cognitive dimensions on people’s behaviour. Such behavioural effects could be analyzed regarding a wide variety of outcome variables such as the willingness to politically support a country, invest in a country, or travel to a country (Buhmann, 2020). This is depicted in Exhibit 4.

Exhibit 4: Analyzing the constitution and affects of the country image using the “4-D Model



Source: Buhmann, 2020

7.0 Management of Country reputations and Image, Key considerations

It is necessary, initially to measure the levels of its prestige. It is important, as well, to assess the source of country’s international prestige and influence. To manage its image and reputation, the country should monitor and analyze its image and reputation at an international level at regular intervals.

At the beginning of strategic planning to build and manage the country’s reputation, it is important to ask basic questions and answer them. These questions are; which countries have the strongest reputation? Why did these countries have the best reputation in the world? What made them worthy of this position? How can you measure your country image and reputation? What can country leaders do to overcome a negative image or reputation? How does a country gain a favourable reputation? How can you manage your country image and reputation?

Despite the growing importance of the issue of country reputation management, many countries still encounter serious difficulties in activating a knowledgeable and systemic process of country reputation management. As a result, communicational strategies for better and more feasible management have to plan the images to be projected onto the global arena.

The country should be interested in understanding what the rest of the world thinks about it, and always pursues a promotion of its prestige and reputation internationally, as an important part of its foreign relations objectives (Buarque, 2017 b). The main determinants which are the basis for assessment of a country reputation is the instrument of international marketing by means of which various unique virtues of a given place such as local products, unique natural resources, convenient investment environment, attractive sights, beautiful landscapes, hospitable locals are promoted. It may be useful here as well to systemically use data mining techniques in media monitoring and analysis.

The starting point of planning for managing the country's reputation is to try to present the tangible and intangible features and characteristics of the country, the former in terms of quality, cost, accessibility, enjoyment of the physical characteristics of a country i.e. infrastructure, natural resources, landscapes, art cities (physical environment). Intangible components concern on the contrary the availability, flexibility, quality and cost of 'soft' resources: such as human resource competency and capacity, of a qualified or non-qualified nature and the prevalent culture of the political, social and economic system (Marino & Mainolfi, 2011).

Other actions to be taken into consideration consist in intervention by the nation in reference to the different contexts of analysis (politico-institutional, economic, technological, socio-cultural), for instance, governance of international policy, industry dynamics, orientation towards Welfare, social policies, cultural movements and political leanings etc. Governing authorities are ever more conscious of the fact that national reputation has significant effects on different contexts of action in a country (as a system), e.g. the creation of solid alliances with foreign partners, openness towards international markets, the promotion of national tourism and the attraction of investments (Marino & Mainolfi, 2011).

Besides that, the country must identify a marketing "identity" for itself, around which efforts are made to build and manage the state's reputation, for example, a country may present itself as a source of tourist attraction or as an area attractive to investment, etc. The ultimate aim of a policy of country branding and reputation management is to create an ideal positioning clear, simple and above all, differentiated, construed around the emotional features and quality of the country, symbolized both verbally and visually, to be interpreted by different audiences in a variety of contexts (Marino & Mainolfi, 2011).

A country should evaluate and manage its reputation by means of a global brand. Once the country brand image starts to acquire its own visibility and positive connotations, a

virtuous cycle is triggered, the country will promote the brand and in its turn, the brand will promote the country, nourishing its reputational patrimony as originally envisaged by strategic management (Marino & Mainolfi, 2011). The country should make fundamental changes, if necessary, in the prevailing political media discourse, which necessitates a kind of scientific analysis of the political and media discourse and diagnosing the problems this discourse suffers from and may have negative effects on country reputation.

Max Weber distinguished between the “Prestige of Power” and “Prestige of Culture,” he argued that the country reputation today can be analyzed as products of global communication processes that have been institutionalized since the late nineteenth century. At heart of these processes, Weber pointed out to the formation of global media publics and the rise of third parties (such as international organizations, political journalists, social scientists, art critics, or sport journalists, etc.), which specialize in the continual public observation, comparisons, and evaluation of states and other international actors. By doing so, these observers established new, universalistic criteria for reputation based on performance, rather than on political power (Buhmann, 2019).

A country’s ability to attract or persuade others is a key component of its “soft” power. Country reputation management should focus on influencing key actors in the public space and opinion leaders such as: political parties, presidential candidates, top governmental officials, public sector institutions, and all actors involved in influencing the political process or political outcomes. It is necessary for the country to identify a number of important files and high-level issues, to monitor and collect data on these issues, and to identify main actors and stakeholders, with the aim of offering other views on the same issue.

A country has to work to respond quickly to any kind of negative news by publishing the country’s official statements about the various events. It is important her to use “information management” and “media management” techniques, by clarifying some important information or some necessary documents, in order to control the media agenda. In some cases, especially in times of crisis, the country may need to mobilize a diverse spectrum of prominent and influential media professionals in various media outlets, such as magazines, radio, and television, to manage the flow of information in the media, and hence the public opinion. As well as hosting foreign dignitaries, and arranging their visit, with the aim of creating direct platforms for communication with various decision-making centres of other countries, as well as the media, executives and experts.

In addition, the country can use the capabilities of international broadcasting, the means of diplomatic communication, intellectual dialogues, communication between people, and forms of so-called cultural diplomacy such as cultural activities, artistic activities and language education. Country reputation cannot be manipulated by commercial marketing techniques, as countries are judged by what they do, not by what they say and, hence, the idea that country can merely advertise itself to a better reputation has proved

to be delusive. As Yousaf & Li (2015) argued, Country reputation is a strategic concept, grounded in long-term impressions that are constructed from images and actions of a country and, thus, branding only contributes to the country's reputation to a certain extent but does not entirely define it (Ibid).

For all of the above, a country should focus on realistic actions and activities, focus on real achievements happening in real life, rather than focusing on attributes and characteristics of the country, or just focusing on using propaganda for promotion or exaggeration, as some leaders, politicians or media consultants may think. Different researchers argued that there is no point in having good communication about the country if the reality does not match the image it tries to offer (Buarque, 2017 a). In modern societies, many institutions such as public institutions, research centres, universities, museums, sports organizations, civil society organizations, religious organizations and others have a role in the field of public diplomacy. Thus, it is necessary for the government to support those institutions and organizations instead of leading them.

Some countries have used international public relations firms to improve their image and reputation internationally, or to promote specific ideas and trends. Building, changing and improving Country Reputation or Image are not easy tasks, where that task faces a number of obstacles and challenges, the first of which is the difficulty of changing mental images that have been stuck in mind of others for many years, because the construction of these images naturally took several years, through extended cumulative processes. Hence, the success or failure of the country in fulfilling this mission depends on the nature of society, the extent of its openness, and its ability to accept new ideas, in other words, that depends largely on the prevailing cultural climate and political discourse. It is important for any kind of country's reputation management strategies and practices to emphasize the moral or ethical reference of politics, whether at the level of the state's relationship with its citizens or its relationship at the international level.

References

Buarque, D. (2017 a). The Tainted Spotlight – How Crisis Overshadowed Brazil’s Public Diplomacy Bet in Hosting Sports Events and Led to A Downgrade of the Country’s Reputation. *RevistaTrama*, 8(3).

Buarque, D. (2017 b). Book review: Fabiana Gondim Mariutti (2017) *Country Reputation: The Case of Brazil in the United Kingdom*. *Brasiliana- Journal for Brazilian Studies*, 6(1), 299-303. doi: 10.25160/v6.i1/br.1

Buhmann, A. (2016). *Measuring Country Image*. Wiesbaden: Springer Fachmedien Wiesbaden.

Buhmann, A.; Ingenhoff, D.; White, C.; Kioussis, S. (2019). Charting the landscape in research on country image, reputation, brand, and identity: A trans-disciplinary overview. In D. Ingenhoff, C. White, A. Buhmann, S. Kioussis (eds.): *Bridging disciplinary perspectives on the formation and effects of country image, reputation, brand, and identity*. New York: Routledge

ChinaPower Project, Is China’s soft power strategy working? | ChinaPower Project. (2019). Retrieved 30 December 2019, from <https://chinapower.csis.org/is-chinas-soft-power-strategy-working/>

ChinaPower Project. “What is the source of China’s international prestige and influence?” | ChinaPower Project. (2019). July 27, 2016. Updated May 21, 2019. Accessed December 4, 2019. <https://chinapower.csis.org/source-chinas-international-prestige-influence/>
Dimitrova, B., Korschun, D., & Yotov, Y. (2017). When and how country reputation stimulates export volume. *International Marketing Review*, 34(3), 377-402.

Ingenhoff, D., Buhmann, A., White, C., Zhang, T., Kioussis, K. (2018), Reputation Spillover: Corporate Crises’ Effects on Country Reputation. In: *Journal of Communication Management*, Vol. 22(1).

Jiménez, N., & San-Martin, S. (2016). The central role of the reputation of country-of-origin firms in developing markets. *Journal of Business & Industrial Marketing*, 31(3), 349–364.

Kiambi, D., & Shafer, A. (2017). Country reputation management: developing a scale for measuring the reputation of four African countries in the United States. *Place Branding and Public Diplomacy*, 14(3), 175-186.

Liangxiang, J. & Ganardan, E. (2018), Belt and Road Initiative Opportunities and constraints for the Gulf region. *Emirates Diplomacy Academy*

Marino, Vittoria & Mainolfi, Giada (2011), Analysing and Assessing the Country Branding Process. Perceived Reputation Capital of Italy on The Chinese Market. 2011 Cambridge Business & Economics Conference, June 27-28, 2011, Cambridge, UK

Michaelis, M., Woisetschläger, D., Backhaus, C., & Ahlert, D. (2008). The effects of country of origin and corporate reputation on initial trust. *International Marketing Review*, 25(4), 404-422.

Odell, J. S. (2001), Case Study Methods in International Political Economy. *International Studies Perspectives*. 2(2):161 - 176 · May 2001.

Passow, T., Fehlmann, R., & Grahlow, H. (2005). Country Reputation — From Measurement to Management: The Case of Liechtenstein. *Corporate Reputation Review*, 7(4), 309-326. doi:10.1057/palgrave.crr.1540229

Szwajca, D. (2017), The Importance of Reputation of a Country in the Process of Building Its Competitive Advantage on the Global Market. *Scientific Journal of Bielsko-Biala School of Finance and Law*. 2017 | No. 1 | 99—114

Yoo, J., & Jin, Y. (2015). The Effects of Leader Image on National Reputation: Influence of Chinese Presidents Hu Jintao and Xi Jinping on Korean Perceptions and Attitudes toward China. *Corporate Reputation Review*, 18(1), 50-64.

Yoo, J., Lee, H., & Jin, Y. (2018). Effects of Celebrity Credibility on Country's Reputation: A Comparison of an Olympic Star and a Political Leader. *Corporate Reputation Review*, 21(3), 127-136.

Yousaf, S., & Li, H. (2015). Social identity, collective self-esteem and country reputation: the case of Pakistan. *Journal of Product & Brand Management*, 24(4), 399-411.

Yousaf, S., & Samreen, N. (2016). Information agents and cultural differences as determinants of country's reputation and its subsequent effects on tourism prospects of a country in sustained crises. *Journal of Vacation Marketing*, 22(4), 365-384.

Managing Regional Risk and Volatility

An Agile Approach to Creating the Public Value of Security

Dr. Kristian Alexander

Assistant professor

College of Humanities and Social Sciences.

Zayed University, Abu Dhabi, UAE

E-mail: Kristian.Alexander@zu.ac.ae

Abstract

The United Arab Emirates enjoys proximity to many of the world's expanding markets and has established a reputation as a politically stable and an investor-friendly country. Yet it is located in a volatile environment and with a seemingly precarious regional order. Ongoing civil wars, regional power struggles, refugee crisis and a large unemployed youth, are complicating factors and have served to escalate and perpetuate conflicts. While the particulars of each conflict are unique, certain ingredients are common: collapsing socioeconomic order, a corrupt elite class, predatory authoritarianism, and growing grievances. These have led to instability and the growing security concerns for the UAE. Agile government responses are quintessential in dealing with and preempting these threats to create the public value of security. It is the combination of smart city/ safe city technology and Human Intelligence as well as soft power approaches that have come to characterize the UAE's counter-terrorism approach.

Keywords: tolerance, security, risk, uncertainty

Author Profile

Dr. Kristan Alexander: Kristian is an Assistant Professor at the College of Humanities and Social Sciences, Zayed University, Abu Dhabi, UAE. He previously taught at the University of Utah, the University of Wyoming in the United States and the University of Wollongong in Dubai. His research examines social movements in the Middle East and security related issues, with particular regard to migration in the GCC.

Managing Regional Risk and Volatility - An Agile Approach to Creating the Public Value of Security

1.0 Contextualizing Security Risks

Defining terrorism is not a straightforward matter. There is no single internationally accepted definition of what constitutes terrorism, and the literature is filled with competing definitions and typologies. Most analysts agree that terrorism is “an intentional act of violence or threat of violence by a non-state actor.” The term, terrorism, is ideologically contested and emotionally charged and has, in many instances, taken on pejorative connotations (Mahan and Griset 2008: 10).

While drivers of terrorist activity are often complex, there are several generalized and significant drivers and grievances that lead to terrorism. Some individuals choose to engage in terrorism due to dire poverty, unemployment, a strong sense of injustice, alienation from society, or ideological indoctrination. Many analysts distinguish between two main categories of drivers, namely “push factors,” which refer to those factors that are structurally situated in society, and “pull factors,” which are psychological in nature and can render individuals more susceptible to engaging in violent-extremist behavior. Examples of push factors would be: lack of socio-economic opportunities; marginalization and discrimination; poor governance, violations of human rights and the rule of law; prolonged and unresolved conflicts; and radicalization in prisons. Pull factors would be: individual backgrounds and motivations; collective grievances and victimization stemming from domination, oppression, subjugation or foreign intervention; distortion and misuse of beliefs, political ideologies and ethnic and cultural differences; and leadership and social networks (Martin 2011: 15).

The UAE government has declared a zero-tolerance policy towards terrorism and stated its commitment to working with regional and international partners such as the United Nations to confront extremism and terrorism. UAE anti-terror laws gives a glimpse at an official UAE mandated definition of terrorism. Article 1 of the law defines a terrorist outcome as: “Stirring panic among a group of people, killing or causing grave physical harm, or material damage to property or environment, disrupting/undermining the social domestic or international security, antagonising the state, impacting the public authorities in the State or other states or international organisations as they go about exercising their duties or receiving from the State or other states or organisations a benefit or privilege of any kind.” This definition, however, is vague and elastic and refrains from providing a concise explanation of what type of threats are particularly relevant in the context of counter-terrorism.(Khan 2019: 56).

However, in 2014 the UAE Cabinet published a list of 83 designated terrorist organizations, including the Islamic State (Daesh), Al Qaeda, the Muslim Brotherhood and a number of western organizations. This list fulfills a variety of purposes. First, it officially and publicly lays out in a transparent manner the groups that are formally considered to be terrorists. Second, it stipulates that any association with these terrorist groups, open or clandestine, will have severe consequences for nationals and residents. Third, by blacklisting these groups the UAE demonstrates to the international community its commitment to combating terrorism and extremism domestically and internationally. The decree criminalizes membership in these groups and allows the government to freeze these groups' assets (Kerr 2014).

2.0 Vulnerabilities and Risk Perceptions

The UAE is ranked 40 out of 162 countries in the 2018 Global Peace Index, making it the third most-peaceful country in the region, according to the report. The report found there was a direct relationship between peace and increased economic development that led to low levels of grievances, and the UAE scored well on many of the internal indicators, including economic diversification and massive investments in renewable energy. The UAE also ranked very favorably on the 2019 Global Terrorism Index, which took into account the number of terrorist incidents, deaths caused by terror, and total value of property damage ranked. According to the report, Iraq, Syria, and Yemen, were among the top 10 countries most impacted by terrorism, while the UAE prospects of being impacted by terrorism was categorized as “very low,” showing low levels of violent crime and homicide (Global Terrorism Index 2019: 18).

The UAE's security establishment contemplates, evaluates, and assesses potential scenarios in which the country might be targeted by a terrorist actor. Risk assessment factors into the process of comparing diverse security threats (Iran, the Muslim Brotherhood, airline safety, Daesh) and determining the most immediate security concerns. With a population where over 85% are expatriates representing over 200 countries, being a strong transit hub with tourism as a key contributor, the ability to prevent and prepare for terrorism is key to the economic stability of the country and the region as such acts cannot be contained and do spillover.

One example of a risk assessment was the case IS (aka, Daesh). Daesh (the self-proclaimed Islamic State of Iraq and the Levant) quickly became the most-feared terrorist organisation in the region. Unlike Al Qaeda, Daesh managed to control and expand the territory it conquered — though it has subsequently suffered significant territorial losses in Iraq and Syria to both government and rival extremist groups. Daesh was quite adept at using social media to recruit and attract young supporters and sympathisers from different parts of the world. The terrorist group diversified its military strategy by launching attacks in the West such as the attacks in France in November 2015 and in Belgium in March 2016.

3.0 Factors that Might Lead to Terrorism: Lone-Wolf Terrorists and Return Fighters

In the last ten years lone-actor (lone-wolf) terror attacks have increased in various countries. Militants involved in such attacks are usually home-grown “self-starters” who are inspired by the jihadi movement but who might have little or no actual connection to these groups. Instead, many use the internet and social-networking tools to find propaganda and research attack methods. While lone-actor attacks have a comparatively small chance of being discovered and stopped, they are not very efficient as they cause relatively little damage. Terrorist organizations usually target public spaces because there are high concentrations of people and the attack will thus generate more media coverage and create more fear and panic in the general population. These spaces also symbolize a Western lifestyle of which the terrorists might disapprove. Recently, there has been a general shift towards simpler attacks against non-traditional and softer civilian targets (Simon 2016: 3-6).

There has been one isolated incident in 2015 when a Yemen-born Emirati national attacked a Hungarian-American teacher. Police tracked down the “face-covered suspect” within hours and she was subsequently arrested and ultimately convicted of murdering the woman in what police believed was an apparent attack on the victim’s nationality. This incident was classified as a lone-wolf terrorist attack and speaks to the potential danger emanating from the self-radicalized.

Another growing concern for UAE authorities has been the return of IS fighters who operated and gained combat experience in Iraq and Syria. To prevent any spillover attacks, the UAE has not officially admitted any Syrian refugees (it has admitted Syrian nationals on work visas) and has run strict security background checks on various individuals that are nationals of these as well as other Middle Eastern countries (Egypt, Lebanon, Iran). Analysts and media outlets have created a narrative of an undetermined and potentially large number of young Muslims from Europe and Muslim-majority states in the Middle East, North Africa, and Central Asia who were drawn to join terrorist groups returning and plotting attacks. Many were drawn to the war because of religious conviction, while others were fighting a perceived Western invader and existing Arab oppressor. These are pull factors for many potential terrorists (Byman 2019: 15).

The role of security forces in foiling potential attacks is instrumental. In a large number of cases, intelligence services have tracked, monitored, and arrested returnees, a job made easier since many of the extremists exposed themselves online. Within the country, those suspected of becoming radicalized have been referred to guidance-rehabilitation centers. For example, The UAE suspended the activities of the Muslim Brotherhood (MB) in 1994, and there were increased efforts to clamp down on the organization, especially after 2012 Egyptian elections. At that time, it was assumed that MB members had infiltrated several educational facilities in the UAE and using its religious ideology to

“brainwash” innocent and unassuming high-school students. Al Islah, an offshoot of the MB, was identified as a danger to national security in the aftermath of the Arab Spring. Security and intelligence services were monitoring the Islamist scene and uncovered small cells of local groups that were captured, arrested, and incarcerated. The cells were fairly small in number and turned out to have little mobilizational capabilities, reflecting the lack of popular appeal of the MB (Ibish 2017: 39-41).

4.0 Approaches to Countering Terrorism

As explained above, UAE is very cognizant of the regional challenges, the political players and key actors that may destabilize the country,

Strategic Communication and Messaging: The government is proactively engaged in creating safe spaces and handling grievance points. The UAE is a tribal-based monarchy in which the ruler is obliged to see to the well-being of his people. Most citizens have access to government decision-makers through the majlis, where petitions and complaints are put forward by ordinary Emiratis and often dealt with favorably. This system of exclusive responsiveness enables access to the political process. The rulers of the emirates are widely viewed as benevolent and fair leaders who are in tune with the needs and desires of the local population. Emirati leaders generate much of their legitimacy through charisma and the distribution of welfare benefits. Tradition, effective governance, and the character of the UAE’s rulers are the keys to their success. By sustaining economic growth and diversifying the economy, leadership can lay out clear social-development objectives that include a modern education system, a knowledge-based economy, and a strong sense of national pride and identity (Davidson 2013: 66).

Education: This is not to say there are no grievances. Over the years, there has been an underlying sense of dissatisfaction with the large number of expatriates flooding the country, a growing concern over the loss of national identity, and the repercussions in the aftermath of economic downturns. But overall, the government is perceived as having done a relatively good job addressing and dealing with the economic crisis (Ulrichsen 2017: 69-71). To that extent, the country has heavily invested in creating and upholding the quality of Tolerance. In 2016, a Minister of State for Tolerance was appointed. The year 2018 was declared the year of tolerance and included for example a visit by the Pope. The country invested heavily in higher education, providing free education for nationals and training them for the job market.

Community Engagement: There have been examples of feelings of dissatisfaction amongst particular segments of the population, especially in the northern emirates, in the time after the Arab Spring. The government responded swiftly to grievances and ordered an investment of 1.5 billion US in electricity and water projects. The UAE federal government also cut food prices by 20-30% for a month to pre-empt any dissent (Forstenlechner, Rutledge, Alnuaimi 2012: 56). The government has been at the frontline

of female empowerment in the Middle East, encouraging and placing Emirati women in responsible positions in the public and private sectors. Gender equality has become a hallmark of the government's public policy. Engagement with the community happens throughout the year. It is not unusual to see the rulers of the emirates and countries walk without any security details and interact with the public. This accessibility creates a high trust as seen with the latest Edelman 2019 Trust barometer. There is religious freedom in the country and all religious communities have houses of worship and opportunities to congregate.

The UAE provides lucrative job opportunities to hundreds of thousands of expatriate professionals whose experience is highly sought after. Rapidly expanding non-native populations in the UAE have created a need for workers across a range of other industries, from finance to education to healthcare. Tax-free salaries are a big incentive for many workers, with most employers offering packages that include an accommodation allowance, health insurance, school fees, and other amenities. Expat societies have sprung up in all the main cities, organising cultural and networking events for the community and providing vital support for new arrivals and long-term residents (Lekhraibani, Rutledge, Forstenlechner 2015: 112). According to Davidson (2013), these temporary economic migrants, skilled or unskilled, mainly reside in the UAE for 2-5 years with the main purpose of saving money (based on a tax-free salary), and "... have no real interest in the politics of their host country, and certainly never revolutionary politics" (p.63).

De-Radicalization, Disengagement and Reintegration: The susceptibility of youth to radicalization is linked to a multitude of factors, including their geographic proximity to a terrorist group, economic vulnerability, perceptions of social or political marginalization, exposure to permissive social networks, and exposure to extremist propaganda (Darden 2019: 1). Many young people in the Arab world are highly educated yet unemployed or underemployed. They are also highly tech-savvy and connected via social media. They express different desires and values than their parents' generation and are more risk-averse. Many young people in the Middle east after the Arab Spring resorted to apathy or hatched out plans to migrate and start a new life elsewhere. Some succumbed to the temptations and propaganda of violent-extremist organisations, embracing a radical ideology (Kinninmont 2015: 28).

The UAE government has recognized the potential and underlying concern of its own youth and has addressed it by taking a number of steps. It has also established the UAE Minister of State for Youth Affairs in 2016, catering to the concerns and aspirations of the youth by creating Youth Circles or Youth Consultative Councils in many of the Emirates, thus providing an opportunity for the youth as aspiring key members of society to actively participate in decision-making and leadership training at the ground level. Lastly, the UAE has invested heavily in leisure activities, such as sports and recreational facilities (entertainment parks, cinemas, theatres etc.), thereby affording its youth far greater choices on how to spend their leisure time (Alsayed 2014: 94).

5.0 Counter-terrorist measures by the government: Agility in action

It is clear that terrorist threats are constantly evolving and are diffuse. Terrorist actors come in different varieties and have different profiles. Terrorists adapt to security measures and often look for 'soft' targets to strike at. This poses one major challenge. Furthermore, a conventional approach of decision-making in national security organizations is typically top-down, exhibits slow procedures, risk aversion, manifests itself in a lack of coordination across ministries. The threat emanating from terrorism is increasingly emerging in the digital sphere. Data collection is immense, but it poses a problem in terms of having to process and connect the dots. Online platforms are used to indoctrinate and influence young people in engaging in illegal activities (Muggah 2018). The UAE has taken on elements of the agile paradigm to better prepare itself and preempt potential and developing threats. For one, the Federal Government has put in place information technology that enables it to survey and monitor online activities on various sites. It has also augmented its Smart City/Safe City concept to include CCTVs that connect public and private security systems to overcome blind spots. The deterrence systems (smart cameras, streetlight, anti-vehicular systems, protection of infrastructure) is employed in combination with Human Intelligence. Personal communication with 'potential suspect's' and using informal consultation is also part of the agile approach. Lastly, the government has put in place 'top teams' with some autonomy to react to impending situations and to contemplate hypothetical 'worst case scenarios' to design response plans for the eventuality of such a scenario playing out (PWC 2014).

A multifaceted approach towards dealing with terrorist related activities and threats has been put forth by the UAE authorities over the years and the state authorities continue to do so. The UAE increased intelligence efforts and augmented surveillance of suspected political/religious activists. Over the years the government has made tremendous investments in top-notch technology and has also undergone extensive training for its personnel. Respective Security Services have invested in sophisticated and innovative technological solutions such as biometric systems and databases across the spectrum of law enforcement and border management to collect intelligence and have also employed facial recognition via CCTV surveillance in order to survey suspected militants and potential radicals (Helfont 2018: 460). The UAE has constantly increased its share of internal security expenditure in relation to the rest of the security market (e.g. private security, fire and electronic security, etc.) in order to protect some of its immense projects (protection of borders, petrol fields, or strategic buildings) due to frequent terrorist threats and an extremely dynamic economic development that manifests itself through the creation of modern, ever-expanding infrastructure (Ibish 2017: 45).

In addition, the UAE, in coordination with the U.S., launched the Sawab Centre, a digital platform (communication centre) located in the UAE's capital. Its mission is to raise

awareness among social-media users and counter the spread of Daesh propaganda messages online. By monitoring online activities related to Daesh and releasing videos and Twitter messages in English and Arabic, the UAE, via the Sawab Centre, has been able to promote an alternative vision and voice to that of Daesh. This soft-power approach focuses on the counter-narrative of moderate Islam, debunking the radical narratives espoused by terrorist organizations (Ulrichsen 2017: 208). To complement Sawab, the UAE has also initiated an International Dialogue on Countering Extremism by establishing the Global Center for Excellence in Countering Violent Extremism, a “think and do” tank that provides communities and governments around the world with tools to increase their capabilities to counter extremism and recruitment efforts by terrorist organizations. Hedayah was created by the UAE, U.S., and other member countries of the Global Counterterrorism Forum in 2012 (Katzman 2019: 24).

From a legal vantage point, the UAE has issued a specific federal Anti-Terrorism Law (2015), which incorporates tough punishments for “acts related to extremism”. The law defines terrorists as people committing any act considered illegal that would lead to results of terror, whether directly or indirectly. The law also includes areas such as human trafficking and established guidance centers to rehabilitate those exposed to extremism and integrate them back into society. In addition, the Federal Decree Law No. 2 of 2015 on Combating Discrimination and Hatred criminalises any acts “that promote religious hatred through any form of expression”. It makes it a punishable offense to discriminate against individuals or groups on the basis of religion, caste, doctrine, race, color, or ethnic origin. Lastly, the UAE’s Federal Law No. 9, introduced in 2014, aimed to close the gaps in the monitoring and prosecuting of entities and individuals engaged in fundraising for extremist purposes, as defined by the authorities. These amendments codified into law that suspicious transactions related to terrorism financing are a criminal offense (Gulf News, August 20, 2014).

The purpose of enacting strict law is meant to serve as a deterrent. The Federal Supreme Court, for example, has sentenced four Emiratis to death and several others in absentia, for travelling to Syria to fight for Daesh. The accused were tried in the highest court in the country, which signals the severity of the crimes and makes an example out of those who are proven guilty. Trials such as those are quite rare in the UAE, but they show that even young people are accountable for their actions and that those convicted of terrorist offences face capital punishment, life imprisonment, and fines of up to Dh100 million (Gulf News, October 1, 2019).

Under the tutelage of Lieutenant General Shaikh Saif Bin Zayed Al Nahyan, UAE Deputy Prime Minister and Minister of Interior and Vice-Chairman of the Emirates Identity Authority, the government has been at the forefront of promoting “positive patriotism”. The goal is to instill a strong sense of nationalism and loyalty to the nation by practising commitment to citizenship obligations. One manifestation of positive patriotism was the mandatory military conscription for all men aged between 18 and 30 as well as the establishment of Martyrs’ Day to be observed on November 30 of each year to

commemorate the sacrifices that UAE citizens have made in defence of the nation at home and abroad (Ardemagni 2019).

Part of the soft response to terrorism is also enshrined in the concept of tolerance. In the UAE, the notion of national identity is intrinsically linked to the late Shaikh Zayed Bin Sultan Al Nahyan, the charismatic founding-father and driving force behind the formation of the UAE. He personifies much of what many Emiratis uphold or strive for. His virtues and persona and his frequent utterances about tolerance have become the benchmark and ideal for what it means to be an upstanding citizen of the UAE. The discourse on tolerance is meant to generate social cohesion and state legitimacy and is part of a broader national education program, in particular, targeted at young Emiratis, socializing them into the principles of the state and encouraging them to practice tolerance via volunteer associations. The promotion of tolerance, moderation, and interfaith dialogue serves a particular function. According to Fahy (2018), "... Gulf states have found in the political discourse of 'moderate Islam' an important vehicle of representation, wherein misconceptions about Islam might be dispelled, extremism disavowed, and ties with the West strengthened. Ideals such as tolerance or moderation, in other words, have come to serve as important indexes, by which the West distinguishes between 'good Muslims' and 'bad Muslims', and by which Muslims themselves seek to define their religion against the terrorists who claim to act in the name of Islam. The promotion of tolerance, however, should also be understood more broadly in terms of a concerted effort to construct a counter-narrative to Western civilisational discourses" (p. 321).

References

Alsayed, W. 2014. "The Impatience of the Youth: Political Activism in the Gulf." *Survival: Global Politics and Strategy*, 56(4), 91-106

Ardemagni, E. 2019. "Gulf Monarchies's Militarized Nationalism." Carnegie Endowment for International Peace, Washington D.C.

Barzegar, K. 2014. "Iran's Nuclear Program." in Mehran Kamrava ed. *The Nuclear Question in the Middle East*. Columbia University Press, 225-264

Berti, B. and Guzansky, Y. 2015. "Gulf Monarchies in a Changing Middle East: Is Spring far behind?" *Orbis*, 59(1), 35-48

Brzuskiewicz, S. 2018. "Hard and Soft Strategies: The UAE's Approach to Counterterrorism." *Terrorism Monitor*, XVI(9), 5-7

Byman, D. 2019. *Road Warriors: Foreign Fighters in the Armies of Jihad*. Oxford University Press.

Carrasco, M. et al. 2018. 'Agile as the Next Government Revolution.' Boston Consulting Group. <https://www.bcg.com/publications/2018/agile-next-government-revolution.aspx>

Darden, J. 2019. *Tackling Terrorist's Exploitation of Youth*. American Enterprise Institute.

Davidson, C. 2013. *After the Sheikhs. The Coming Collapse of the Gulf Monarchies*. Oxford University Press.

Davidson, C. 2009. *Dubai. The Vulnerability of Success*. Hurst & Company.

Davidson, C. 2009. "Dubai and the United Arab Emirates: Security Threats." *British Journal of Middle East Studies*, 36(3), 431-447

Fahy, J. 2018. "The International Politics of Tolerance in the Persian Gulf." *Religion, State & Society*, 46(4), 311-327

Forstenlechner, I., Rutledge, E. and Alnuaimi, R.S. 2012. "The UAE, the 'Arab Spring' and Different Types of Dissent." *Middle East Policy* 19(4), 54-67

Giusto, H. 2016. *Daesh and the Terrorist Threat: From the Middle East to Europe*. Foundation for European Progressive Studies. Brussels, Belgium.

Global Terrorism Index. 2019. *Measuring and Understanding the Impact of Terrorism*. Institute for Economics & Peace. IEP Report.

- Hedges, M. and Cafiero, G. 2017. "The GCC and the Muslim Brotherhood: What does the Future hold?" *Middle East Policy*, 24 (1), 129-153
- Helfont, Tally, 2018. "A More Forward Role for the Gulf States? Combating Terrorism at Home and Abroad". *Orbis*, 62(3).454-472
- Hollywood, J. et al. 'Connecting the Dots' in Intelligence. Detecting Terrorist Threats in the Out-of-the-Ordinary'. *Rand Research Briefs*.
- Ibish, H. 2017. *The UAE Evolving Security National Security Strategy*. The Arab Gulf Institute in Washington.
- Jarvis, L. and T. Legrand. 2018. "The Proscription or Listing of Terrorist Organisations: Understanding, Assessment and International Comparisons." *Terrorism & Political Violence*, 30(2), 199-215
- Kamrava, M. 2018. *Troubled Waters. Insecurity in the Persian Gulf*. Cornell University Press.
- Katzman, K. 2019. *The United Arab Emirates (UAE): Issues for US Policy*. Congressional Research Service. Washington, DC. RS21852.
- Kerr, S. 2014. "UAE Blacklists 83 Groups as Terrorists." *Financial Times*, November 16, 2014.
- Khan, Mehmood-ul-Hassan. 2019. "The UAE Anti-Terror Law. Right Move in the Right Direction." *Defence Journal*, 56-58
- Kinninmont, J. 2015. *Future Trends in the Gulf*. Chatham House Report. The Royal Institute for International Affairs.
- Krane, Jim. 2010. *City of Gold: Dubai and the Dream of Capitalism*. Picador.
- Lekhraibani, R., Rutledge, E. and Forstenlechner, I. 2015. 'Securing an Open and Dynamic Economy: The UAE's Quest for Stability' *Middle East Policy*, XXII(2), 108-124
- Mahan, S. and P. Griset. 2008. *Terrorism in Perspective*. 2nd edition. Sage.
- Maras, M.H. 2015. *Transnational Security*. CRC Press-Taylor & Francis.
- Martin, G. 2011. *Terrorism and Homeland Security*. Sage.

Muggah, R. 2018. 'How smart tech helps cities fight terrorism and crime.' World Economic Forum. <https://www.weforum.org/agenda/2018/06/cities-crime-data-agile-security-robert-muggah/>

Neumann, P. 2015. *Victims, Perpetrators, Assets: The Narrative of Islamic State Defectors*. ICSR, Kings College London, UK.

PWC. 2014. 'Agile Defense Sustainable Cost Reduction on the Path to Greater Agility'. The Public Sector Research Center

Simon, J. 2016. *Lone Wolf Terrorism: Understanding the Growing Threat*. Prometheus.
Ulrichsen, Kristian Coates. 2017. *The United Arab Emirates. Power, Politics, and Policymaking*. Routledge.

Vakil, S. 2018. *Iran and the GCC. Hedging, Pragmatism and Opportunism*. Chatham House.

The Agile COPSS:

The Invisible Hand to Managing Innovation

Dr. Sid Ahmed Benraouane

Senior Lecturer, Carlson School of Management,
University of Minnesota, USA
Chair, US-ISO Innovation Working Group
Email: sbenraouane@gmail.com

Colonel Dr. Saleh Al Hamrani

Deputy Director of Excellence and Pioneering
Dubai Police, United Arab Emirates
Email: salehalhamrani@gmail.com



Abstract

The new United Arab Emirates Government Excellence Model makes of organizational agility a cornerstone to government performance and a sine qua non condition to a successful approach to innovation management in the government sectors. In this paper we review different conceptual frameworks on organizational agility, and we suggest a new framework we call the Agile COPSS. This new framework provides government entities' leadership with a template on how to build organizational agility capability to manage innovation programs while adapting organizational structure to the changing environment. It also allows manager to assess the maturity level of the government entity through the COPSS Agility Maturity Index.

Keywords: Agility, Innovation management, Lean Startup, Design thinking, Ambidextrous organization, Change management.

Author Profile:

Professor Sid Ahmed Benraouane: Sid is the Chair of the United States ISO Working Group tasked with the publication of an Innovation Management System Standard (ISO 56002). He is a thought leader with 20+ years of experience in multiple sectors, regions, and industries. Currently, he advises Dubai Police on innovation, digital transformation, and future foresight. Sid is a speaker at the World Government Summit on AI and Ethics, AI Everything Conference, and Think AI Conference organized by the Prime Minister Office to address issues that relate to the implementation of AI in the government sector. He is also a member of the Advisory Board of the Abu Dhabi Digital Authority's Digital Next Conference. Sid has authored two textbooks and holds a Ph.D. from the University of Minnesota, United States.

Colonel Dr. Salah Rasheed AlHamrani: Salah is the Deputy Director of the General Department of Excellence and Pioneering at Dubai Police, United Arab Emirates. He is a certified Chief Innovation Officer and an Innovation Assessor certified by the Global Innovation Network, the US based innovation network leader. Salah is also a Certified Management Consultant from the UK Chartered Management Institute and he has achieved a Kaplan Norton Master Class certificate in Balanced Score Card. A Six Sigma Black Belt expert, Salah is an ISO auditor and a graduate of London School of Economics specializing in government policy. He was awarded numerous awards in excellence for his public service.

The Agile COPSS: The Invisible Hand to Managing Innovation

1.0 Introduction

If you have been managing innovation in a government entity in the last ten years, you probably know by now that the traditional concepts of organizational design and closed-system approach to innovation have come to terms. These old ways of managing innovation in the government sector are being challenged by a new and an emerging framework in which agility, flexibility, design thinking, lean startup, and open innovation have become the rule rather than the exception. The integration of global markets, the acceleration of technological breakthrough, and the change in demographics are creating a new reality in which public sector manager needs to learn how to reconcile paradoxes, manage interdependencies, and thrive in a world of unknowns.

The new Government Excellence Model framework, recently launched by the Government of UAE aims at providing managers leading different government services with a framework that helps them address change and uncertainty. It aims at challenging government leaders to think innovatively about how to design fundamentally ambidextrous structures, think of systems that are open, and create processes that are agile. The ultimate goal of the new model is to create a new breed of government managers able to lead disruption and manage market volatility in order to achieve the government vision of making the UAE a global hub of innovation.

In this paper, we would like to discuss the concept of organizational agility, and how it should apply to managing innovation programs and initiatives in the government sector. We will first address a few conceptual frameworks on organizational agility, and then propose a framework for managing innovation that is aligned with the new Government Excellence Model. We will conclude with a discussion of the COPSS model, a Dubai Police Agility Maturity Index that helps leaders gauge and measure their level of organizational agility level.

2.0 Review of Agility Conceptual Framework

Agility is often defined as the ability of the organization to change and adapt to meet new markets and social demands. In the new economy or the innovative economy, agility takes critical importance because it allows the organization to sense, predict, anticipate, and adapt to new changes. David Treece, for instance, argues that agility is a much-needed concept when uncertainty and ambiguity are prevalent. He argues that agility provides a dynamic capability that allows the organization to measure risk and

uncertainty, especially in economies that are going through disruptive changes.

Nobel laureate economist George Stigler, defines agility as the ability of the organization to manage uncertainty and continuously adjust to market changes. He argues that, at its core, agility helps organizations achieve two important goals. Realize value based on past scenarios while remaining flexible to address change resulting from economic and social shocks.

Eric Abrahamson, a Harvard Business professor and a thought leader on organizational change, adopt the concept of dynamic stability to define organizational agility. He argues that what helps an organization manage change and lead in transitions is the ability of management to constantly reconfigure existing practices and business models. In his view, dynamic stability requires pacing big and small changes to manage transitions and rethink existing processes to make them fit and adopt new and emerging market trends.

Nir Brueller, defines agility as the “ability to notice an opportunity and to make a rapid, yet precise move using extraordinary accelerating power.” According to Brueller et al., what characterizes agility is the nimble decision-making process, the rapid deployment of resources, and the predictive capability of the organization that helps manage and sense change before it happens.

A more recent study conducted by Melodena Stephens, Martin Spraggon, and Camila Vammalle from the Mohammed Bin Rashid School of Government, provides yet another framework on the agile government. The interest of this study is that it addresses the skill inventory needed for an agile government. According to the study, a good framework of agile government needs to have three pillars: Fluidity in the process and systems, with a foresight capability to manage future and unforeseen changes. Resiliency and collaboration to alter mindsets and allows for flexibility and adaptability of the decision making process. And finally, legitimacy through a harmonization effort to provide coherence and consistency to instill trust in and with government institutions.

Based on this brief overview of the agility concepts, we identify the following building blocks of an organizational agility model:

The ability of the organization to sense change internally and externally, manage it and respond to it with rapid moves by re-allocating resources, shifting people around and rethinking processes (Strategy).

The ability to design structure and core processes with flexible elements that absorb shocks and adapt changes. This could include different types of structures and different types of organizational configurations (Structure and processes).

The need to alter mindsets to retool and upskill the workforce to meet new and emerging customer needs (Culture and people).

3.0 Managing Innovation with Agility Framework



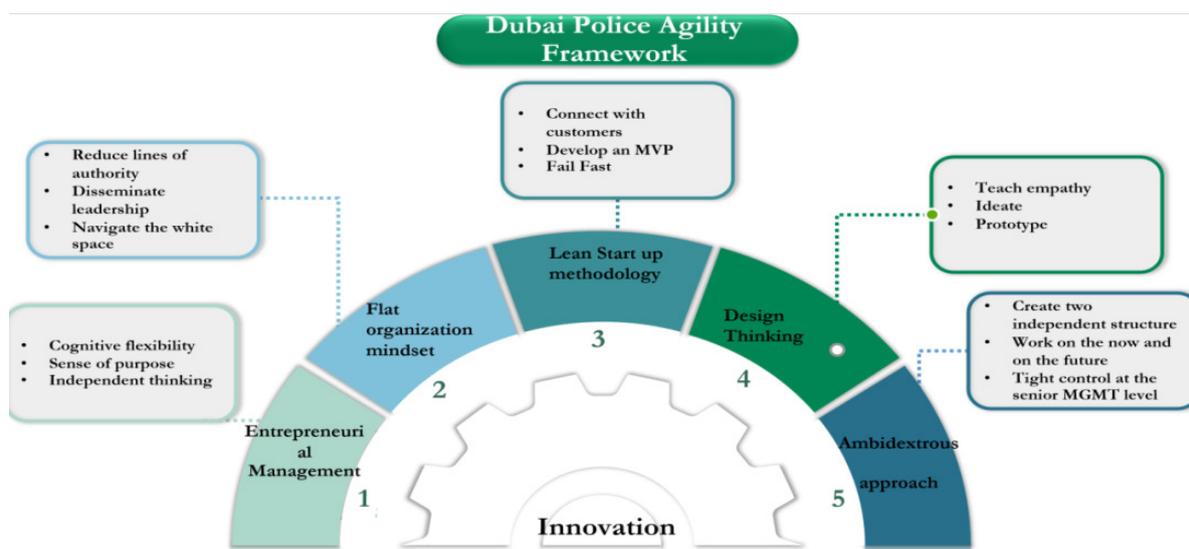
What worked for the past may not work for the future. What benefitted us in the past 20 years maybe not be useful for the next 20. Time makes it imperative to change tools, renew institutions, and tackle recessions.

His Highness Mohamed Bin Rashid

Managing innovation is a complex process. It requires human-centric systems and a mindset that handles the management of innovation paradox: Managing incremental innovation to extract value from the current offering, while keeping an eye on future trends and breakthroughs that may present an opportunity but also a threat to existing offerings.

Based on our work with the Dubai Police in the United Arab Emirates, we identify a model of five steps. This model is based on global trends and best practices in the field of innovation management as well as the ISO guidelines on the Innovation Management System published recently but the International Organization for Standardization. Our model (see Exhibit 1) addresses skills and abilities (steps 1 and 2), tools and methods (steps 3 and 4) and the guiding philosophical approach to managing agility (step 5).

Exhibit 1: Dubai Police Agility Framework



Source: Sid Ahmed Benraouane, and Saleh Al Hamrani.

3.1 Lead as an Entrepreneur

There are two types of managers. Managers who manage the everyday operations of the organization thus fulfilling the four traditional management functions of organizing, planning controlling, and staffing. These are managers who understand well the process, comply with lines of authorities, and know more about organizational politics. When they are in the middle of the hierarchy, middle managers that is, they act as a filter between the leadership vision and the way it is implemented. Middle managers, while they are a necessity for consistency, stability, and conformity, they also tend to be less effective in sensing the change, managing agility, and leading transformations. Entrenched in the process, their decision-making mindset subscribes to a mechanical view of management.

Entrepreneurial managers, on the other hand, are managers with an entrepreneur mindset. They manage departments and lead teams as if they were managing a venture project. Comfortable in managing paradox and ambiguity, they thrive in managing tensions and making judgment calls in volatile times. They are effective at agility because they can navigate the process and overcome barriers by negotiating deals with different stakeholders. When selecting your managers, focus on the following three skills: Cognitive flexibility, sense of purpose, and autonomy.

3.1.1 Cognitive flexibility:

An entrepreneurial manager tends to score high on cognitive flexibility, a test that measures the ability of the individual to shift focus and attention between two concepts. They are quick at making decisions and able to shift things around by taking bold initiatives. When faced with distraction, such as a new event, new data, a new decision, or simply a change in what has been agreed to, they can focus their attention by directing the team to what is more relevant to the innovation project, while still not ignoring completely the distraction. Their decision-making process is dynamic rather than static. They can cope with the stress of focusing on two completely different things.

3.1.2 Sense of purpose:

Entrepreneurial managers tend to be driven by a sense of purpose. They are aggressive in pursuing their goals and commit more energy and time to achieve and shape the organization's vision. Their sense of purpose allows them to focus on the short term and the long term while at the same time prioritizing what is more critical to the delivery of the innovation project. Their ability and energy to plan and execute many things at the same time are not hampered by disappointments and failure.

3.1.3 Independent thinkers:

Entrepreneurial managers tend to be independent thinkers and score high on autonomy. They set their own goals and follow their own plans. They come up with new and creative ways to bypass obsolete processes and navigate organizational politics to get what they want. They tend to adopt an insurgent attitude that helps them challenge the status quo constantly seeking new and novel things.

3.2 Manage Bureaucracy with a Flat Organization Mindset

It is a well-known fact that the flat organization model made popular in the United States by the Silicon Valley startup model of the 1990s was a breakthrough in organizational design. It was also a process innovation in the way business manages innovation, solves problems, and getting the product to market in a record amount of time. Startup beat old and established organizations on innovation metrics and other performance criteria, such as speed, flexibility, and transformation. The startup flat model structure is fast in reacting to events and provides more nimbleness in solving organizational issues. The flat organizational model tends to be more tuned to market changes and customer requirements. Leadership is easier and better disseminated because there are fewer management layers between those who execute the mission and interface with the customer's problems and the top leadership true owner of the vision. In the flat model, communication lines between the leader and team members are not linear and do not subscribe to the hierarchical model.

Government structures, on the other hand, are by design hierarchical. People and resources are boxed into areas of specialization, such as finance, HR, and marketing. There are more reporting lines and more time and energy is wasted around administrative and process-related issues than innovation and creativity. Team members in this type of organizations tend to spend more time waiting for permissions and approvals from the top thus hindering the ability of the organization to react to events. By the time an approval comes, the event that triggered the approval process will no longer be of interest to the organization. In this type of organizations, hierarchy slows-down the process and makes the organization less responsive. It also creates a less engaged workforce as people get more entrenched in their specialization, focusing on procedures and measurement rather than engaging with the customer.

This is why it is critical for leaders, department heads, and senior managers to adopt a flat organization mindset that allows them to bypass bureaucratic layers, or at least reducing them, by establishing direct communication lines with those who face the issues. Adopting a flat-organization mindset allows managers to:

- Become more visible to their team members empowering them to focus on customer's issues and the challenges they face in interacting with them.
- Coach team members on how to address and solve issues while constantly reminding them of the values the organization stands for.
- Translate with them the organizational vision into a way of working that is centered on the customer.
- Help team members navigate the white space of organizational hierarchy and support them with resources to overcome bureaucratic layers.

3.3 Managing innovation initiatives as a Lean Startup project

The Lean Startup methodology is an approach that helps innovators launch innovation initiatives and manage them as a startup project. The goal is to help the innovation take off with minimum features to get it to the customer in a record amount of time. Once the customer gets a minimum version of a product that they can accept, you will be able to work with the customer to improve the innovation through iteration and feedback.

Launched by Eric Ries and Steve Blanks, two Silicon Valley entrepreneurs, the Lean Startup movement emerged as a powerful and agile methodology for managing innovation. It puts into question basic assumptions about managing innovation projects. At its core, the Lean Startup approach is about learning how to improve the innovation project through iteration and customer research. The idea that you invest in a big and complete innovation product that the customer may or may not find interesting is the opposite logic of a Lean Startup approach, in which you engage with the customer about the features and the product that solves their problems. According to this methodology, innovation has better chances of success if it is built around customer needs. So getting the innovation to the customer in its early stage, then shaping it, and building it with the help of the customer provides better chances of success. In this process of iteration, agility is of paramount importance. It allows managers to go through a few design steps, shift teams and resources around, and reconfigure working methods, including the way process is designed. Agility becomes the invisible hand that moves things around and an approach by which people develop new ways of doing things. Failure, in this baby-steps approach, when it occurs, should not destabilize the project. But rather, it should allow the project to improve as people learn and adapt to new changes.

Below are a few suggestions on how you can integrate agility during the implementation of a Lean Startup methodology:

- Connect with the customer to understand their pain points. Find out how and in what ways customers engage with your existing product and services.
- Develop a minimum viable product (MVP) that can meet the minimum threshold acceptable to the customer; work with customers to adjust features and adapt

- the product based on feedback.
- Teach your team how to adopt agile thinking during this back and forth process with the customer. Enable your team to shift resources and move things around to adapt product design.
- Help your team learn from different failure cycles. Help them fail fast and learn better so they can get back on track without affecting the innovation project.

3.4 Adopt a Design Thinking Approach

An important dimension of agility is the ability of the employees to make quick and nimble decisions about customer needs without feeling hampered by organizational hierarchy. Design Thinking, defined as the art of learning about customer challenges, is an iterative process that helps the innovator solve problems by challenging basic assumptions and taken-for-granted logic behind process design. It allows innovators to put themselves in the shoes of the customer to feel pain points, and understand the challenges the customer goes through. Those who are at the frontline of organizational problems, and those who interface with the customer, have a trove of solutions and improvement that they can bring to the process if the structure allows them to do so.

They can make a lasting impact on the innovation process if they are involved. But often time, organizational hierarchy and position boundaries make it difficult for the lower level manager to voice their concerns, speak their views, and share their perception of how processes are designed. When you adopt a Design Thinking philosophy to solving problems, you allow those who have intimate knowledge about customer problems to engage, circumvent hierarchy, and transcend position boundaries.

Here are four steps for Design Thinking:

- Empower your employees to empathize with the customer and make a decision when they see something is wrong.
- Enable your employees to re-conceptualize the problem from the perspective of the customer and based on their interaction with the customer not based on how quality engineers design process
- Allow your employees to ideate about the problem by telling the story of the customer not by implementing a process that they do not believe in. Help them challenge the assumptions of “how you do business” based on what they know about customer pain points.
- Help your employees gain cognitive agility and become less constrained by mental framework taught in schools and training programs. Teach them flexibility,

resiliency, and adaptability to meet changing environments, new, and unknown demands.

3.5 Embrace an Ambidextrous Approach

A landmark study conducted in 2004 by Charles A. O'Reilly III and Michael L. Tushman, introduced a new concept to the innovation management literature called the ambidextrous organization. This new concept, which refers to the ability of a person to use the left hand and the right hand, provides a powerful framework to organizational agility and innovation management. Similar to the ability of a football player, such as in the case of Cristiano Ronaldo and Zinedine Zidane, who dribble using both feet and score using either the left or right, an ambidextrous organization can simultaneously work on two different tracks pursuing two different missions at the same time. Ambidextrousness is important to agility because it helps the organization focus on the current goals, while at the same time, projecting itself into the future to manage future threats and future challenges. The ambidextrous organization can work on the now and the tomorrow, the current and the future, the short term, and the long term. It does this by creating two different structures that are completely independent of each other but tightly integrated at the senior leadership level. Teams from both structures, while they are independent, and enjoy their resources, processes, and cultural practices, they report to a senior manager at the top of the pyramid. This integration at the senior level of the organization allows for a better sharing of resources and information even though the teams are completely separated from each other and completely autonomous. Ambidexterity comes in two forms: A structural ambidexterity, in which you create two separate and different teams focusing on two different tracks. Or contextual ambidexterity in which you create one team working on two different tracks. This second option is a less costly approach but more challenging.

According to the study, ambidextrous organizations are nine times able to come up with innovations than other forms of organizing. Ambidextrous organizations can focus both on incremental innovation, extracting the value from the current offering, while making breakthrough innovation that would allow them to capture value from future innovation. They are more agile in managing processes and they are more effective in managing short-term long-term tensions that tend to distract innovation projects.



In the same way, the future compels us to have new blood, restructure our culture and ideas to ensure that we achieve real changes over the coming period.

His Highness Mohammed Bin Rashid

3.6 The Agile COPSS: A Dubai Police Framework to Managing Innovation

Based on this discussion, we suggest a framework (see Exhibit 2) that addresses five critical components of an agile organization. An agile organization needs to learn how to manage mindset and lead cultural changes (Culture), build agile capacity and upskilling team, develop nimbleness in the process, design flexible structure, and craft a strategy that adapts to internal and external changes. We use the acronym COPSS to capture the agile nature of a police officer (a cop) when dealing with highly volatile situations. The frame work assesses the following dimensions:

- The ability to recognize and lead cultural change (Culture)
- The ability to retool and upskill people coaching them through change initiatives (People)
- The ability to design a core process that is nimble and adaptable to the changing environment (Agile Process)
- The ability to design an ambidextrous structure that focuses on managing the short term and the long term taking into consideration social and economic transformation (Agile Structure)
- The ability to craft a strategic management process that identifies change and create alignment between the vision of the police force and everyday people's behavior (Agile Strategy)

The Agility Maturity Index uses a scale of five categories. We choose the same scale adopted by the UAE Excellence Model to make it easy for people to adopt it.

1. Novice where agility is absent and the organization is managed in a traditional way
2. Beginner where the organization has some level of agility in the ways it manages the five dimensions
3. Intermediate where the organization has an average level in some of the dimensions of the index
4. Advanced where the organization has reached a higher level in at least four dimensions of the assessment tools
5. Mature where the organization has reached a mature level in balancing stability and agility on all dimensions
- 6.

Exhibit 2: Agile COPSS™

Dubai Police Agility Maturity Index

Agility Dimension	Definition	0-10	15-35 Beginner	40-60 Intermediate	65-85 Advanced	90-100 Mature
Cultural Agility	<p>Does the culture of the organization embrace change?</p> <p>Is senior leadership engaged in activities that predict change and anticipate new threats?</p>	<p>Culture is rigid. Old and outdated value system that rejects change</p> <p>Leadership is not engaged in activity that predict change and anticipate new threats?</p>	<p>Culture superficially accepts change</p> <p>Top leaders, only superficially engaged in activities that predict change and anticipate new threats.</p>	<p>There is a higher level of interest in change but people resist change</p> <p>Leaders are engaged in activities that predict change and anticipate new threats?</p>	<p>There is a framework that coaches employees through change with a minimum level resistance</p> <p>Higher level of awareness and engagement in activities that predict change and anticipate new threats</p>	<p>A well resilient culture and leaders at all levels are held accountable for change initiatives</p> <p>Higher level of awareness and engagement in activities that predict change and anticipate new threats</p>

<p>People Agility</p>	<p>Is there a coherent framework to train people on agility?</p> <p>Is the work environment conducive to teams' performance?</p>	<p>No training provided on change management strategies</p> <p>Lack of specialized teams that lead the change</p>	<p>Training provided to senior management only</p> <p>Limited number of teams with limited support on agility</p>	<p>Training provided to all management levels</p> <p>Teams work is well understood, but lack capacity building strategies for a coherent training model on agility.</p>	<p>There is a good training framework on agility</p> <p>There is a fair coherent framework that incentivize collaboration and team work</p>	<p>A clear ownership of change initiatives; agility is embedded in people's performance</p> <p>Well structured environment for less supported teams and self-managing teams.</p>
<p>Process Agility</p>	<p>Is the process nimble and efficient?</p> <p>Can the process balance stability and flexibility?</p>	<p>The process is rigid</p> <p>Highly centralized process review</p>	<p>Adaptable process but slow to change</p> <p>Centralized process review</p>	<p>Dynamic process but misalignment occurs</p> <p>Process review is not decentralized</p>	<p>Dynamic process with good alignment.</p> <p>Process review is fast to reacts to changing requirement</p>	<p>Nimble process that balances change, and a stability (time to review process)</p> <p>Efficient and flexible process that supports rapid decision-making.</p>

<p>Structural Agility</p>	<p>A flexible and delayed structure that balances centralization and decentralization</p> <p>Fluid decision making that takes into consideration change and disruption</p>	<p>Highly centralized structure.</p> <p>Rigid decision making process</p>	<p>Centralized approach that follows a waterfall methodology</p> <p>Somewhat a flexible decision making but still slow to react to events</p>	<p>A fair balance between centralization and decentralization but too many layers</p> <p>Flexible decision making that reacts to incremental change</p>	<p>A good balance between centralization and decentralization with a flat approach to communication</p> <p>Nimble decision making with a high level of power delegation</p>	<p>A well mature structure able to anticipate change with an agile operating model</p> <p>An ambidextrous decision making process to managing innovation that focuses on everyday work while preparing for tomorrow's threats</p>
<p>Strategic Agility</p>	<p>An integrated and coherent framework that aligns the vision, mission, and goals with the changing market demand</p> <p>An action plan that rapidly adjust to incremental and transformational change</p>	<p>Lack of coherence between the strategy and the changing environment</p> <p>Lack of flexibility in different action plans</p>	<p>Weakness in the conceptual framework that links strategy to the changing environment</p> <p>Lack of capability in managing incremental and transformational change</p>	<p>There is a fair strategic framework but the framework lacks conceptual clarity on the meaning of change</p> <p>There is a fair process to creating action plans but weakness in defining incremental and transformational change</p>	<p>A well-advanced framework that links the vision to the changing environment</p> <p>A well-developed action plan that guides employees during the implementation of wide strategic change initiatives. Well managed process for incremental change, strategic change, and transformational change</p>	<p>Well-developed foresight capability that is tight to the strategic management process</p> <p>A mature action plan that helps coach employees during large transformational</p>

Source: Authors

4.0 Conclusion

The new UAE Excellence Model raises the performance bar for government employees. By introducing a new category called Elite, the new model challenges government employees and those leading government entities to account for skills, systems, and structures that were not required for some leaders, and perhaps unknown to many managers. The transformation of the global economy, driven primarily by demographic change and breakthrough innovation technologies, requires a new government business model and a new breed of public service managers willing to embrace change and lead in uncertainty to meet new and emerging social and economic demands.

References

Trice, D., Peteraf, M. and SohvieLeih (2016). Dynamic Capability and Organizational Agility: Risk, Uncertainty, and Strategy in the Innovation Economy. California Management Review. VOL 58. NO 4. SUMMER 2016.

Stigler, G. (1934). Production and Distribution in the Short Run. Journal of Political Economy. 47/3. Government Excellence Program 2019, DGEP, Dubai, UAE <https://tec.gov.ae/en/publications/#filters=.mix>

Abrahamson, E. (2000). Change Without Pain. Harvard Business Review. July-August 2000

ISO 56002: 2019 Innovation management - Innovation management system - Guidance
ISO 22301:2019 Security and resilience - Business continuity management systems - Requirements

Brueller, N., Carmeli, A. and Arori. I. (2014). California Management Review. VOL 56. N. 3. Spring 2014. pp 41

Stephens, M., Spraggon, M. and Vammalle, C. (2019). Agile Government. Policy Paper No 13. September 2019. Mohammed Bin Rashid School of Government, Dubai Government. UAE

Agile Government and the Challenge of AI

Prof. Dr. Dirk Nicolas Wagner

Karlshochschule International University, Germany

Email: dwagner@karlshochschule.de



Abstract

This paper describes that with the introduction of Artificial Intelligence (AI), Agile Government increasingly takes place in the context of so-called Human-Agent Collectives (HAC). Such HAC are characterized by the economic pattern of micro-division of labor which implies a growing number of tasks being taken over by increasingly autonomous AI agents. To successfully team-up with AI the machine has to be perceived as a colleague rather than as a tool; organizational development is required. This can be supported by Human-Factors Training. Based on adequate skills working with AI can support governments to cope with the tensions of Agile Government. But AI does also create a new tension.

Keywords: Agile Government, Artificial Intelligence, Human-Agent Collectives, Human-Factors

Author Profile

Prof. Dr. Dirk Wagner: Dirk is dean of the faculty of Business Economics & Management and Professor of Strategic Management at Karlshochschule International University. He studied economics and management at Université de Fribourg (CH) and Royal Holloway University of London (UK), graduating as a MBA in International Management and Dr.rer. pol. in the area of New Institutional Economics. Since the 1990s, he has been dealing with questions related to the Economics of Artificial Intelligence and he regularly publishes with the Zukunftsinstitut in Frankfurt a.M.. Prior to joining Karlshochschule, he served in various senior management and board member positions in the technical services industry in Europe.

Agile Government and the Challenge of AI

1.0 Introduction

The public sector has repeatedly been inspired by managerial approaches originally designed for the private sector. Whilst in the past it took some time for new ideas like for example lean management to be adopted, recently the time-lag has been shrinking considerably. It is thus not surprising that it did not take long for governments around the globe to discover agile management techniques to be useful to meet the challenges of in increasingly complex world. If this trend continues, it is to be expected that a more or less simultaneous adoption of certain managerial innovations may in the future be observed in both, the private and the public sector. An area where this is highly likely to happen is the support of knowledge work and management by the means of Artificial Intelligence (AI). To be prepared for the fast-paced developments stemming from so called AI, it is useful to review how this technology is about to impact on Agile Government. This is the purpose of this paper which is structured as follows: Initially, it will be shown how the introduction of AI will lead to Human-Agent Collectives (HAC) in government. Then, the effects of micro-division of labor will be illustrated which results in a requirement for effective teamwork between humans and AI agents. Finally, the effect of these developments on the three tensions of Agile Government and the opportunities and risks for the creation of public value are reviewed. A fourth tension of Agile Government is identified.

2.0 From Agile to AI in Government

Recently, governments have begun to realize that agile approaches can enhance collaboration between the state and its citizens, increase transparency and may result more efficiency ('doing things right') and improved effectiveness ('doing the right things'). The Agile Government Handbook (2019) states six reasons why governments should adopt agile:

- Improvement in investment manageability and budgetary feasibility
- Reduction of overall risk
- Frequent delivery of usable capabilities that provide value to customers more rapidly
- Increased flexibility
- Creation of new opportunities
- Greater visibility into contractor performance

However, to comprehensively pursue Agile Government means going beyond agile software development and to more broadly work on organizational development. To become future-proof, Stephens, Spraggon & Vammalle (2019) claim that Agile Government must meet the challenge of successfully handling three tension areas:

Tension 1: The ability to create policies that can take into account the uncertainty and ambiguity of the future.

Tension 2: The ability to adapt to complex environments.

Tension 3: The ability to create stability in the face of change and increasing volatility.

In this context, agile management techniques are essentially social innovations (Beinhocker, 2007) that provide government organizations with new structures and processes but also with new skills. These social innovations are supported by complementary information technology, like for example agile project management tools.

Whilst governments are still in their early stages of adopting agile approaches, a remarkable physical innovation is about to enter the scene: Artificial Intelligence. Based on a cluster of technologies that includes Machine Learning, Deep Neural Networks, Big Data, Internet of Things and Cloud Computing AI has finally left the research laboratories and begins to rapidly establish itself not only in business but also in government practice. AI allows for a “cognification of everything” (Kelly, 2017) which leads to a fundamental change in how organizations work with machines. Software performs tasks by relying on patterns of inference instead of using explicit instructions (Russell & Norvig, 2016). AI assists humans by providing predictive analytics, it augments humans by providing prescriptive analytics, and it substitutes human work by fully automating business activity (Lepenioti et al, 2019).

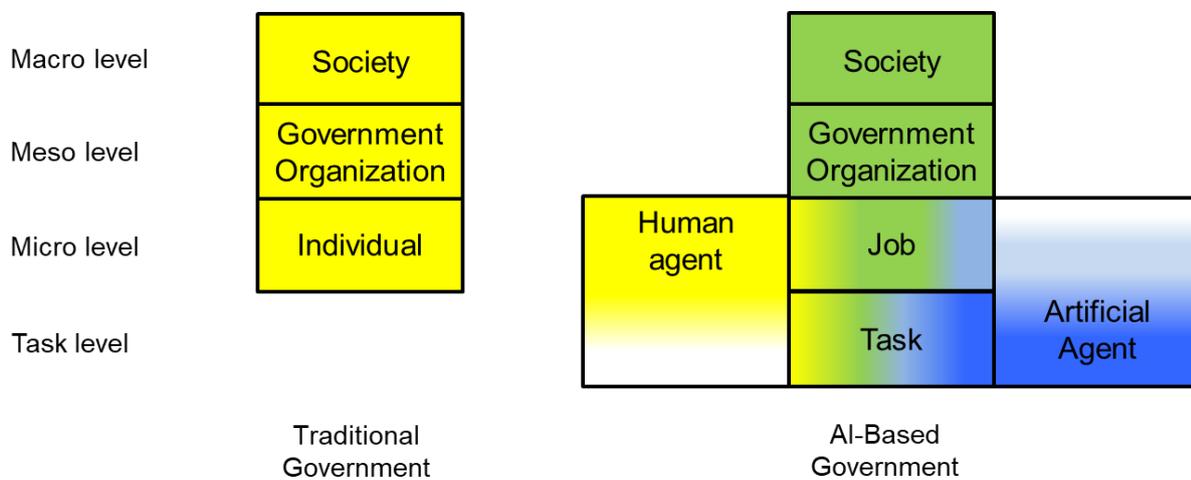
Where AI is put to use, so called Human-Agent Collectives (HAC) emerge (Jennings et al., 2014). Here, sometimes the human takes the lead, sometimes the computer does. Who or what is in charge can vary dynamically. A relatively simple use case is public surveillance where human managers work with AI agents that autonomously oversee sensors and learning algorithms which record gestures, body languages, voices and sounds in a public space to automatically report and prioritize unusual scenes for human supervision and potential intervention.

Perceiving future governments as HAC means to expect governments to conduct knowledge work not only based on human intelligence but also based on various forms of specialized artificial intelligence, like for example data analytics, image recognition or language generation. This leads to new forms of co-creation between man and machine which are bound to follow a specific economic pattern: micro-division of labor.

3.0 Micro-Division of Labor

AI does get involved in and take over knowledge work in unprecedented ways. A basic underlying economic pattern is that the delegation of tasks to machines leads to micro-division of labor. As AI improves, not only businesses but also governments must adjust their division of labor between humans and machines. Traditional job roles for humans can be sub-divided into a variety of tasks. It is on the task level where AI agents come into play as and when governments process data (see Exhibit 1).

Exhibit 1: Structure of government



Source: Author, own representation

In government and society, volumes of data are increasing at an exponential pace. And the exploitation of data by humans at an economically relevant scale is increasingly mediated by AI. The purpose of micro-division of labor and of micro-specialization is very simple: to create gains from specialization and exchange. This is achieved because specialized AI agents are much more efficient at processing data. Unlike human learning and evolution which is confined by the human brain and takes generations to evolve, AI has the property of an information good, which means that its patterns of learning and knowledge can be copied at marginal costs and – at least in principle - only one AI has to master each particular skill (Kurzweil, 2005). This property of copying or sharing enables exponential possibilities for recombination and differentiation which can reshape government work. Examples include the “City Brain” project for traffic control in the city of Hangzhou (China), automated coding of surveys by the US Department of Labor, the virtual assistant working for Latvia’s Register of Enterprises, or the chatbot “Sigma” working for ePortugal (Berryhill et al., 2019).

Micro-division of labor furnishes governments with new opportunities. But these new opportunities come with new challenges. Since software often operates “behind the scenes” (Jennings et al, 2014), its rationale and actions are regularly not readily available to the involved humans. Also, co-operation ‘at eye level’ with artificial agents will be the exception rather than the norm, simply because a micro-division of labor amongst artificial agents leads to a degree of fragmentation that can no longer be deciphered by humans (see Exhibit 2).

Exhibit 2: Examples for human interaction with AI

Emulating at eye-level interaction	Rather not at eye-level interaction
public administration chatbot self-driving car e-government services smart waste bin	precision medicine automated traffic control survey coding pollution monitoring

Source: based on Berryhill et al. (2019)

4.0 Teaming-up with AI

It is evident that at the level of the individual and at the level of the organization, AI will make government work more complex. In order to capture the opportunities and to cope with the challenges of this development, governments have to develop new ways of managing this complexity. Since AI agents are bound to become omnipresent in government organizations and since they will interact with all kinds of users, this task cannot simply be delegated to software engineers or IT departments. It becomes a matter of organizational development. But how can this be approached?

It is the last human grandmaster in chess, before the discipline was conquered by Deep Blue and other computers in the 1990s, who proposes an answer: Garry Kasparov claims that we should develop our teamwork skills (Kasparov, 2008). On the first sight, this is nothing new. But he refers to teamwork between man and machine. The insight stems from the introduction of a new discipline for the game of chess: In ‘freestyle chess’ or ‘advanced chess’ human players team-up with chess-computers to engage in competitions with other players or teams. It turned out that man-machine teams play better than supercomputers or human grandmasters on their own. What’s more, successful teams do not necessarily consist of outstanding team members. Reasonably good players using off-the-shelf chess computers have been able to beat teams with individually much stronger players. The secret to success: they used a better process. Or, in other words, they organized their team better.

The idea of treating the machine as a colleague rather than as a mere tool represents a paradigm shift. It means that machines can be thought of as economic and social actors.

Such an interpretation makes it easier to understand what is going on: for example, to recognize that machines, just like humans, commit errors and can be biased when they make decisions. It also shows that individuals as well as organizations need to focus on adaptation and co-evolution along with AI agents rather than on deterministic planning. To the extent that mechanisms of micro-division of labor are deployed and tasks are delegated to AI-agents, it is less and less possible to predict and directly manipulate the outcomes of government work. (Artificial) evolution is faster than humans, so the advice is to harness the power of evolution and to co-create together. This requires particular skills on the level of the individual as well as on the level of the organization.

4.1 Human-Factors Training

Further guidance can come from industries that have for a long time been under considerable pressure to successfully integrate high technology with highly skilled human labor and to adapt to unforeseen circumstances: Aviation and health care. For decades, these industries have been training their crews to cope with challenging situations and to avoid plane crashes or casualties in operating rooms. This is human-centered management at its best. Over the years, a clear pattern of skills that need to be trained has emerged. These include situational awareness, communication and coordination, cooperation, vigilance, stress and fatigue, and decision making. The so called ‘Crew Resource Management (CRM)’ training (Kanki et al., 2010), which is largely based on human-factors and behavioral sciences (Salvendy, 2012) is fully in line with and clearly supports skills required for Agile Government. What stands out is the particular integration of topics and learning objectives as well as the fact that CRM-trainings go hand-in-hand with the technology. In addition, there is the aspect of the continuity of training that is special to CRM: all crew members have to regularly attend trainings on all topics which systematically turns them into life-long-learners. Overall, this mindset of CRM provides guidance for skill development for Agile Government with AI.

5.0 Agile Government and AI

Human Factors training serves to prepare for working in Human-Agent Collectives in government. It facilitates teamwork between man and machine and it is no coincidence that it provides a perfect match with core ideas of Agile which puts individuals and interaction over processes and tools, working systems over comprehensive documentation, customer/citizen collaboration over contract/entitlements negotiations, and responding to change over following the plan (Fowler & Highsmith, 2001). But a question that arises is how teaming-up with AI may affect the tensions of Agile Government stated above.

5.1. Tension 1: The ability to create policies that can take into account the uncertainty and ambiguity of the future.

Human-Agent Collectives in government can be expected to facilitate policy development suitable for an uncertain and ambiguous future. In its role as a prediction machine (Argawal et al., 2018) AI enables data driven policy making which can support government officials in considering future scenarios before opting for specific policies. A longer-term objective is to replace policy planning with real time policy adaptation (van den Berg, 2019). To get there, agile teamwork between legal-policy experts, data scientists, substantive experts, and AI agents will be necessary.

5.2. Tension 2: The ability to adapt to complex environments.

In a number of ways, AI is well positioned to enhance government employees' ability to adapt to complex environments. First, automation of routine tasks can free up human resources and enable them to focus on relevant changes within their area of responsibility. Second, based on continuous and extensive data analysis AI can predict outcomes and prescribe suitable decisions. In the light of the UN's Sustainable Development Goals this is for example relevant when it comes to the prediction of energy consumption. A very different everyday example is AI supervision of bus drivers in Singapore to detect increasing risks of crashes and to prescribe training accordingly (Ho & Morlet, 2018).

5.3. Tension 3: The ability to create stability in the face of change and increasing volatility.

In general, the rise of AI is likely to give additional spin to what already today is a VUCA world (volatile, uncertain, complex, ambiguous). For governments, a smart combination of agile and AI will be necessary to be able to exert stabilizing influences. The underlying rationale goes back to the foundations of systems theory an Ashby's Law of requisite variety which claims that only variety can absorb variety (Ashby, 1958). In other words, if the world becomes more complex and volatile due to AI, government is requested to put AI to use in order to develop suitable control strategies. In this sense, AI has already become indispensable in the area of cyber-security. In the same way, monitoring of financial market trading by public authorities has become unthinkable without AI.

The aforementioned points do only provide some indications about the potential role of AI in government. They do, however, already suggest that Agile Government and AI are complements. For government, agility appears to be a prerequisite to work effectively with AI. Substantial individual and organizational development will be necessary to allow for a promising team-building between government workers and AI agents. But it does not stop here. New technological possibilities do bring about new requirements.

These can be specified in form of an additional tension that needs to be considered by Agile Governments.

5.4. Tension 4: The ability to responsibly engage with AI

This includes a variety of aspects. The most straightforward aspect is a responsible allocation of taxpayer's money when investing into AI. Lesson's learned from failed agile software development projects (Onwujekwe & Weistroffer, 2019) need to be applied to AI projects which can be expected to be even more complex and financially demanding. Next to resource allocation, working with AI does also concern questions of distribution and ultimately individual freedom. Governments that enhance their possibilities with AI need to develop their competencies to deal with deficiencies of AI systems. Currently, these do for example include biased predictions and decisions made by AI agents which can result in disadvantages to or discrimination of certain groups of people (Kim, 2017). In addition, access to AI puts government agencies into privileged position. AI can be viewed as an instrument of power which, in principle, can be abused in illegitimate ways to infringe on human rights and on individual freedom of the citizens a government is supposed to serve (Nemitz, 2018).

6.0 Recommendations

In summary, AI opens up new opportunities to government. Agile Government and AI can be perceived as complements. Based on adequate skills working with AI can support governments to cope with the tensions of Agile Government. But to successfully team-up with AI, the machine has to be perceived as a colleague rather than as a tool. This requires organizational development which can be supported by Human-Factors Training. A new tension arising with the introduction of AI is the ability of responsibly engaging with AI to ensure adequate allocation of resources, appropriate distributional effects, and to avoid illegitimate abuse of power.

References

AGL Association (Ed.) (2019): Agile Government Handbook. Available online at <https://handbook.agilegovleaders.org/>

Agrawal, A., Gans, J. and Goldfarb, A. (2018): Prediction machines. The simple economics of artificial intelligence. Boston, Massachusetts: Harvard Business Review Press.

Ashby, W. (1958): Requisite Variety and its implications for the control of complex systems. In: *Cybernetica* (2), S. 83–99.

Beinhocker, E. (2007): The origin of wealth. The radical remaking of economics and what it means for business and society. Boston, Mass.: Harvard Business School Press.

Berryhill, J., KokHeang, K., Clogher, R. and McBride, K. (2019): Hello, World: Artificial intelligence and its use in the public sector. Edited by Observatory of Public Sector Innovation (OPSI). OECD. Available online at <https://oecd-opsi.org/wp-content/uploads/2019/11/AI-Report-Online.pdf>

Fowler, M., Highsmith, J. (2001): The agile manifesto. In: *Software Development* 9 (8), 28-35. Available online at <https://agilemanifesto.org/>

Ho, G. and Morlet, C. (2018): Artificial Intelligence in mass public transport. Edited by UITP Asia-Pacific Centre for Public Transport. Available online at <https://www.uitp.org/>

Jennings, N.; Moreau, L.; Nicholson, D.; Ramchurn, S.; Roberts, S.; Rodden, T.; Rogers, A. (2014): Human-agent collectives. In: *Communications of the ACM* 57 (12), S. 80–88.

Kanki, B.; Helmreich, R.; Anca, J. (Eds.) (2010): Crew resource management. Amsterdam, Boston: Academic Press/Elsevier.

Kasparov, G. (2008): How life imitates chess. London: Arrow Books.

Kelly, K. (2017): The inevitable. Understanding the 12 technological forces that will shape our future. New York: Penguin Books.

Kim, P. (2017): Auditing algorithms for discrimination. In: *University of Pennsylvania Law Review* 166 (1) (10).

Kurzweil, R. (2005): The singularity is near. When humans transcend biology. New York: Viking.

Lepenioti, K., Bousdekis, A., Apostolou, D., & Mentzas, G. (2019). Prescriptive Analytics: A Survey of Approaches and Methods. In W. Abramowicz & A. Paschke (Eds.), *Lecture Notes in Business Information Processing. Business Information Systems Workshops* (Vol. 339, pp. 449–460). Cham: Springer International Publishing.

Mergel, I., Gong, Y. and Bertot, J. (2018): Agile government: Systematic literature review and future research. In: *Government Information Quarterly* 35 (2), S. 291–298.

Nemitz, P. (2018): Constitutional democracy and technology in the age of artificial intelligence. In: *Philosophical transactions. Series A, Mathematical, physical, and engineering sciences* 376 (2133).

Russell, S. J., Norvig, P., Davis, E. and Edwards, D. (2016): *Artificial intelligence. A modern approach*. Boston: Pearson.

Onwujekwe, G., and Weistroffer, H., (2019). Agile Development in Bureaucratic Environments: A Literature Review. In: Themistocleous, Rupino da Cunha (Ed.), *Information Systems*, Vol. 341, S. 316–330.

Salvendy, G. (2012): *Handbook of human factors and ergonomics*. NJ: Wiley.

Stephens, M., Spraggon, M., Vammalle, C. (2019): *Agile Government*. Dubai: Mohammed Bin Rashid School of Government.

van den Berg, C. (2019): *Artificial Intelligence and the future of public policy*. Edited by Chair in Global and Local Governance. University of Groningen. Groningen. Available online at https://ec.europa.eu/jrc/communities/sites/jrccties/files/06_berg.pdf

Case Studies of Data Visualization in Agile Policy Making

Jose Berengueres (Ing., PhD)

College of IT, UAE University

Email: jose@uaeu.ac.ae

Ferran Pujol

Expert Partner

McKinsey, Santiago

Email: ferran.pujol@mckinsey.com



Abstract

While Data-Information-Knowledge-Wisdom (DIKW) model has been known for several decades, the process of transforming data to wisdom has been less explored. Here, we take a holistic approach and layout methods of how to transition between the different information classes. The examples highlight the growing importance of visualization for policy decision making in an agile government.

Keywords: data visualization, data science, information architecture visual communication, knowledge management, agile policy

Authors Profiles

Dr. Jose Berengueres: Jose studied engineering in Barcelona and received a PhD in bio-inspired robotics from Tokyo Institute of Technology in Japan. He is currently with the Computer Science Department at UAE University, where he teaches Agile, IT Ethics and Design Thinking. In 2008, after a stint at C.E.R.N, he co-founded two startups (a visual Twitter and a photo sharing site). In addition, Jose has taught workshops and summer courses at Apple CA., Bielefeld University in Germany, Mexico's CEDIM, and the Hult Business School in Dubai. Jose has combined his love for teaching with consulting. He has helped various companies and startups to improve their analytics capabilities (Awok.com, Etihad and Healint in Singapore). Jose is a Kaggle competitions master and is the author of two Kindle books: "Sketch Thinking" and "Introduction to Data Visualization & Storytelling".

Ferran Pujol: Ferran is a trusted advisor to heavy-industries clients from the chemicals, metals and mining, power, and private-equity sectors. He helps executives strengthen their digital and analytical capabilities in pursuit of stronger productivity. Since joining McKinsey in 2006, Ferran has honed his expertise in operations and machine learning while advising leading global companies. He has led numerous operations-improvement projects across Europe and North and South America, helping companies achieve top-notch operations. In particular, he helps executives with throughput increase, yield improvement, operational-costs reduction, and purchasing and logistics optimization. He helps complex, large companies achieve success by applying rigor and advanced analytics to remove bottlenecks. Examples of his work include the following: Using machine learning to improve availability, maintenance, throughput, and yield for a global specialty-chemicals and mining company, resulting in increased availability and reduced maintenance costs. Creating a company-wide lean-management program for a global mining company, resulting in safety improvements and a 20 percent production increase while reducing costs. Before joining McKinsey, Ferran held several positions at General Electric in France, Germany, Spain, and the United States. He also led the global advanced-manufacturing engineering division at GE Wind Energy. Ferran is a Six Sigma Black Belt.

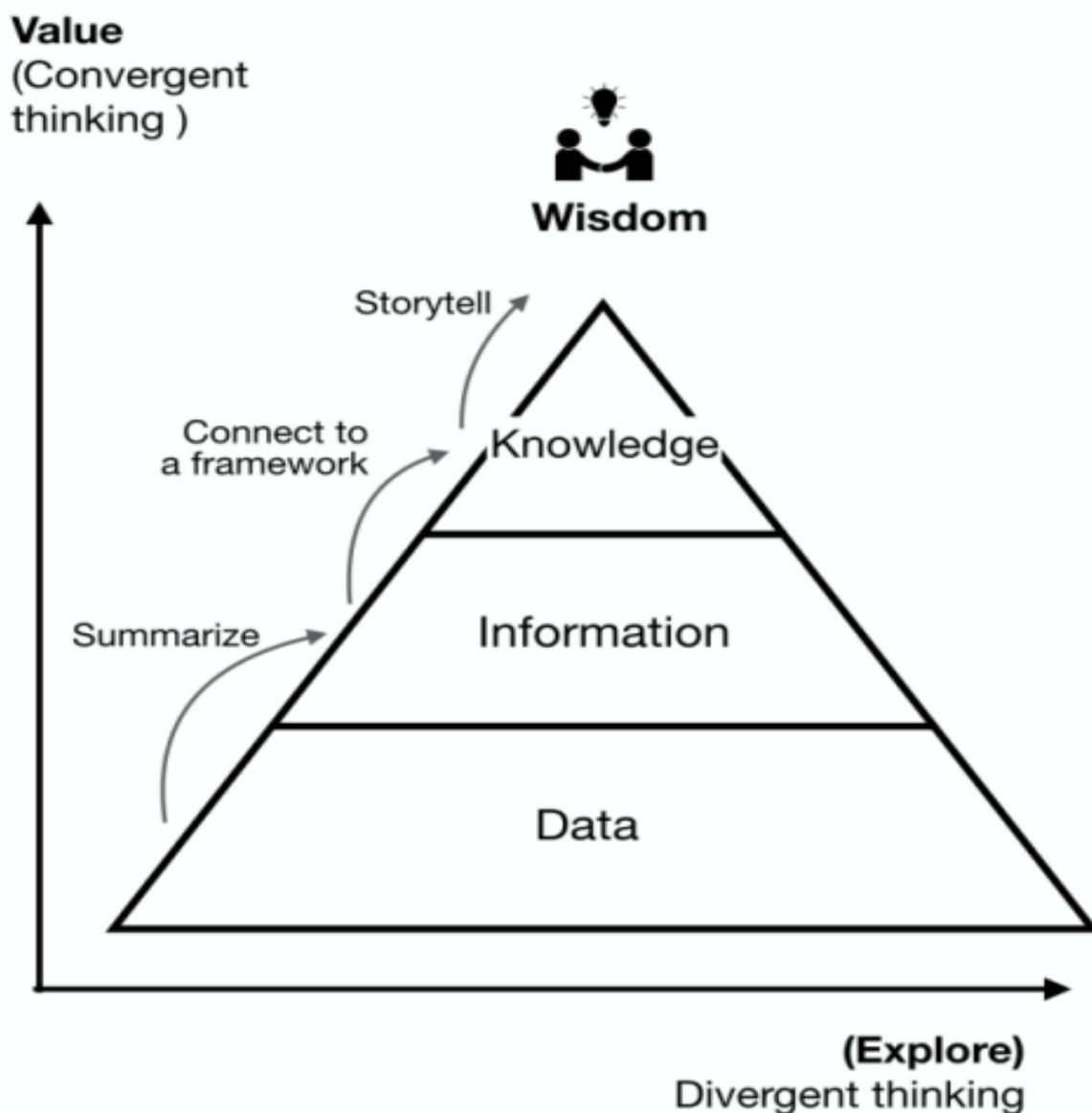
Case Studies of Data Visualization in Agile Policy Making

1.0 Introduction

Trends such as Agile and the Data Economy are influencing the practice in data visualisation for policy-making. On one hand, we have the increased adoption of Agile practices for general management by means of the SAFe framework (Lefingwell 2018), on the other hand we have the explosion of data-based economy (Toonders 2014) that encourages data driven decision-making. In Agile Software Development, a central tenet is rapid prototyping and user centricity. In policymaking, this means incorporating policy implementers and tax-payers in the design process, conduct user-testing & piloting. Naturally, these are all data-driven steps.

On the other hand, the so-called data-based Economy, has meant that dealing with data has become more important than ever. One way to deal with data is to visualize it. The popularity of tools such as Tableau (acquired by Salesforce in 2019 for \$15bn), Datarobot, RStudio, ggplot, and H2O.ai is a proof of the market need and strategic importance. As these modelling and visualisation tools have become popular, so has the literature about how to make persuasive charts that apply storytelling and graphic decluttering techniques (Knafflic 2017). However, when we consider the Data-Information-Knowledge-Wisdom (DIKW) hierarchy of information (Rowley 2007), we can see that most visualization software focuses on the lower levels of the pyramid (how to transform data in to information) while what policy makers need is at higher levels (how to transform knowledge into wisdom). The reality is that while tools at lower levels abound, few authors have created tools to support decisions at higher levels. Two examples are Wardley Maps (Pujadas 2019), and The Business Canvas (Ostevalder 2011).

Exhibit 1: How to transition from information classes in a Data-Information-Knowledge-Wisdom (DIKW) hierarchy.



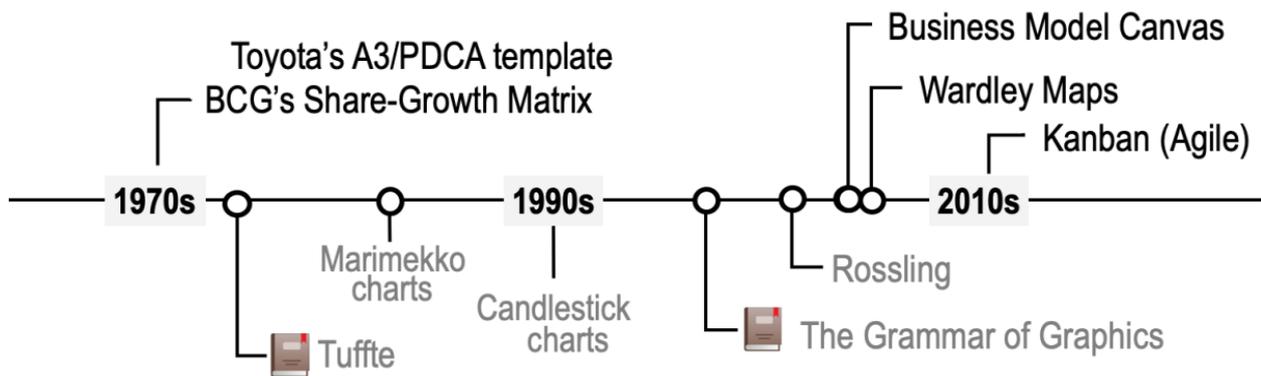
Source (Berengueres 2019)

An Agile government policy maker goal is data-driven decision making and getting buy in through sense-making and communication of data (Few 2009). Visualization can help with prioritization of issues and by taking heterogeneous data and presenting it in a reusable manner to help answer intelligent queries (Tilahun et al., 2014). The complex process of bridging knowledge gaps between diverse stakeholders and simplifying the and complexity of decision criteria, can be achieved through visualization (Rupert et al., 2015). As we move into the big data economy, this process becomes vital for public sector innovation (Jansson et al, 2017).

Exhibit 1 shows a DIKW pyramid. Exhibit 2 Shows a review of the top milestones in visualization for decision making in the last 50 years. As we can see from Exhibits 1 and 2, a separation of functions seems to exist. Indeed, it is hard to create a tool that is good horizontally as well as vertically (Exhibit 1). Naturally, each tool available focuses on doing well one task. However, this has created silos in the process of data-driven decision making which is both horizontal and vertical. Here, we aim to address this disconnect by showing some principles that apply to the whole process.

Exhibit 2: Selected milestones in visualization and decision making tools.

50 YEARS OF DATA VISUALIZATION



Source: Authors

2.0 Steps of Data Visualization in Policy Making

The demands on governments to produce evidence backed data-driven policies has become both a challenge and an opportunity (Abouzhar 2007, Napoli 2010, Giest 2017). Here, following the DIKW framework, we layout standardized steps towards the synthesis process of converting raw data into wisdom, in our case, a policy recommendation. In this section, we explain how to do effective policy making based on data. The DIKW framework classifies information according to the utility:

1. at the bottom, we have data (raw data), then we have
2. information (organized or summarized data),
3. then knowledge (information connected to a context), and finally,
4. wisdom (to know where and when to apply a given piece of knowledge to inspire action)

The DIKW framework has been known for more than five decades and its original author is unknown. Here we have added a key missing element: how to transition from each information class or level. Note that in policy making we usually start from the top (the policy is already decided and we want to support it with data). More often, it starts from the bottom. We understand a situation through an (imperfect) data representation, and we create a policy to address such situation. In any case, effective policy making always requires a compelling messaging (usually a visual + story) to get the rest of the organization on board. Policies that are not properly communicated tend to fail (Young 1993). The steps to transition up in a DIKW model are:

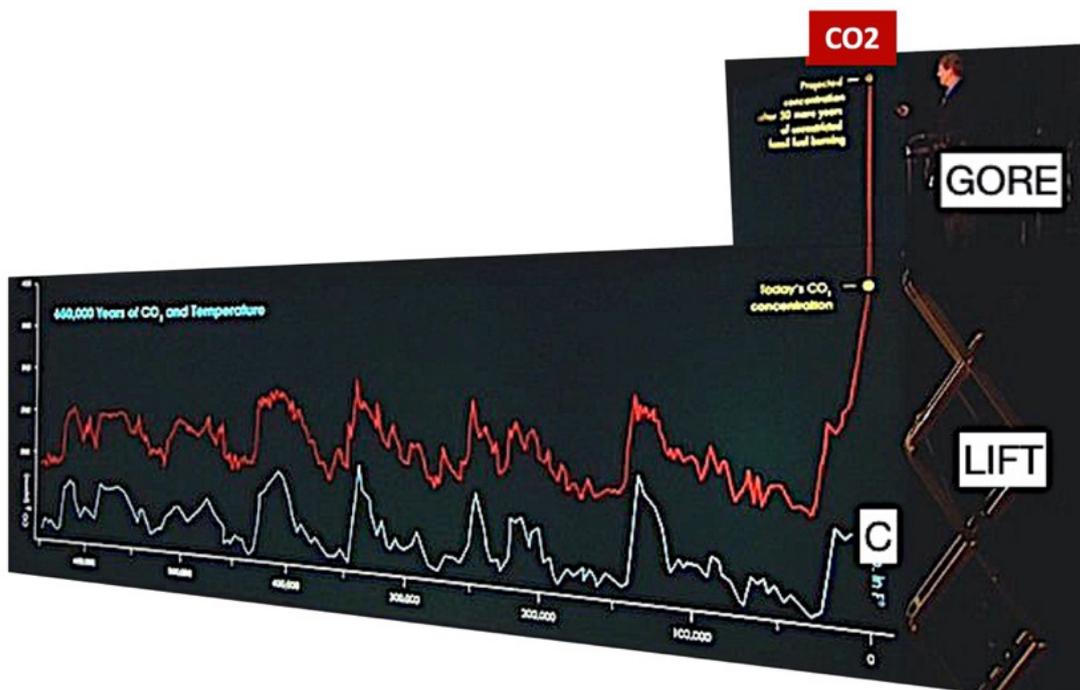
1. How to convert data into information. This is usually achieved with statistically descriptive techniques such as a histogram, a bar plot, a regression or a clustering. The goal here is to create meaning by reducing the dimensionality of the data to a human comprehensible scale. This is avoiding information overload. In data science, this also involves to clean, extract, transform and import the data, and it accounts for 80% of a typical data scientist's workload. This is also referred to as data wrangling. For this task, specific tools called ETL (Extract, Transform, and Load) tools exist. Following an ETL, a so called EDA (Exploratory Data Analysis) usually ensues. In an EDA step non-relevant data is discarded and all the dimensions of the data are explored indiscriminately, usually with summarizing charts. An efficient way to share an EDA report is through a Jupyter Notebook (See [kaggle.com](https://www.kaggle.com)).
2. How to convert information into knowledge. This is usually achieved by relating the newly created information to other existing bodies of knowledge, experiences or laws. For example, the innovation with mean reversion case in (Berengueres 2019). In bioinformatics this is also done throughout the so called "data enrichment". In this phase, the data at hand can be combined with external data sources such as census data, demographics or GDP data and so on to find valuable connections or correlations. Notwithstanding enrichment, other ways to create knowledge are: clustering to find statistically significant differences between groups, and finding trends, correlations that might help predict a variable. However, the most effective way to create value is to connect or relate the newfound information to an external knowledge framework. This work is of disciplinary nature.
3. How to convert knowledge into (wise) action. This is usually achieved by using storytelling techniques, metaphors and visual psychology principles to persuade and get the message across. Creating the policy is not enough. We need to get the organization to adopt it too, usually with the help of a compelling visual.

3.0 Case studies

3.1 Bottom up case – Storytelling climate change

An example of a bottom up policy making effort was Al Gore's Climate change awareness campaign in the 2000s decade. It is an example that failed to inspire change despite excellent supporting data. In his TED talk, Al Gore hired a consultant to prepare visuals and representations of how the increase in CO2 emissions has been historically linked to dramatic rise in temperatures. The data was converted into knowledge by scientists with a model that correlates CO2 levels to historic temperatures. However, Al Gore's laudable efforts failed to inspire the US public in the last step of the DIKW hierarchy. The knowledge failed to convert into action (see Exhibit 3).

Exhibit 3: Al Gore's CO2 chart of 2006 failed to exploit the biases towards circular charts of the human visual system.



Source: An Inconvenient Truth (2006)

In contrast, a decade later, a 16-year-old teenager called Greta Thunberg, using a different storytelling strategy, did indeed manage to inspire (See Exhibit 4). In addition, a spiral temperature chart made by a UK professor showing essentially the same information that Al Gore had shown a decade earlier went viral in minutes (See Exhibit 5). What was different? As pointed out by some authors, the human eye is more sensitive to change in spiral charts than to a linear chart as used by Gore. On the storytelling front, Greta's perceived integrity (she sailed to New York instead of flying to reduce emissions) was

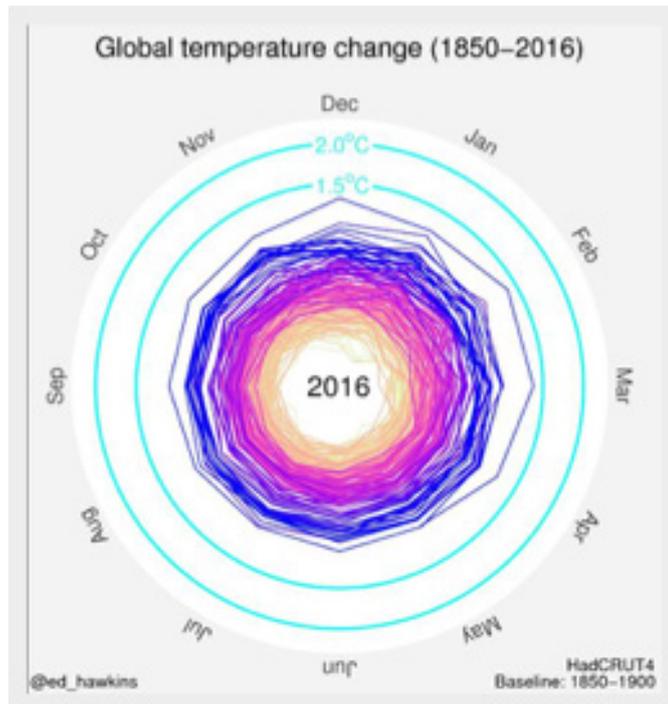
the story itself and lent her high credibility.

Exhibit 4: Unlike Al Gore in 2006, Greta Thunberg needed no charts to get her message across.



Source: @GretaThunberg

Exhibit 5: Prof. Ed Hawkins made this spiral chart in May 2016. It went viral in minutes.



Source: Hawkins (2016)

This case highlights, that policy making can fail even when supporting data is there. It is not only enough to have a scientifically correct chart to inspire change. To convert knowledge into wisdom (action) how we tell the story matters too (Berengueres 2019)

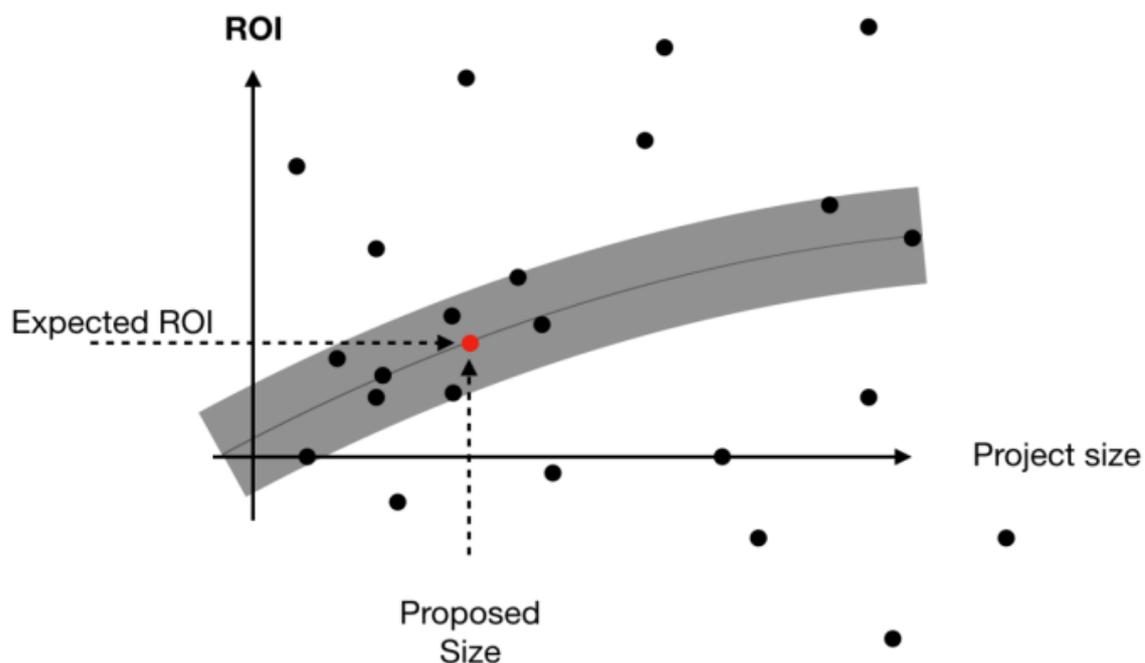
3.2 Top down case – Miners.

A young mining executive had been charged with the task of improving the output of a mine. To do this, an action plan had to be created and then approved by the board. The executive's task was to create a presentation that would convince the board and then a second presentation to convince the miners. He went to gather information about previous lean implementations in similar situations. The young executive produced a chart where the x axis was the amount of money spent on a given transformation project, and the y axis was the gains accrued to the corresponding implementation. See Exhibit 6. This scatter plot showed a trend that implied a positive correlation between the size of the project and the results. However, after certain size (\$11 million), the returns diminished. He also painted a red dot that represented the project size he was proposing (safely in the linear area).

This chart convinced the board. By mapping out the decision design space in terms of ROI vs. project size. The executive created credibility. About 20 cases (dots) appear in the chart. In a few cases the projects were failures (no improvement in productivity). Credibility was earned by showing that there are limits on the spend of a project (saturation, a law everybody understands).

The next step was to get the workforce on board. The young executive used the co-creation approach from design thinking. As the project revolved around deploying a new analytics tool to optimize miner's workflows and mining parameters, the miners were asked for input in the design of the user interface (UX). This gave the miners ownership of part of the process and made it easier for them to own the changes in their modus operandi (Kim 2005). Note here that a typical mistake would have been, (again in the last step of the DIKW hierarchy), to show the miners the same chart that was shown to the board and then tell them why they should use the new software that was being deployed without asking any input from them.

Exhibit 6: Credibility by mapping success and failures in a canvas using the regression framework



Source: Kim (2005)

3.3 Chart-Story fit case

In this example we will see how inspiring action can also fail due to a poor fit between the chart and the story's narrative. Some chart choices connect to more positive stories and some to less positive ones. This affects how people will be inspired (convinced by the policy).

How many Solar Panels are needed to power the USA? In 2017, Elon Musk used a chart like this one (see Exhibit 7). He was advocating for Solar Energy. He said, "We just need one pixel of the map covered in panels to power the whole USA, remember just one pixel." It was a flop. Why? Because it connected to a win-lose narrative. It is also hard to trust what we cannot see (one pixel is not a great visualization). Unfortunately, 2D charts do not have enough dynamic range to visualize differences larger than 2 orders of magnitude. He was trying to visualize 4 orders.

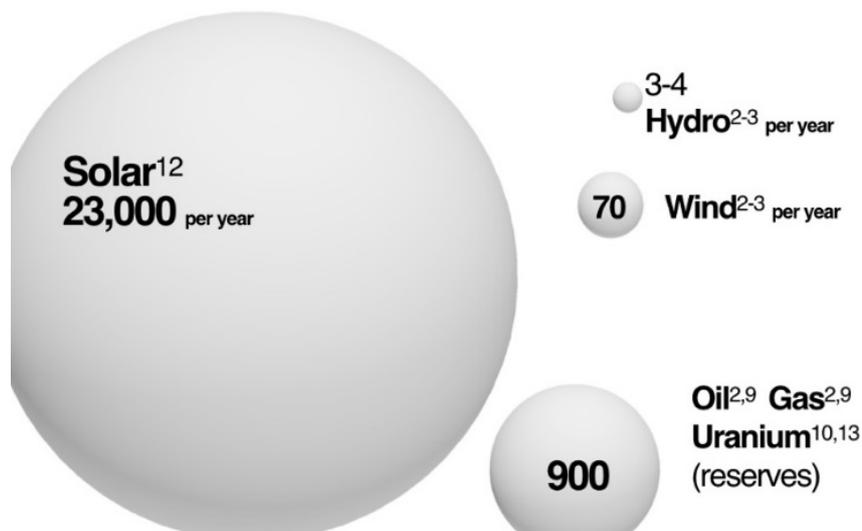
Exhibit 7: In 2017, Elon Musk used such a chart template to advocate for Solar Energy — It was a flop



(Berengueres 2019)

Exhibit 8 narrative is the growth mindset (Dweck 2015). It visualizes more than 5 orders effortlessly. Circa the year 2005, German solar maker Q-cells used a similar chart in their PR. This chart is easier to trust than Exhibit 7 because it connects us to the more positive growth mindset narrative by visualizing the astonishing abundance of renewable energy available.

Exhibit 8: A chart that uses the growth mindset narrative.



Adapted from Q-Cells. (Berengueres 2019)

4.0 Conclusions

We have clarified the steps on how to transition from data to policy in a DIKW information hierarchy and we have shown three case examples. We have seen how policy making can start at the top and then look for data to support the policy and vice versa. We have seen how policy efforts usually fail at the people interface. It is not enough to have supporting data. To inspire action, it is also important to consider how to tell a story. Each stakeholder might need a different story and chart because each has a different need and goal. In summary, finding a right fit between the story and the visual means that storytellers and data scientists need to work closely together in interdisciplinary teams to maximize impact.

References

AbouZahr, C., Adjei, S. and Kanchanachitra, C., 2007. From data to policy: good practices and cautionary tales. *The Lancet*, 369(9566), pp.1039-1046.

Berengueres, J. *Introduction to Data Visualization and Storytelling: A guide for the data scientist*. 2019.

Dweck, C., 2015. Carol Dweck revisits the growth mindset. *Education Week*, 35(5), pp.20-24.

Few, S. 2009. *Now you see it: simple visualization techniques for quantitative analysis*. Analytics Press, Oakland

Giest, S., 2017. Big data for policymaking: fad or FastTrack? *Policy Sciences*, 50(3), pp.367-382.

Janssen, M., Konopnicki, D., Snowdon, J. L., & Ojo, A. (2017). Driving public sector innovation using big and open linked data (BOLD). *Information systems frontiers*, 19(2), 189-195.

Kim, W.C., 2005. Blue ocean strategy: from theory to practice. *California management review*, 47(3), pp.105-121.

Knaflic, C.N., 2015. *Storytelling with data: A data visualization guide for business professionals*. John Wiley & Sons.

Leffingwell, D., 2018. *SAFe 4.5 Reference Guide: Scaled Agile Framework for Lean Enterprises*. Addison-Wesley Professional.

Napoli, P.M. and Karaganis, J., 2010. On making public policy with publicly available data: The case of US communications policymaking. *Government Information Quarterly*, 27(4), pp.384-391.

Toonders, Joris. "Data is the new oil of the digital economy." *Wired* (2014).

Rowley, J., 2007. The wisdom hierarchy: representations of the DIKW hierarchy. *Journal of information science*, 33(2), pp.163-180.

Rufus E. Miles, 1978. The Origin and Meaning of Miles' Law, Jr., *Public Administration Review* Vol. 38, No. 5 (Sep. - Oct., 1978), pp. 399-403

Ruppert, T., Dambruch, J., Krämer, M., Balke, T., Gavanelli, M., Bragaglia, S., & Kohlhammer, J. (2015). Visual decision support for policy making: advancing policy

analysis with visualization. In *Policy Practice and Digital Science* (pp. 321-353). Springer, Cham.

Tilahun, B., Kauppinen, T., Keßler, C., & Fritz, F. (2014). Design and development of a linked open data-based health information representation and visualization system: potentials and preliminary evaluation. *JMIR medical informatics*, 2(2), e31.

Young, M. and Post, J.E., 1993. Managing to communicate, communicating to manage: How leading companies communicate with employees. *Organizational Dynamics*, 22(1), pp.31-43.

Sport and Culture Infrastructure as Government Service:

How to Secure Sustainable Planning and Agile Governance

Prof.Dr. Louise Bielzer

Professor of Business Administration and Culture, Leisure and Sport Management
Reinhold-Würth-University of the University of Heilbronn, Germany.

Email: louise.bielzer@hs-heilbronn.de



Abstract

In recent years, cities have to face a more and more competitive interurban environment that is characterised by fast changes and developments. In that context, sports and cultural infrastructure as distinctive locational factors of a modern city contribute significantly to a city's competitiveness and sustainable development. It increases the attractiveness of the city for both companies and businesses as well as tourists and citizens.

International hallmark events such as World Championships, World Exhibitions or other major events often serve as a vehicle to develop infrastructure and reach the striven public and international attention. However, to deal with the uncertainty of post-use and the overall sustainability of the projects seems to be a challenge resulting in the need for agile governance. Specifically, for sports and cultural infrastructure, high fluctuations of the market, difficulties to forecast trends, a limited adaptability for use by third parties and high costs for maintenance and re-investment make operating the venues a challenge for responsive and effective governance. Nevertheless, in the context of spatial planning, agile governance is not a commonly used procedure yet. In practice, regulations sometimes limit the potential to use agile methods significantly. For example, public procurement law does not allow fast reactions, even though changes in the environment, in demand, from the stakeholders' side or similar would actually require fast adaptations of the infrastructure.

Having a look at the two examples of Hannover World Exhibition in 2000 and the London Olympic Games in 2012, the comparative Policy Case will discuss selected examples and different approaches of sustainable planning and post-event management of public sports and cultural infrastructure.

To conclude, the Facility Life-Cycle-Model for sports and cultural facilities shows a better understanding of the time dimension and resource requirements during planning and operational stage of this highly complex infrastructure and suggests the use of agile procedures in the process.

Keywords: Mega-Events, Expo, Olympics, Agile Governance, comparative policy case

Author Profile

Prof. Dr. Louise Bielzer: Louise is Professor of Business Administration and Culture, Leisure and Sport Management at Reinhold-Würth-University of the University of Heilbronn, Germany. As a full professor since 2007, she is a regularly invited guest lecturer at international universities such as the University of Westminster, London, UK or the JAMK University of Applied Sciences in Jyväskylä, Finland. Before assuming the professorship, Louise worked for six years as senior consultant and head of the “Venues” department for SYMBIOS AG, a consulting company with a focus on special properties such as sport and cultural venues. Her research interests amongst others concentrate on sustainable event venue development and management and branded architecture.

Sport and Culture Infrastructure as Government Service: How to Secure Sustainable Planning and Agile Governance

1.0 Introduction:

Sport and Culture Infrastructure as Hallmark Events' Legacy

With the question of how sport and culture infrastructure as government service can be sustainably planned and optimized by agile governance, this paper links to several points of reference: hallmark events and their long-term impacts and built legacy, the general concept of agility, agile governance in the public sector, and general characteristics and managerial requirements of sports and culture infrastructure.

In recent years, cities have to face a more and more competitive interurban environment that is characterized by fast changes and developments. In that context, sports and cultural infrastructure as distinctive locational factors of a modern (smart) city contribute significantly to a city's competitiveness and sustainable development. It increases the attractiveness of the city for both companies and businesses as well as tourists and citizens. Thus, sports and cultural infrastructure has become a crucial element of a successful destination branding and marketing strategy. Initiating infrastructural development through hallmark events such as Olympic Games, World Exhibitions or other major events is a popular strategy.

As of hallmark events and their impacts and legacies the differentiation of impact and legacy is not fully clear. Most researchers agree on the existence of different forms of legacy: tangible and intangible legacy, intended and unintended legacy, personal and territorial, positive and negative, short-term and long-term legacy and others. Hence, Chappelet (2012) suggests to better discuss legacies of mega-events instead of legacy.

The IOC differentiates legacies of the Olympic Games as follows: "Olympic legacies generally fall into five categories – sporting, social, environmental, urban and economic – and can be in tangible or intangible form" (International Olympic Committee, 2012). In Olympic Games history, Melbourne's candidature document for the Olympic Games in 1956 first mentioned 'legacy'. Only few other cities took up this issue until the IOC organized an international symposium to discuss the Games' legacies in 2002 and officially introduced legacy in the Olympic Charter in 2003 (International Olympic Committee, 2017). Following to that, more and more researchers from different academic perspectives discussed how to conceptualize, plan and evaluate Olympic legacies, often related to specific editions of Olympic Games. (e.g. Munoz, 2006; Dansero and Puttilli, 2010; Andranovich and Burbank, 2011; Dickson, et al. 2011; Agha, et al. 2012; Leopkey, and Parent 2012). According to the Olympic Charter Chapter 5.I.34, "the construction of new permanent venues or infrastructure for the purposes of the organisation of the Olympic

Games shall only be considered on the basis of sustainable legacy plans” (International Olympic Committee, 2019). However, the Charter does not define specific requirements for those legacy plans or post-use concepts.

The Bureau International des Exposition (BIE), the intergovernmental organisation overseeing and regulating international exhibitions such as World Expos, Specialised Expos, Horticultural Expos and the Triennale di Milano is even less precise as of the legacy of the exhibitions. It adopted a resolution in 1994 underlining that “Expos must tackle the challenge of environmental protection” (BIE, 2020a). On its website BIE states that “Participants therefore had to consider the environmental and social impact of their pavilion and their potential for re-use after the Expo. This is key to Expos today” (ibid.). However, a look at the list of BIEs project assessment criteria for the candidates’ bids shows that BIE explicitly assesses the “environmental impact of the project”, but does neither request a comprehensive post-use concept for the built infrastructure nor make any recommendation about how to govern the infrastructure after the event (BIE, 2020b).

For about two decades, research has increasingly discussed different impacts of hallmark events such as EXPOs or Olympic Games on the host cities, among them economic impacts, image impacts, or impacts on the cities’ urban development, transportation system, housing situation or similar. Already in 1999, Chalkley and Essex published one of the most comprehensive papers assessing impacts of the Olympic Games on the urban environment of host cities from the start of the Modern Games in 1896 until 1996. Two decades later, Thomson, et al. (2019) provide a systematic quantitative review of literature on sport event legacy, elaborating that half of the studies considered specifically highlight the importance of legacy planning. Annear, et al. (2019) systematically assess the literature on sports mega-events and adult physical activity legacy, pointing out that most studies found no evidence for long-term physical activity amongst citizens of former major events host cities.

Some studies discuss specific types of legacy: Kassens-Noor (2012) analyses particularly the transport legacy of Olympic Games from 1992 to 2012 by examining archive material related to the events and conducting expert interviews with decision makers in the five former host cities. She also indicates the positive outcome of the introduction of the IOC’s Transfer of Knowledge Program that aims to increase learning from previous event editions. Girginov and Hills (2009) discuss the ‘active sports legacy’ of the London Olympics 2012 by examining links between the event and sustainable sports development.

However, despite that perception of major sport events both as “agent of urban policy” (Chalkley and Essex, 1999, p. 370), “springboard for urban change” (ibid), and impacting factor for physical activities, there is few academic discussion of the long-term use of the built legacy of those events, on their governance structures, operations and financing. For World Exhibitions, the topic of impacts and legacy is not new either and shows a similar lack of research. World Exhibitions of the 19th century starting with the Great Exhibition of London in 1851, followed by World Exhibitions in Paris, Vienna, Philadelphia

and other cities already show event-led urban development and change. (Hall, 1997). Li and McCabe (2013) provide a comprehensive overview about literature on legacies of mega-events and develop a framework of key indicators to measure the socio-economic legacies particularly with regard to tourism. One of the few examples generally assessing legacies of World Exhibitions is from Kalb (1994). She shows the wide range of impacts Expos have on cities and regions, however does not discuss specific post-use concepts and suitable governance structures for the former World Exhibitions buildings either.

Generally, research on impacts and legacy of World Exhibitions relates more to specific editions than being systematic and comprehensive. For example, Wilson and Huntoon (2001) elaborate the shift from EXPOs historically celebrating progress in science and technology to in the 20th century being a catalyst for the revitalization of urban areas. They specifically evaluate the post-EXPO land use planning in Lisbon, the host city of EXPO 1998. Carrière and Demazière (2002) refer to the same EXPO as an example to discuss urban regeneration projects with a special focus on the Pros and Cons of Public-Private-Partnerships in this context.

As of the EXPO 2000 in Hannover, Heise (2002) comprehensively evaluates how the EXPO's concept of sustainable development got implemented in Hannover's urban development. However, her research dates from 2002 and, therefore, can only provide a short-term implementation evaluation. Deng et al. (2016) publish a paper explicitly dealing with the built legacy of World Exhibitions – in this case for EXPO 2010 in Shanghai. Also, for Milan's EXPO 2015 there are some studies on its impacts and legacy available (e.g. Iraldo, et al. 2014), Morandi, 2018). However, studies remain largely on an analytical level, differentiating legacies and discussing the challenges in forecasting and measuring them. Therefore, this conceptual paper aims to show management challenges of the built legacy of those hallmark events, and how agile government procedures and tools can contribute to a more sustainable use of the infrastructure both from an economical and a social perspective.

2.0 Sports and Culture Infrastructure as Public Service

In most countries, sponsorship of sports and cultural infrastructure is, to a large extent, still governmental. Even though Public-Private-Partnerships (PPP) generally became more and more popular for big infrastructural projects as part of urban development plans since the 1990s, the PPP concept entails different risks for the ones involved:

First, due to a lack of reliable data, it is hard to draw decisions based on complete information as regards their long-term-use and life-cycle development. High fluctuations of the market, short trend cycles and difficulties to forecast trends and users behaviour lead to a complex and incomplete information situation and difficulties to develop reliable business case scenarios.

Second, independently of the respective use concept, many different stakeholders are involved, all having different expectations and requirements towards the infrastructure.

Third, the venues are characterised by a high building complexity, need state-of-the-art technology to be competitive and are usually expensive due to their specific architecture. This results in high maintenance and re-investment costs.

Moreover, sports and cultural venues are mainly purpose-built facilities. A limited adaptability of sports and cultural infrastructure for use by third parties in case of the necessity to change the use concept make sport and cultural facilities a challenge for responsive and effective governance and compared to other infrastructural projects rather unattractive for private investors. (Bielzer and Wadsack, 2011).

Accordingly, to that, with some exceptions in professional sports or private donators for cultural venues, municipalities are still widely responsible for ownership and management of sports and culture infrastructure and see their role as public service providers. There is no doubt, that sports goes beyond simple leisure activities and entertainment, since it “enhances individuals and communities, boosts the economy, and supports a range of other policy priorities, including health, tackling crime and education” (HM Government, 2015) and may contribute to a community’s identity.

The role of culture in a society is equally important. Besides entertainment, participating in culture may amongst others improve learning, help to develop skills and creativity, promote identity formation, increase tolerance and intercultural understanding. Sharing cultural experiences may foster exchange and bring people together. Thus, there is a clear need for sport and cultural spaces as “third places” (Oldenburg 1989) apart from people’s “first place” (home) and “second place” (work or school) (ibid.).

However, providing sports and culture infrastructure is expensive. Lots of sports and cultural venues are highly subsidized by the government both in construction and in operations, and in many cases potential savings are not yet exploited. Therefore, in the sports and culture sector, agile governance may significantly increase the sustainability of the respective infrastructural projects. Even more, to tackle the uncertainty of post-use, multiple stakeholders, fast changing trends and use habits, there is a clear need for agile governance to flexibly react. Since competitiveness of cities is a key to their sustainable development, it requires agility at the government’s and organizational levels including customized and flexible tools to assure effective governance to respond to the fast changing conditions and environment.

3.0 The Concept of Agile Governance

IT-related research has discussed agile software development governance since a decade, at least. It describes the concept of 'agile governance' as "related with the ability to steer (to guide, to govern) an organization" (Luna, et al. 2015, p. 2) whereas "information and communication technologies... are the link between the decision-making ability, ..., and the competence to put into practice these tactics..." (ibid) Luna et al. define three realms as basis for governance: strategic planning, establishment of mechanism to ensure accomplishment of the strategic planning and awareness and reaction to change. (Luna et al. 2015).

Dikert et al. (2016) provide a systematic review of existing reading regarding challenges and success factors for the implementation of agile methods in large teams and large-scale agile transformations. They point out, that a lot of papers are experience reports lacking a sound theoretic foundation. Finally, they identified 29 factors for the successful implementation of agile methods at large scale, amongst them management support, mindset, training, coaching, and customization of the agile model (Dikert et al. 2016).

Hence different academic disciplines deal with agile governance, there is no common understanding of what exactly it is – neither in theory, nor in practice. The term took its origins in software development in the 1990s. From there, it was introduced in academia – first in IT sciences and technologies, later in business, specifically in form of agile project management. Most recently, it became a point in discussion in the context of public governance. In governments' policies, too, there seems to be no common definition of agile governance. Here, the understanding of agile governance ranges from the use of the Agile Manifesto principles in the domain of public service delivery to the use of different forms of technologies in governmental work and activities such as e-government (cf. WEF 2017). In its White Paper on Agile Governance from 2017, the World Economic Forum highlights that agile governance "aims to shift the manner in which policies are generated, deliberated, enacted and enforced ... to keep pace with the rapid changes of society – driven significantly by the rapid development and deployment of emerging technologies. Policy-makers must become more proactive in shaping these developments." (ibid). Thus, agile governance may be defined as "adaptive, human-centred, inclusive and sustainable policy-making" (ibid.).

The methods and tools for agile governance are manifold though (WEF, 2017): Design thinking, policy labs considering a comprehensive stakeholder approach, public-private-data sharing are just some that could help to sustainably and user-oriented operate sports and culture infrastructure, too.

In the context of spatial planning, agile governance is not a commonly used procedure yet. In practice, some regulations and legal framework to consider sometimes limits the potential to use agile methods significantly. For example, public procurement law

does not allow fast reactions as of public infrastructure, even though changes in the environment, in demand, from the stakeholders' side or similar would actually require fast adaptations.

4.0 Hannover EXPO and London Olympics as Hallmark Events – Two cases of legacy planning and implementation

Legacy planning has a lot to do with urban development and spatial planning. Even though this paper for the sake of narrowing the topic cannot consider approaches and actual trends urban development and spatial planning itself, it has to be said that there is considerable research about spatial planning as a social process, too. Christmann et al. (2019) broadly discuss innovations in different areas of spatial planning (urban design, neighbourhood development, urban regeneration and regional planning) and elaborate different phases, actors and conflicts. They also point out, that different countries generally follow different practices of planning. Whereas in the UK a more reactive system to political changes and “discontinuity of rules and practices prevail” (Christmann et al. (2019), p. 1), Germany shows a long continuity of planning law. (ibid.) The brief introduction of the two cases of EXPO Hannover 2000 and London Olympic Games 2012 will discuss the practical impacts the two events had on urban development by explaining their post-use concepts in order to later show the potential of agile governance in similar cases.

4.1 EXPO Hannover 2000

The Hannover World Exhibition took place from 1st of June 2000 to 31st of October 2000 and was visited by 18,1 million visitors. According to official statistics of the BIE (Bureau Internationale des Expositions) 174 participants contributed to the theme “Humankind – Nature – Technology” on a total area of 160 ha. (BIE, 2000) The topic should link ideas and models for a future society and policies integrating technology, environment and mankind and in that referred to and reflected the key issues of the 1992 Earth Summit in Rio de Janeiro and Agenda 21.

The event was organized by Expo 2000 Hannover GmbH with 40% shares hold by the “Bund”, the German Government, 30% by the Federal State Lower Saxony, 20% by the “Expo-Beteiligungsgesellschaft der Deutschen Wirtschaft mbH & Co. Verwaltungs-KG”, 6 % by the City of Hannover and 2 % each by the District Hannover and the “Kommunalverband Großraum Hannover” (a local Government Association) (Heise, P. 2002). The structure of this organizing committee already indicates the different perspectives and interests of the manifold stakeholders involved in the event.

For the land development an own company was founded: EXPO Grund GmbH. Today, EXPO Grund GmbH is 100% owned by the union-boden GmbH (Landeshauptstadt Hannover, LHH, public), whereas EXPO 2000 Hannover GmbH since 2003 is in liquidation (Expo GRUND GmbH, 2002).

Daily newspapers criticized the EXPO Hannover as financial disaster, given the fact that only 18 million people instead of the originally forecasted approx. 48 million visited the event and an overall loss of approx. one billion Deutsche Mark (today approx. 511 million Euro or 2.1 billion Dirham) (Welt, 2015). The original post-use plan for the EXPO Hannover site was based on two main pillars: 90 ha of the overall 160 ha exhibition site was supposed to be developed by the neighbouring Deutsche Messe AG. Independently from the World Exhibition, Deutsche Messe AG, the already existing exhibition company in Hannover, was planned to be extended and modernized to be more competitive in the dense German exhibition market. (Heise 2002) The other 70 ha of Hannover EXPO's total area should be part of the new residential district Kronsberg. Here, a new landscape zone and city district was developed, consisting of new residential areas of passive buildings and low-energy houses, new public transportation links and local recreational areas. (Heise 2002, pp. 124-131.) Even before EXPO Hannover opened its doors, 3000 new housing units were completed. Thousand out of them were used for exhibiting countries' representatives during EXPO. (Heise, 2002, p. 131.) The impact Hannover EXPO had on urban development was widely explored by German researchers (e.g. Ehrenberg and Kruse 2000; Heise, 2002; Ibert and Meyer 2002).

To assure sustainability in the EXPO 2000 projects, the City of Hannover has commissioned the so-called "Hannover Principles", nine guidelines for architects, designers, planners and others involved in infrastructural projects (See Exhibit 1):

Exhibit 1: Hannover Principles

1. Insist on rights of humanity and nature to co-exist
2. Recognize interdependence.
3. Respect relationships between spirit and matter.
4. Accept responsibility for the consequences of design.
5. Create safe objects of long-term value.
6. Eliminate the concept of waste.
7. Rely on natural energy flows.
8. Understand the limitations of design.
9. Seek constant improvement by the sharing of knowledge.

Source: http://www.c2c-centre.com/sites/default/files/The%20Hannover%20Principles_1.pdf

Given the fact that Deutsche Messe AG today has difficulties in renting out the total exhibition space and is considered oversized (and that several pavilions are not in use since many years and in dilapidated condition, there is no doubt that the legacy concept did not fully work (Deutschlandfunkkultur, 2015; GoettingerTageblatt, 2017; Hannover Allgemeine, 2010a). Even the Exposeum, a privately run museum on the EXPO Plaza 11 to recall Hannover EXPO closed its doors in October 2019 (Expo2000, 2020). However, the overall evaluation of the Hannover EXPO's legacy depends on the perspective: host city, exhibitor, visitor, local resident, tourist, etc.

Looking at the post-use of some pavilions, the Hannover EXPO was a legacy success. One example for a sustainable post-use of a pavilion is Iceland's Blue Cube. After the end of the EXPO 2000 the pavilion was deconstructed and rebuilt in the Danish Science theme park Danfoss Universe in Nordborg, Danmark. Here, it is used as an attraction an experience space for artificial geysers (Geyser, nd).

On the former EXPO site in Hannover, legacy situation is divers. On the one hand, for example the Finnish Pavilion was renamed "Fin-Box" and hosts architects, designers and a marketing agency's offices today – an example for successful legacy. A similar situation occurs for the former Belgian pavilion: the owner, a private person, invested 4 million Euro into the conversion of the venue and made it a successful recording studio and event location named Peppermint Pavilion. Since 2002, Hannover University runs different study programmes successfully on the former EXPO site with a total of approx. 2.500 students on premise (Deutschlandfunkkultur, 2015).

On the other hand, the pavilions of Norway, Jemen and Hungary were dismantled with no post-use (Hannover Allgemeine, 2010b). Eighteen years of no post-use made the former Dutch pavilion a derelict building. A similar situation occurred for the Spanish pavilion, after EXPO sold to a French business man (Expo GRUND GmbH, 2002). The Polish Pavilion was sold to a Vietnamese owner who wanted to convert it into an event location for cultural events but was finally abandoned (Deutschlandfunkkultur, 2015). The Lithuanian Pavilion is another example of the unsteady post-EXPO history of some pavilions: According to EXPO Grund GmbH it was bought by a Lithuanian business man in 2007, then sold to a lawyer from Berlin, burned three times in 2019, should then be part of a project in the application of the City of Hannover as "European Capital of Culture 2025", but was now sold to a real estate company from Sehnde (Hannover Allgemeine, 2019; Expo GRUND GmbH, 2002; Neue Presse, 2019).

Even though some pavilions are best practise examples for a sustainable post-use, it can be stated that Hannover missed to develop a comprehensive post-use concept for the whole expo site. According to EXPO Grund GmbH, only 28 pavilions and other venues of EXPO Hannover 2000 are still in use today (ExpoPark Hannover, 2020). The randomly picked examples listed above show that there is no comprehensive and consistent sustainable post-use concept for the EXPO site in Hannover. To find new owners for the complex buildings requesting high investments for conversion is a challenging task for

EXPO Grund GmbH. It shows the dependency from private partners, and how difficult it is to involve them in an overall sustainable post use concept that is successful from the perspective of a former EXPO host city.

4.2 The London Olympic Games 2012

The London Olympic Games started on 27th of July 2012 and took place both in London city and in the Olympic Park, a site that was previously one of the less attractive areas on London Eastland. In total, 10,568 athletes competed in the event that lasted until 12th of August 2012. (for further facts and figure see London 2012 Olympic Games, 2013). All London venues outside the Olympic Park were existing before the Games and only required some changes in order to fulfil the IOCs requirements for Olympic host venues (See Exhibit 2).

Exhibit 2: Existing London venues for Olympics 2012

- Earls Court, used for Volleyball,
- ExCel, a multifunctional venue used for lots of different sports such as boxing, fencing, table tennis and others,
- Greenwich Park, the place for Equestrian events,
- Horse Guards Parade for Beach Volleyball,
- Hyde Park as location for triathlon and 10 km marathon swimming,
- Lord's Cricket Ground, the venue used for archery,
- the Mall, an area used for marathon and road cycling amongst others,
- the North Greenwich Arena mainly used for Gymnastics and Basketball,
- the Royal Artillery Barracks, a venue used for shooting and archery,
- Wembley Arena as home for Badminton and rhythmic gymnastics,
- Wembley Stadium used for football and
- Wimbledon as home for Olympic tennis matches.

By using existing and established sports infrastructure, the London Olympics Organizing Committee contributed significantly to the sustainability of the Games. During transformation of the site for the Olympic Park, the Olympic Delivery Authority (ODA) tried to ensure different sustainability measures such as to re-use the bricks of the 220 buildings were demolished for the new Olympic park. Furthermore, 1,5 cubic metres of contaminated soil got cleaned to make sure a safe use of the site and seeds for native plants were collected to be planted after finishing construction of the Olympic Park. London 2012 Olympic and Paralympic Games, 2012, p. 19/20). The main sports venues are shown in Exhibit 3.

Exhibit 3: Main Olympic Venues

- The *Olympic and Paralympic Stadium* with a capacity of 80,000. After the Games, it was transformed into the home of Premier League Team West Ham United and used for several other sports events, too (e.g. Athletics, Rugby, see <https://www.london-stadium.com/stadium/about>). Owner of the stadium is the E20 STADIUM LLP, a London Legacy Development Corporation body.
- The *Aquatics Center* was designed by Zaha Hadid and should have been built anyway. When the decision was drawn that London would be hosting the Olympic Games 2012, it got two temporary, later demounted stands as “wings” to create the Olympic capacity of 17,500. After removing the stands in 2013 it became a public swimming centre with a regular seating capacity of 2,500 that can be enhanced to 3,500 for FINA or other professional swimming and diving competitions. The center is managed by Greenwich Leisure Limited which also operates the Copper Box Arena, during the Olympics used for handball, Modern Pentathlon and Goalball, and today a multi-purpose arena for the community.
(<https://www.londonaquaticscentre.org/about/history>)
- The *Velodrome* was designed to later become the core of the Lee Valley VeloPark operated by Lee Valley Leisure Trust. The trust also runs the Lee Valley White Water Center, the former *Water Polo Arena*, and the Lee Valley *Hockey and Tennis Center*. The three former Olympic venues are all owned by the Lee Valley Regional Park Authority. (<https://www.leevalleypark.org.uk/en/content/cms/corporate/london-2012-legacy/>)
- With a capacity of 12,000, the London Olympics Basketball Arena (used for basketball, handball, wheelchair basketball and wheelchair rugby) was the largest Olympic temporary venue by then and characterized by its recyclable PVC exterior that could be used for changing light shows at night. In 2013, the arena was dismantled and put up for sale by its owner Barr Construction.
(<http://www.psam.uk.com/olympic-basketball-arena-sale>)
- The Riverbank Arena, another temporary Olympic venue, was used for Hockey and 5-/7-a-side football.

The list of venues from the beginning planned as temporary ones and the early development of post-use concepts show the efforts to create a sustainable legacy of the Games. Right now, a culture and education quarter is expected to be added, too. Well-known partners like Victoria and Albert Museum and the Smithsonian take part in this project “East Bank” (New York Times, 2018). These on the one hand positive developments of the area result in a change of the social structure on the other hand. Some criticism of the London Olympics legacy was already directed to the post-use of the Olympic village.

The Olympic Village consisted of approx. 3,000 apartments in 11 residential blocks that hosted 16,000 athletes and officials during the Games. After the Games, the properties were sold or rented out, some of them as affordable housing (London 2012 Olympic and Paralympic Games, 2012: p 21). However, housing prices increased and there is quite some controversy about the revitalization project of the whole area (The Guardian, 2017).

5.0 Conclusion: The Potential of Agile Governance for Hallmark Events Sports and Culture Infrastructure Legacy

The two cases showed that there are different ways to increase a sustainable legacy of hallmark events and that careful planning is a success factor. A key difference between the built infrastructure legacies of EXPOs and Olympic Games lies in the almost “logical”, self-explaining post-use of Olympic Sports venues through sports, whereas EXPO sites’ and pavilions’ post-use concepts don’t “recommend” a specific post-use and therefore require more creativity and flexibility when thinking about a sustainable post-use. Here, from cultural uses, uses for events, and office uses to the use for educational purposes everything is possible. However, more or less restructuring of the EXPO venues is needed. Alongside with that there are manifold ownership and management structures in place.

Even though the post-use concept for Olympic Sport venues seems easier to develop, this is only true on the generic level. Forecasts of developments in specific active sports, sport events, trends in sports and actual user and visitor figures for the venues are still a challenging task that is impacted by a variety of different external factors. Ownership and management structures, key players and conditions of the local and eventually regional, national and international sports market, competition, multiple stakeholders, and other factors impact the individual situation and perspective of the former Olympic venues.

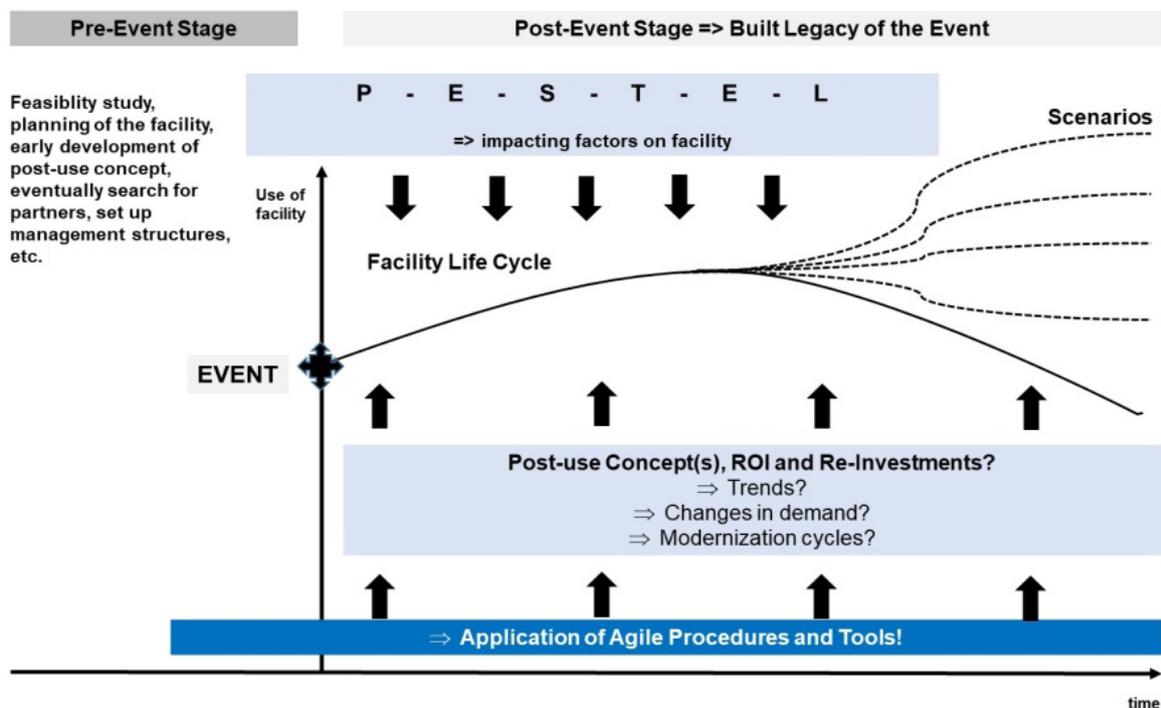
This is the point where the implementation of agile governance and the use of agile procedures and tools is useful. Using appropriate software tools, collect data, and draw decisions based on integrated management information systems contributes to a large extent to a sustainable legacy.

Considering that managing sports and culture public infrastructure is a complex task with lots of stakeholders involved, systems and design thinking seem to be promising methods to take into account complexity, integrate different stakeholder perspectives and develop sustainable concepts with broad acceptance. Whilst system thinking enables the identification of impacting factors and fosters rapid learning, design thinking is based on the idea of co-creation and by that creates social meaning of the respective project. These approaches based on iteration may facilitate dynamic policy-making and agile governance meeting the users’/citizens’ needs instead of “static” planning and controlling.

Also, the approach of installing policy labs could be transferred on sports and culture infrastructure. Within the course of a policy lab public services could be designed that are focused on the actual user requirements for the sports and cultural infrastructure. Hereby, data analytics about active sports participation of audience behaviour are a crucial point. The more knowledge about the users and their expectations, using behaviour of the infrastructure, preferences, etc., is available, the more public services can respond to that. Adding to that, Management Information Systems collecting data about facilities' maintenance parameters, costs, etc. can provide an important basis for sustainable management of the infrastructure. Furthermore, civil society organizations like sports or culture clubs could be easily involved in policy labs and by that foster public-private collaboration.

To conclude, the Facility Life-Cycle-Model for sports and cultural facilities can provide a better understanding of the time dimension and resource requirements during planning and operational stage of this highly complex infrastructure and how agile procedures may be included in the process (See Exhibit 4).

Exhibit 4: An Agile Approach to Government Events: Facility Life-Cycle-Model for sports and cultural facilities



Source: Author

References

- Agha, N., S. Fairley, and H. Gibson (2012): Considering legacy as a multi-dimensional construct: The legacy of the Olympic Games. In: *Sport Management Review*, 15, pp. 125-139.
- Andranovich, G. and M. J. Burbank (2011): Contextualizing Olympic legacies. In: *Urban Geography*, 32, pp. 823-844.
- Annear, M. J., Y. Shimizu, and T. Kidokoro (2019): Sports mega-event legacies and adult physical activity: A systematic literature review and research agenda. In: *European Journal of Sport Science*, Vol. 19: 5, pp. 671–685.
- Bielzer, L. and Wadsack, R. (2011). Betriebswirtschaftliche Herausforderungen des Managements von Sport- und Veranstaltungsimmobilien. In L. Bielzer & R. Wadsack (Eds.), l.c., pp. 53-127.
- Carriere J, and C. Demaziere (2002): Urban planning and flagship development projects: lessons from EXPO'98, Lisbon. In: *Planning Practice and Research*, vol. 17(1), pp. 69-79
- Chalkley, B., and S. Essex (1999): Urban development through hosting international events: a history of the Olympic Games. In: *Planning Perspectives*, 14, pp. 369-394.
- Chappelet, J.-L. (2012): Mega sporting event legacies: a multifaceted concept. In: *Papales de Europa*, vol. 25, pp. 76-86.
- Christmann, G. B., O. Ibert, J. Jessen, and U.-J. Walter (2019): Innovations in spatial planning as a social process – phases, actors, conflicts. In: *European Planning Studies*, available at <https://www.tandfonline.com/doi/pdf/10.1080/09654313.2019.1639399?needAccess=true>, last accessed on 15th of December 2019
- Dansero, E. and M. Puttilli (2010): mega-events tourism legacies: The case of the Torino 2006 Winter Olympic Games – A territorialisation approach. In: *Leisure Studies*, 29, pp. 321-341.
- Deng, Y., S. W. Poon, and E. H. W. Chan (2016): Planning mega-event built legacies - A case of EXPO 2010. In: *Habitat International*, vol. 53, pp. 163-177.
- Dickson, T. J., A. M. Benson, and D. A. Blackman (2011): Developing a framework for evaluating Olympic and Paralympic legacies. In: *Journal of Sport & Tourism*, 16, pp. 285-302.
- Dikert, K., Paasivaara, M. and Lassenius, C. (2016): Challenges and success factors for large-scale agile transformations: A systematic literature review. *Journal of Systems and Software*, 119: 87-108.

Ehrenberg, E., and W. Kruse (2000): Soziale Stadtentwicklung durch große Projekte?: EXPOs, Olympische Spiele, Metropolenprojekte in Europa: Hannover, Sevilla, Barcelona, Berlin. Münster: LIT Verlag.

Girginov, V. and L. Hills (2009): The political process of constructing a sustainable London Olympics sports development legacy. In: International Journal of Sport Policy and Politics, 1:2, pp. 161-181.

Hall, C. M. (1997): Mega-events and their legacies. In: Murphy, P. (ed.): Quality Management in Urban Tourism. Chichester: Wiley, pp. 75-87.

Heise, P. (2002): Nachhaltigkeit von Weltausstellungen am Beispiel der Expo 2000 in Hannover: eine Wirkungsanalyse. Dissertation, Fakultät Raumplanung der Universität Dortmund, Hochschulschrift.

Ibert, O. and H. N. Mayer (2002): Innovation im Kontext der Weltausstellung EXPO 2000. Der neue Stadtteil Hannover-Kronsberg. In: Müller, H./K. Selle (Hrsg.): EXPOst. Großprojekte und Festivalisierung als Mittel der Stadt- und Regionalentwicklung: Lernen von Hannover, Hannover, Aachen & Dortmund: Dortmunder Vertrieb für Bau- und Planungsliteratur, pp. 297-308.

Iraldo, F., M. Melis, and G. Pretner (2014): Large-Scale Events and Sustainability: The Case of the Universal Exhibition ECPO Milan 2015. In: Economics and Policy of Energy and the Environment, vol. 3, pp. 139-165.

Kalb, C. (2004): Weltausstellungen im Wandel der Zeit und ihre infrastrukturellen Auswirkungen auf Stadt und Region (Europäische Hochschulschriften Reihe V Volkswirtschaft und Betriebswirtschaft Bd.1570), Peter Lang GmbH: Frankfurt am Main.

Kassens-Noor, E. (2012): Transport Legacy of the Olympic Games 1992-2012. In: Journal of Urban Affairs, Vol. 35:4, pp. 393-416.

Leopkey, B. and M. M. Parent (2012): Olympic Games legacy: From general benefits to sustainable long-term legacy. In: The International Journal of the History of Sport, 29, pp. 924-943.

Li, S., and S. McCabe (2013): Measuring the Socio-Economic Legacies of Mega-Events: Concepts, Propositions and Indicators. In: International Journal of Tourism Research, Vol. 15, pp. 388-402.

Luna, A.J.H. de O., Kruchten, P., and Moura, H. P. de (2015): Agile Governance Theory: Conceptual Development. In: Sakata, D. M. G. (Ed.): 12th International Conference on Management of Technology and Information Systems. Sao Paula FEA-USP, pp. 1-22.

Morandi, C. (2018): The Spatial Projects of the Expo 2015 and the Post-Event: The Relationship with Milan's Urban Change Before, During, and After the Crisis. In: Di Vita, S./C. Morandi (eds.): *Mega-Events and Legacies in Post-Metropolitan Spaces*. Palgrave Macmillan.

Muñoz, F. (2006): Olympic urbanism and Olympic villages: Planning strategies in Olympic host cities, London 1908 to London 2012. In: *Sociological Review*, vol. 54(2), pp. 175–187
Oldenburg, R. (1989): *The great good place: Café, coffee shops, community centers, beauty parlors, general stores, bars, hangouts, and how they get you through the day*. New York: Paragon House Publishers.

Thomson, A., G. Cuskelly, K. Toohey, M. Kennelly, P. Burton, and L. Fredline (2019): Sport event legacy: A systematic quantitative review of literature. In: *Sport Management Review*. Vol. 22:3, pp. 295-321.

Wilson M. and L. Huntoon (2001): World's fairs and urban development: Lisbon and EXPO'98. In: *International Review of Comparative Public Policy*, Vol. 12, pp. 371-393.
World Economic Forum (ed. 2017): *Agile Governance. Reimagining Policy-Making in the Fourth Industrial Revolution*. Available at:
http://www3.weforum.org/docs/WEF_Agile_Governance_Reimagining_Policy-making_4IR_report.pdf, last accessed at 15th of December 2019.

Internet Sources:

BIE, 2020a, Available at: <https://www.bie-paris.org/site/en/publications/annual-bulletin/quarterly-newsletter/item/104-2000-hannover>, last accessed on 15th of December 2019

BIE, 2020b, Available: <https://www.bie-paris.org/site/en/how-to-organize-an-expo>, last accessed on 15th of December 2019

BIE 2000, Available: <https://www.bie-paris.org/site/en/2000-hannover> last accessed on 15th of December 2019

Deutschlandfunkkultur, 2015, Available: https://www.deutschlandfunkkultur.de/nachnutzung-des-expo-gelaendes-zwischen-oedland-und.1013.de.html?dram:article_id=329275, last accessed on 15th of December 2019

Expo GRUND GmbH, 2002, Available: [https://e-government.hannover-stadt.de/lhhSIMwebdd.nsf/9359EB8D0F764F46C1257CFD0047BE54/\\$FILE/AAWL_20140509_Anlage1.pdf](https://e-government.hannover-stadt.de/lhhSIMwebdd.nsf/9359EB8D0F764F46C1257CFD0047BE54/$FILE/AAWL_20140509_Anlage1.pdf), last accessed on 15th of December 2019

Expo2000 (2020), Available: <https://www.expo2000.de/>, last accessed on 15th of December 2019

ExpoPark Hannover, 2020, Available: http://www.expo-park-hannover.de/02_die_exp_2000.html last accessed on 5th of January 2020

Geyser, nd, Available: <https://universe.dk/en/the-park/attractions/geyserlast> accessed on 5th of January 2020

GoettingerTageblatt, 2017, Available: <https://www.goettinger-tageblatt.de/Nachrichten/Wirtschaft/Weltweit/Wolfram-von-Fritsch-verlaesst-Deutsche-Messe-AG> last accessed on 15th of December 2019 HM Government (2015), Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/486622/Sporting_Future_ACCESSIBLE.pdf last accessed on 5th of January 2020

Hannover Allgemeine, (2010a), Available: <https://www.haz.de/Nachrichten/Wirtschaft/Niedersachsen/Deutsche-Messe-legt-durchwachsene-Bilanz-vor> last accessed on 15th of December 2019 Hannover Allgemeine, (2010b), Available: <https://www.haz.de/Hannover/Themen/Archiv/Expo-Hannover-10-Jahre-danach/Was-von-der-Expo-in-Hannover-uebrig-blieblast> accessed on 5th of January 2020

Hannover Allgemeine, (2019), Available: <https://www.haz.de/Hannover/Aus-der-Stadt/Litauens-Expo-Pavillon-ist-verkauft-Aha-muss-Kulturhauptstadtidee-fuer-Hannover-neu-planen> last accessed on 5th of January 2020

International Olympic Committee (2012), Available: https://stillmed.olympic.org/Documents/Olympism_in_action/Legacy/Olympic_Legacy.pdf.pdf 15th of December 2019.

International Olympic Committee (2017), Available: https://www.olympic.org/~media/Document%20Library/OlympicOrg/Documents/Olympic-Legacy/IOC_Legacy_Strategy_Full_version.pdf?la=en, last accessed on 15th of December 2019

Lee Valley Regional Park Authority (2012), Available: <https://www.leevalleypark.org.uk/en/content/cms/corporate/london-2012-legacy>, last accessed on 15th of December 2019 London Aquatics Center (2019), Available: <https://www.londonaquaticscentre.org/about/history>, last accessed on 15th of December 2019

London Stadium (2019), Available: <https://www.london-stadium.com/stadium/about>, last accessed on 15th of December 2019

London 2012 Olympic Games (2013), Available: https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/Games/Summer-Games/Games-London-2012-Olympic-Games/Facts-and-Figures/Factsheet-Facts-and-Figures-London-2012.pdf#_ga=2.127787341.1362412674.1576441131-863350671.1556547237, last accessed on 15th of December 2019

International Olympic Committee, (2019), Available: https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/General/EN-Olympic-Charter.pdf#_ga=2.116741198.973911691.1574598909-334180229.1574598909, last accessed on

15th of December 2019

London 2012 Olympic and Paralympic Games (2012), Available: https://stillmed.olympic.org/Documents/Reports/Official%20Past%20Games%20Reports/Summer/ENG/2012-RO-S-London_V2.pdf, last accessed on 15th of December 2019

Neue Presse, 2019, Available: <https://www.neuepresse.de/Hannover/Meine-Stadt/Hannover-Schon-wieder-Feuer-im-Litauischen-Expo-Pavillon> last accessed on 5th of January 2020

New York Times, 2018, Available: <https://www.nytimes.com/2018/10/09/business/london-olympic-park.html>, last accessed on 15th of December 2019

Pan Stadia & Arena Management (2019), Available: <http://www.psam.uk.com/olympic-basketball-arena-sale>, last accessed on 15th of December 2019

The Guardian, 2017, Available: <https://www.theguardian.com/cities/2017/jul/27/london-olympic-park-success-five-years-depends>, last accessed on 15th of December 2019

The Hannover Principles (1992), Available: http://www.c2c-centre.com/sites/default/files/The%20Hannover%20Principles_1.pdf, last accessed on 15th of December 2019

Welt, 2015, Available: <https://www.welt.de/kultur/article140154800/Weltausstellungen-im-digitalen-Zeitalter-Lachhaft.html>, last accessed on 15th of December 2019

WEF (2017), Available: http://www3.weforum.org/docs/WEF_Agile_Governance_Reimagining_Policy-making_4IR_report.pdf accessed on 15th of November 2019

Using Behavioural Insights to address Agile Government's Structural Tensions

Himanshu Vashishtha

CEO

SixthFactor Consulting

Email: Himanshu.vashisthta@sixthfactor.com

Arun Joshi

Partner at SixthFactor Consulting

Email: arun.joshi@sixthfactor.com

Omneya Omar

Senior Researcher

SixthFactor Consulting

Email: omneya.omar@sixthfactor.com

Abstract

Behavioural insights are becoming increasingly popular with public policy practitioners. Following the Behavioural insights success across multiple European and Western countries, such as the United States, United Kingdom, Germany and Australia; this paper addresses our contribution over the past two years to the body of knowledge brought up in the GCC Region about utilising behavioural insights. In our potential as a research consultancy we aim to support government entities to achieve public policy goals through behavioural interventions. At SixthFactor consulting we present a 'Nudge Unit' designated to bridge the gaps between human capital performance and public policy objectives. The paper highlights our proposed solutions per typical tension fields that hampers the road towards agile government; which in return hampers the overall macro vision of development and growth across the country.

Keywords: behavior insights, agile government, structural tensions,

Author Profiles

Himanshu Vashishtha: Himanshu is the CEO, SixthFactor Consulting. He is a market researcher with two decades of experience in shaping marketing strategy for global brands. He was heading the largest research agency in MENA region before he set up a new age research firm, SixthFactor, with offices across Dubai, India and Singapore to help brands get clarity, predict consumer behavior and make profitable choices. Himanshu is a thought leader in applied behavioral economics and neuromarketing in the region. He contributes to newspapers, periodicals and magazines regularly and speaks on these topics in conferences across Dubai, Singapore and India. Teaching Behavioural Economics and Applied Neuromarketing in various institutes including Indian Institute of Management helps him be on top of the latest developments in consumer understanding. He has been on the board of numerous organizations and councils such as TiE, Retail ME, Super Brands Council, Asian Brand Council, Gemas Awards etc. and continues to develop new principles in consumer choice architecture. Himanshu is someone who seeks nature to revive his soul regularly and is currently experimenting with minimalism.

Arun Joshi: Arun is a Partner at SixthFactor Consulting and he was part of the founding team. He is an accomplished marketing research veteran with varied expertise and equipped with learning drawn from work done for leading public sector entities and private sector organisations in a wide spectrum of industries across the Middle East, Africa, Eastern Europe, and Asia. In his previous role, he was the global training director at the largest global marketing research organisation. As part of his work in the recent years, among other things, he has designed, developed and implemented research solutions that make use of various new-age techniques and tools such as Implicit Testing, Behavioural Insights, Nudge Theory, Electroencephalography (EEG), Eye Tracking, Galvanic Skin Response (GSR), and Facial Coding. Arun has published papers, and spoken on several occasions at various industry fora, including events by ESOMAR. He has taught at various leading business schools as visiting faculty and guest lecturer, for basic and advanced marketing research courses and topics. He has run marketing research workshops on various subjects for several clients. He holds a B. Tech. degree in Chemical Engineering from Indian Institute of Technology Delhi and an MBA from Xavier Institute of Management Bhubaneswar in India.

Omneya Omar: Omneya is a Senior Researcher, SixthFactor Consulting. She is a Business Psychologist with total of 11 years of experience in various disciplines across several countries. Her experience includes business and economics studies instructor in Egypt, Academic Counselling and Business instructor in Kuwait and Director of Character education in UAE. She is a PhD candidate for Research at Lancaster University, with research focus Policy implementation and bridging policy gaps; her doctoral research

focused on the UAE National Program of Happiness and Wellbeing and how to bring it into practice within the Business Organizations setup. Omneya currently works at SixthFactor Consulting as a senior Qualitative researcher, where she ably leverages her Psychology and Policy studies background in uncovering human behaviors and tackling optimum solutions for organizations to maximize the human capital revenue and align to macro government KPIs and vision.

Using Behavioural Insights to address Agile Government's Structural Tensions

1.0 Introduction

The very early discussion about Libertarian paternalism and nudge intervention was brought by Thaler and Sunstein in their bestseller 'Nudge'; They introduced vast amount of examples that explain the benefits of nudge approach and setting choice architecture (Gabriela, Georg, Reimund, & Özgür, 2016; Thaler & Sunstein, 2008). Governments around the globe, have begun to utilise behavioural insights to reimagine and enhance their policies. This has been seen in the United States; Germany, and Australia and with over 150 case studies having been published on this topic in respect to these countries and others with less formal behavioural insight practices (Hallsworth, Rutter, Egan, & McCrae, 2018).

The UK is often said to have been the first major industrialized country which systematically employed behavioural insights to various policy issues on a broad scale, and a closer look at what actually happened, particularly major institutions and their actions, confirms this impression (Geiger, 2016; Hallsworth et al., 2018). Furthermore, in Germany, individual federal ministries usually have their own academic or scientific advisory board "wissenschaftlicher Beirat". These boards are composed of scientists of the department's field of activity whom advise and consult the ministry (Geiger, 2016).

The Gulf Cooperation Council (GCC) countries as well are progressing and implementing ambitious national transformation programs grounded by scientific research and visionary leaders' insights. Behavioural insights can help GCC governments reach many of the social, economic, and environmental objectives outlined in their various national transformation plans, such as UAE Energy Strategy 2050, Abu Dhabi Economic Vision 2030, New Kuwait 2035 Vision, Saudi Vision 2030, and UAE Vision 2021. Policymakers have the task of introducing new policies to achieve these ambitious objectives, but are often frustrated by citizens and human capital natural tendency of resistance and lack of resilience and skills set needed to pursue the policy objectives. Behavioural insights can provide policymakers the bridging tools to change these behaviors, thereby enriching the economic models in place (Adra, Anouti, Klat, Dada, & Clayre, 2018).

This paper consolidates our learning drawn from research we have done at SixthFactor Consulting over the past some years, and it reflects our points of view. It demonstrates the potential we see in utilising behavioural insights and interventions through use of our 'Nudge Unit' based in the United Arab Emirates in addressing the common policy staircase gaps and challenges across the public sector.

2.0 The Agile Government: An Ultimate dream with several challenges

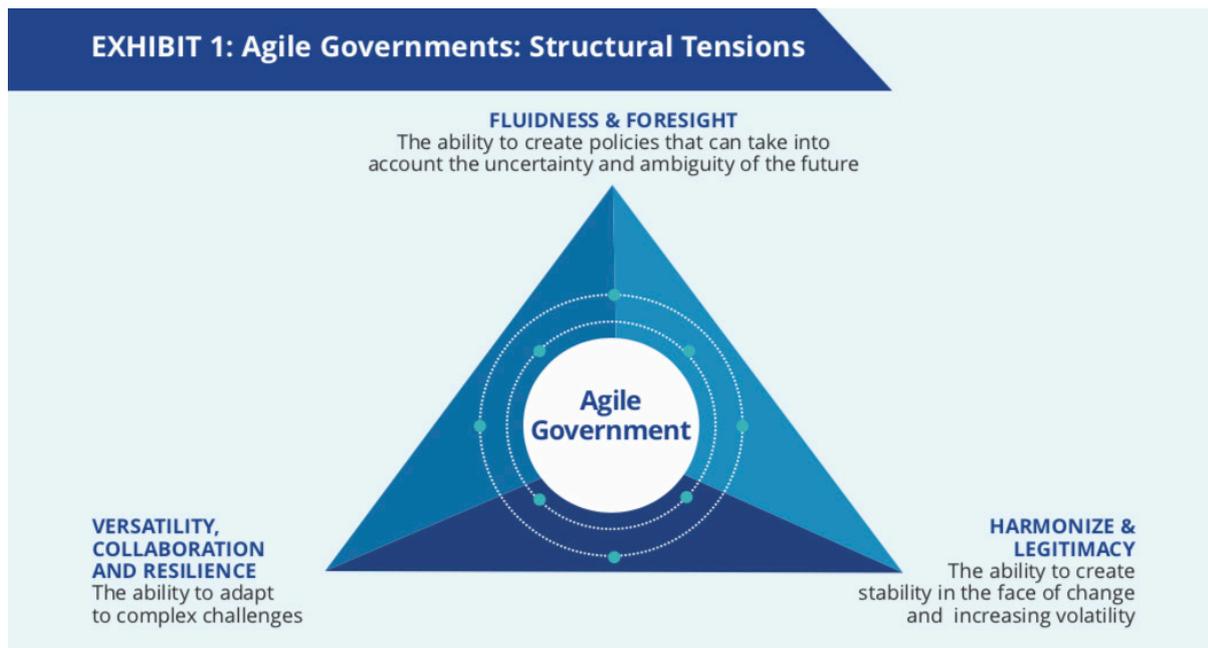
Over the last decade, there has been rapid change in the field of technology. As the Fourth Industrial Revolution has taken root, new governance has been earmarked as a necessity due to the level of transformation being witnessed in the form of new technologies and the transactional and societal implications which they encompass. As such, policymaking of the past has become moot, and new governmental processes are needed in order to keep up with rapid rates of change (Elmi, Broekaert, & Engtoft Larsen, 2017). Agility represents a prime option for a new manner of government function.

Governance is often seen as political, legislative, or executive actions presented by governmental bodies, leaders, or politicians. On the contrary, governance occurs in multiple arenas, including within private organizations and social contexts. Furthermore, the concept of agile government speaks to a need for governance to be more flexible, to change the manner in which it addresses policymaking and legislation. To do so, agile governance reflects upon the way these are created, discussed, and enacted, in an effort to evolve and keep pace with the rapid development of the Fourth Industrial Revolution. Within the concept of agile governance, there exists a specific shift toward being proactive in legislation and enactment, setting it apart from mere plan-based governance (Elmi et al., 2017).

It is no secret that governments worldwide are often characterized as being slow to react and adapt to technological changes; however, within agile governance, systems and design thinking serve to combat this presumption, as they have been shown to provide specific benefits to the governing process, specifically the ability to tackle a diverse set of issues, including complexity and prioritization. In addition, they support the integration “of human-centric views and insights from early prototyping of policies” (Elmi et al., 2017). Agile governance through systems and design thinking takes much into account, representing a balance of sustainable policymaking which is people focused and adaptable, enabling it to withstand the rapid pace of change (Elmi et al., 2017).

Based on the recent MBRSG Policy council paper, in light of OECD research, consultancy and think tank reports on agile government and skills needed for agile government employees, MBRSG identified three structural tensions as shown in Exhibit (1) below.

Exhibit 1: Agile Governments Structural Tensions



Stephens, Spraggon, & Vammalle (2019)

Stephens et al. (2019) identified three levels of tensions often found within governmental bodies. Fluidness & Foresight represent the need to create policies which account for future possibilities. Harmony and Legitimacy takes into account the fact that society and government are ever changing and stability must be created and then maintained, even as outside forces appear volatile. Finally, Versatility, Collaboration, and Resilience allow for adaptability and agility in how employees manage and adjust to change. The next sections in the paper highlight how these structural tensions can be addressed through behavioural insights and choice architecture.

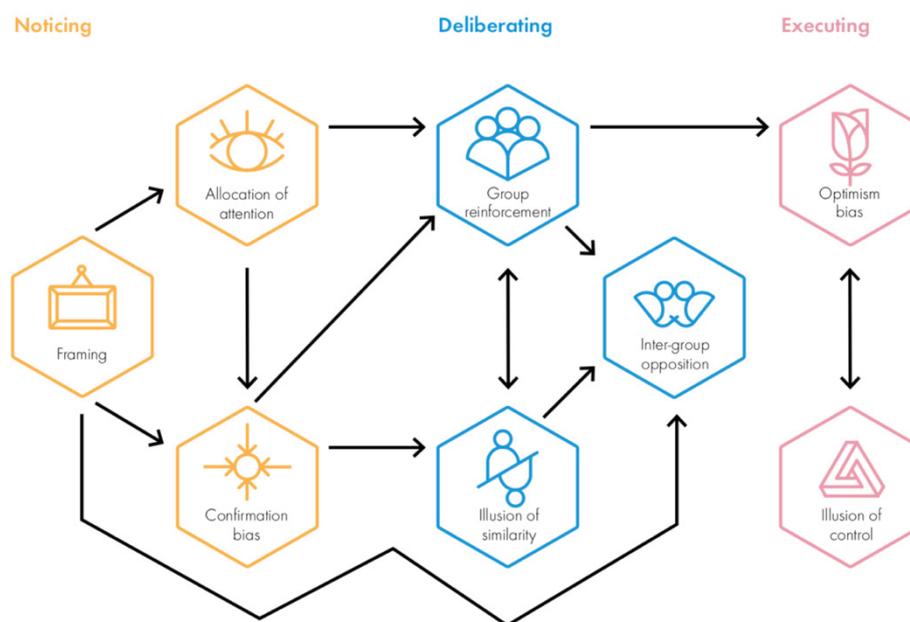
3.0 Role of Behavioural Insights in Public policy implementation

While many people believe that they act most often in a manner which consistently and rationally serves their own benefit, the reality is that this is not the norm. People often face limitations which can present in their willpower, capacity for thought, or memory. From these limitations come predictable cognitive biases which can be seen as behavioural insights (Kuehnhanss, 2018). Behavioural insights draw on multiple fields including behavioural science, economics and psychology, and allow for an understanding of how and why people behave in a particular manner (OECD, 2019). In order to apply behavioural insights, it is necessary to utilise “experiment and observation to identify patterns of behaviour and challenge established assumptions of rational behaviour”(OECD, 2017).

Behavioural insights allow governments to approach policy from the point of view of human behaviour in its reality rather than as it is supposed to be. In essence, behavioural insights make policymaking more realistic, taking into account that when policy is created from only one viewpoint, people may not respond in the way that is expected (Hallsworth et al., 2018), and government intention may not yield the expected outcomes. Behavioural insights absorb some of this unpredictability. Furthermore, policy created or studied using behavioural insights helps to identify unintended consequences or expectations of unrealistic behavioural changes in society (Hallsworth et al., 2018), providing an opportunity for policymakers to make adjustments so that policy has the greatest chance for success.

Carter (2017) note that public policy officials, and therefore, governments can utilise current knowledge of psychology and behaviour to improve outcomes. In addition, there has been an increase in the development of people-centred policies and programmes whose foundations incorporate knowledge of social and psychological aspects of human behaviour. Hallsworth et al. (2018) highlights multiple biases that frequently occurs through the three core activities of policymaking as shown in Exhibit (2) below.

Exhibit 2: Cognitive Biases captured across policy making activities



Hallsworth et al. (2018)

By looking at three core activities of policymaking highlighted by the BIT, we can better understand how behavioural insights can contribute to mitigating structural tensions of maintaining an agile government that were highlighted in Stephens et.al (2019) MBRSG' report.

Each of these components of policymaking represent a core aspect of governance and an area in which behavioural insights can have an impact, as these insights can lead to strategies to mitigate biases and overcome government tensions. First core activity: 'Noticing' represents what is given noticed or given attention within the policymakers' agenda. It directly correlates with framing, which determines when and how it is noticed based upon its phrasing or placement. Confirmation bias refers to one's tendency to look for evidence to support what he or she already believes, leading to a decrease in one's ability to think critically about a topic.

'Deliberating' is another core activity of policymaking which refers to the discussion of policy ideas by policymakers. It includes self-censoring, or conforming the ideas of the majority, and the illusion of similarity, wherein policymakers think that more people agree with them than the number who actually do. The final component, 'Executing', represents how government intention becomes government actions. Executing is most often characterized by two issues, optimism bias, or the overestimation of capability or likelihood of success, and illusion of control, wherein one believes they have substantially more control over outcomes than he or actually does.

Further cognitive biases that were found most common among policy regulator and implementors are explained in Dudley and Xie (2019); such as: 'Availability heuristic' where people assess the frequency or probability of an event based on how easily it can be brought to mind. 'Myopia' for which people assess future benefits or costs using a much higher discount rate than the market interest rate, leading to a choice that overvalues present benefits or costs. 'Overconfidence' explaining the tendency of people to be overconfident in their own abilities to comprehend problems and make judgments. 'Status quo bias' being reluctant to deviate from the status quo; and finally 'Representativeness heuristic' leading people make a judgment on something based on their knowledge about something else that seems to be similar (Dudley & Xie, 2019).

4.0 Can 'Nudging' overcome the challenges? Designing the right Choice Architecture.

Richard Thaler and Cass Sunstein, behavioural researchers, argue for the use of 'nudges' to support individuals as they make choices. Nudging supports changing the individuals' 'choice environment', while leaving them with ultimate freedom to choose (Thaler & Sunstein, 2008). Thus far, the concept of nudging has been well received as a method of designing more focused and effective policies (Schnellenbach, 2012).

Nudging as a behavioural intervention is effective in addressing general employee biases because it allows for improvement in the amount of agency utilised in policy interventions (Kuehnhanss, 2018). Behavioural insights create opportunities to ‘nudge’ individuals toward the best courses of action which ultimately can benefit those on both sides of the policymaking process, specifically, policymakers and employees, and the society whom the policy affects. By utilising behavioural intervention, policy designers can better anticipate what will actually occur during policy implementation, rather than relying on their own biases and conceptions (Öberg, Lundin, & Thelander, 2015).

A key aspect of behavioural interventions is that it involves isolating a specific behaviour that can affect a policy outcome. Isolating this behaviour and breaking down a problem into smaller manageable and impactful ones, policymakers can get to the essence of the pain points and enhance the impact of interventions (OECD, 2019). Hence, nudging has the potential to affect significant change in policy development and enactment. In particular, the method is particularly praised for its ability to act as a ‘soft’ tool, a form of guidance rather than force, which insists that individuals’ maintain a sense of choice and focus on creating a model for choice rather than simply outcomes (Reisch & Sunstein, 2016).

While the discussion about utilising behavioural interventions has many aspects that ought to be considered which cannot be fully addressed for this paper; yet we have to note couple of terms associated with the effectiveness of the proposed nudges. First it is essential to distinguish between ‘exploitative’ and ‘educative’ nudges, also known as ‘system 1’ and ‘system 2’ nudges, respectively, referring to the standard distinction in behavioural economics between two modes of thinking, one intuitive and fast ‘system 1’, and the other reflective and effortful ‘system 2’. Although exploitative nudges deliberately harness individuals’ cognitive biases that are assumed to be given, educative nudges attempt to actually overcome those biases by endowing individuals with resources in order to enhance their capacity for reflective choice (Hertwig & Ryall, 2016; Schubert, 2017).

Second the ‘Choice Architecture’ concept introduced by Thaler and Sunstein (2008), which consists of many features, noticed or unnoticed, that can influence decisions. They argue that poor choice architecture can lead to suboptimal choices, while thoughtful choice architecture can counteract cognitive biases and help people make better choices “as judged by themselves” (Thaler & Sunstein, 2008). Behavioural scholars have proposed that policymakers act as choice architects to frame individual decisions in ways that nudge them to make choices that they would agree make them better off (OECD, 2017, 2019).

5.0 Conclusions and Way Forward

While the subject of behavioural insights and nudge theory have become widely popular, their potential applications to public policy implementation, depending on the academic rigour and science dependency in bridging the gap between human decision-making and policy objectives. To appreciate the opportunities behavioural insights may offer, it is necessary to consider utilising the right choice architecture and set the proper framework in place to address the intended pain points that hampers the policy implementation.

At SixthFactor Consulting our goal is to encourage utilising behavioural insights through our 'Nudge Unit' in a way that can lead to more effective decision-making in government entities and public policy implementation. The three core structural tension areas highlighted to hamper the success of agile government has to do with human capital, in terms of citizens, government employees and policy regulators; all which behavioural insights has vast amount of solutions to offer for the maximization of policy outcomes and governments' agile transformation.

References

Adra, F., Anouti, Y., Klat, A., Dada, S., & Clayre, P. (2018). Triggering Changes in the GCC through Behavioural Insights: An innovative approach to effective policymaking. Retrieved from

Carter, B. (2017). Using behavioural insights to address complex development challenges. Retrieved from Brighton, UK:

Dudley, S. E., & Xie, Z. (2019). Nudging the Nudger: Toward a Choice Architecture for Regulators. Retrieved from USA:

Elmi, N., Broekaert, K., & Engtoft Larsen, A.-M. (2017). Agile Governance: Reimagining Policy-making in the Fourth Industrial Revolution. Retrieved from Geneva, Switzerland:

Gabriela, M., Georg, M., Reimund, S., & Özgür, Y. (2016). Nudging as a New “Soft” Policy Tool – An Assessment of the Definitional Scope of Nudges, Practical Implementation Possibilities and Their Effectiveness. *Economics : the Open-Access, Open-Assessment e-Journal*.

Geiger, N. (2016). Behavioural Economics and Economic Policy: A Comparative Study of Recent Trends. *Oeconomia*, 6(1), 81-113.

Hallsworth, M., Rutter, J., Egan, M., & McCrae, J. (2018). Behavioural Government: Using behavioural science to improve how governments make decisions. Retrieved from London, UK:

Hertwig, R., & Ryall, M. D. (2016). Nudge vs. Boost: Agency Dynamics Under ‘Libertarian Paternalism’. Retrieved from <https://ssrn.com/abstract=2711166>

Kuehnhanss, C. R. (2018). The challenges of behavioural insights for effective policy design. *Policy and Society*, 38(1), 14-40. doi:10.1080/14494035.2018.1511188

Öberg, P., Lundin, M., & Thelander, J. (2015). Political Power and Policy Design: Why Are Policy Alternatives Constrained? *Policy Studies Journal*, 43(1), 93-114. doi:10.1111/psj.12086

OECD. (2017). Behavioural Insights and Public Policy.

OECD. (2019). Delivering Better Policies Through Behavioural Insights: New Approaches. Retrieved from Paris: <https://doi.org/10.1787/6c9291e2-en>

Reisch, L. A., & Sunstein, C. R. (2016). Do Europeans like nudges?(Report). *Judgment and Decision Making*, 11(4), 310. doi:10.2139/ssrn.2739118

Schnellenbach, J. (2012). Nudges and norms: On the political economy of soft paternalism. *European Journal of Political Economy*, 28(2), 266-277. doi:10.1016/j.ejpoleco.2011.12.001

Schubert, C. (2017). Exploring the (behavioural) political economy of nudging. *Journal of Institutional Economics*, 13(3), 499-522. doi:10.1017/s1744137416000448

Stephens, M., Spraggon, M., & Vammalle, C. (2019). *Agile Government*. Retrieved from <https://www.mbrsg.ae/home/research/policy-council/agile-government-agile-skills-report>

Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving Decisions about Health, Wealth and Happiness*. New Haven: Yale University Press.

Islamic Banking, Efficiency and Social Welfare:

A Machine-Learning, Agent-Based Study

Stathis Polyzos

Assistant Professor of Finance
College of Business, Zayed University

Aristeidis Samitas

Chair of the Department of Finance and Professor of Finance
College of Business, Zayed University

Costas Siriopoulos

Professor of Finance
College of Business, Zayed University



Abstract

We attempt to model the benefits of Islamic banking on the efficiency of the banking sector and on societal happiness. We employ machine-learning tools to build a happiness function and integrate it in an agent-based model to test for the direct and indirect welfare effects of implementing Islamic banking principles. We show that even though Islamic banking systems tend to reduce economic activity, financial stability and societal happiness is improved. Additionally, a banking sector employing Islamic principles across all its members is better equipped to handle banking crises since contagion to both economic activity and societal happiness is greatly reduced. Our findings extend existing literature on the advantages of Islamic banking, by quantifying the welfare benefits of the PLS paradigm on happiness and financial stability.

Keywords: happiness economics; Islamic finance; financial stability; agent-based finance

Author Profiles:

Dr. Stathis Polyzos: is Assistant Professor of Finance in the College of Business. He holds a Ph.D. (2019) in Finance from the University of the Aegean. He studied Economics at the University of Warwick (B.Sc., 2001) and Banking and Finance at the Open University of Cyprus (M.A., 2014). Additionally, he holds an M.Sc. (2007) in Computer Science from Staffordshire University. He has worked for many years in the banking sector, as a Corporate Loans Officer in the National Bank of Greece. He was also a freelance consultant and researcher, participating in various FinTech academic and business projects and has extensive experience as a software engineer for various private companies.

His major fields of interest are agent-based financial simulations, banking crises, banking regulation, financial stability, financial crisis contagion and econometric modelling. He has published papers in notable journals, including *Economic Modelling*, *Research in International Business and Finance* and *Tourism Management*.

Prof. Aristeidis Samitasa: is Chair of the Department of Finance and Professor of Finance in the College of Business. He studied Economics at the University of Athens (BSc, 1995) and Banking and Finance at the University of Birmingham (MSc, 1996). He also holds a Ph.D. (2001) in Finance from the University of Athens and he has concluded Postdoctoral Research at City University, London (2009). He has delivered lectures as Full Professor both at the undergraduate and the postgraduate level in the University of the Aegean, University of Athens, University of Thessaly, Hellenic Open University, Open University of Cyprus and in the UK (University of Sheffield, City University and University of Wales). He has also delivered lectures as guest speaker at numerous Universities around the world (USA, Australia, Germany, etc.). He is a member of multiple scientific associations and a reviewer for international journals.

He was Director of the MBA and the Executive MBA programs at the University of the Aegean and member of the University Council. Professionally, he has been employed as consultant for various Ministries in Greece (Ministry of Finance, Ministry of Education, Ministry of Labor) and he was the CEO at an educational organization. His papers have been published in international journals and edited volumes, such as the *Journal of Econometrics*, *European Journal of Finance*, *Journal of International Financial Markets Institutions and Money*, *Applied Financial Economics*, *The Manchester School*, *Economic Modelling*, *Research in International Business and Finance*, *Journal of Policy Modeling*, *Small Business Economics*, etc.

Prof. Costas Siriopoulou: Konstantinos Syriopoulos (Costas Siriopoulos) is Professor of Finance at the College of Business, Zayed University, Abu Dhabi, U.A.E. He holds a B.Sc. degree in Economics (University of Piraeus, Greece), a Master degree in Mathematical Economics and Econometrics (University of Aix-Marseille, France), and a Ph.D. in Mathematical Economics and Econometrics (University of Aix-Marseille, France). His

academic positions also include: Professor of Financial Econometrics, University of Patras, Department of Business Administration (Greece), Chairman of the Department of Business Administration and Member of the University Senate, University of Patras (Greece), Director of Graduate and Doctoral Studies of the Department of Business Administration at the University of Patras, Director of Master Program in “Banking and Risk Management”, at the Hellenic Open University, Assistant Professor of Statistics at University of Macedonia, Department of Economics (Greece), Visiting Professor of Financial Econometrics at the University of Montpellier I, Department of Economic Science (France). He was also served as Vice Executive Chairman of the Hellenic Finance and Accounting Association (HFAA).

His research interests include time series analysis, financial econometrics, market finance, risk analysis and banking regulation. His research has attracted an ANBAR (USA) citation of excellence, and a best paper prize from one of the leading research institutes, The Clute Institute for Academic Research (USA). His professional experience also includes: Director at the Hellenic Capital Market Commission (1997-2000), Chief Investment Manager in the Hellenic Telecommunications Organization Public Pension Fund (2000-2003, 1 billion euros under management), EU-Key Expert in Risk Management at the National Bank of Slovakia, Advisor to the Governor (2004-2005), Bank of Greece, Union Bank of Africa (Lagos, Nigeria, 2005-2006) etc.

Islamic Banking, Efficiency and Social Welfare: A Machine-Learning, Agent-Based Study

Introduction

Islamic finance is no longer a new term in the modern financial industry, since there are currently over 1,500 Islamic financial institutions globally with some \$2.2tn assets in 2016, which are expected to grow to \$3.8tn by 2022 (Financial Times, 2016). In the past years, Islamic finance has seen an annual growth of 20% (Hussain et al., 2015). The growth of Islamic finance is evident not only in Muslim-populated countries, but also in non-Muslim countries, where there is a growing interest for the adoption and practices of Islamic banking and finance principles (Bley & Kuehn, 2005). Islamic finance provides a set of products and services that are designed to comply with the Islamic law, Shariah. Similarly, conventional banking institutions have begun offering Shariah-compliant products which are targeted to Islamic and non-Islamic buyers alike.

Following this, there is growing interest among researchers to examine the financial and economic consequences of implementing Islamic banking principles. In particular, it is important to examine the effects of a generalised implementation of Islamic banking principles to the financial sector, either in part or in full. In this paper, we utilise an agent-based framework to simulate Islamic finance principles on the banking sector. Agent-based finance has been gaining popularity in the past few years, since it seems to be more able to model complex financial systems, such as those operating in the modern economies. In addition, we implement a machine-learning function to generate a happiness function for individuals and thus examine the results of Islamic banking on social welfare. Finally, we examine the profit-and-loss sharing paradigm and examine its ability to deal with banking crises and assess the degree to which these crises are propagated to the real economy, in various combinations of Islamic and conventional banks.

There have been many studies (Khan and Mirakhor, 1989; Iqbal, 1997; Pomeranz, 1997) relating to the advantages of Islamic banking, with academics arguing that Islamic banks are theoretically better prepared than conventional banks in handling external shocks because the banks' financing losses are partially absorbed by the depositors. Similarly, the risk-sharing feature of the PLS paradigm, in theory, allows Islamic banks to lend on a longer-term basis to projects with higher risk-return profiles and, thus, to promote economic growth (Chapra, 1992; Mills and Presley, 1999). Additionally, the PLS paradigm subjects Islamic banks to greater market discipline, since banks are typically required to implement better mechanisms to distinguish good customers from bad ones. Similarly, banks also need to monitor their investments (loans) more closely to ensure that the financial information published is truthful and accurate.

On the demand side, depositors choose their banks more carefully and monitor banks more actively in order to ensure that their funds are being invested cautiously. Advocates of Islamic banking argue that the main advantage of PLS banking is that it results in a more efficient allocation of capital because the allocation of capital and the resulting return depend on productivity and viability of the project (Khan, 1986). Other studies assess the performance of Islamic banks by examining the relationship between profitability and banking characteristics. Bashir (2001) performs regression analysis on bank level data in the Middle East to determine the underlying determinants of Islamic bank performance. Samad and Hassan (1999) apply financial ratio analysis to examine the performance of a Malaysian Islamic banks over the period 1984-1997.

In order to examine the efficiency of Islamic financial markets, we employ an agent-based financial model (Polyzos and Samitas, 2015), which includes a machine-trained happiness function (based on a naïve Bayes classifier and artificial neural network) to examine the benefits of the PLS paradigm over conventional banking. This modelling methodology is an implementation of agent-based economics (Tsfatsion, 2006), where the economy is described as a constant interaction between heterogeneous agents, with differing (and often clashing) rational objectives. There is no single equilibrium; in contrast, multiple dynamic equilibria are reached as the outcome of the aforementioned interactions. Our agent-based system can perform multi-period simulations of the banking environment and includes four types of economic agents: the Banks, the Firms, the Households and the Regulator. Only one regulator can exist in the model, while the number of banks, firms and households can be set at will. The general model structure is based on Tsomocos (2003) and Goodhart et al (2004). Such a setup is popular in agent-based models, such as Riccetti et al (2016) or Rashid et al (2011). All types of agents share some common features and functions.

In relation to the components of the happiness function, Ervasti and Venetoklis (2010) use data from 21 European countries and show that both unemployment and financial strain cause welfare loss. Di Tella et al. (2003) note the negative effects on happiness due to financial crises both through the consequences of these crises and through the crises themselves. During a perceived financial crisis, the authors note, the reported levels of well-being are lower, even though the actual effects of the crisis may not yet be visible in other indicators. Senik (2014) and Van Praag et al. (2003) propose net wealth as another component of the happiness functions. Giarda (2013) corroborates these findings and proposes that a banking crisis causes financial distress in an asymmetric manner among households, implementing the distinction according to the Eurostat deprivation index. This asymmetric effect is also demonstrated by Arampatzi et al. (2015), with unemployment being the transmission channel in this case. Finally, consumption preferences appear to affect happiness (Zhu, 2005).

The contribution of this paper is three-fold. First, despite the rise of Islamic banking in the past few years, there have been no studies, to the best of our knowledge, that examine the benefits of this banking model on financial stability, social welfare and

unemployment. Second, we extend an existing agent-based model (Polyzos and Samitas, 2015), to include a machine-optimised happiness function. We base our modelling process on banking data collected from two Islamic economies (Jordan and Egypt) and one conventional economy (Estonia). Third, we demonstrate that despite the fact that Islamic banking promotes financial stability, it can hinder economic growth and increase unemployment.

The rest of this paper is structured as follows: Section 2 discusses the details and the literature surrounding Islamic finance. Section 3 presents our chosen methodology and Section 4 discusses our empirical findings. Section 5 concludes with the implications for policymakers.

Islamic Finance Principles

Islamic banking differs from conventional banking in two important aspects. Firstly, charging interest (*riba*) is prohibited in Islam. This means that Islamic banks are not allowed to offer any rate of return on the deposits that they carry and are similarly not allowed to charge interest on the loans that they give out. In this respect, Islamic banks boast a unique feature, the profit-and-loss sharing (PLS) paradigm, which is the second important point of differentiation. This is predominantly based on the *mudarabah* (profit-sharing) and *musyarakah* (joint venture) concepts of Islamic contracting. Under the paradigm, the customers (borrowers and depositors) of an Islamic bank share profits and losses with the banks.

Since Islamic financial institutions are a part of the modern economic systems, they need to adhere to the regulatory principles that govern conventional financial institutions. However, Islamic financial institutions also follow the rules set by the Holy Quran (Tatiana et al., 2015). The principles of Islamic banking are in essence the restrictions imposed by Islamic laws, which are translated into business principles with the assistance of the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) as well as internal Shariah boards, which verify the institution's compliance to these standards (Zaher and Hassan, 2012). The distinctive instruments used by Islamic financial service providers include (but are not limited to) estimating the value of an asset on its real value grounds, providing one specific financial service per product, clearly stating prices of goods and services and defining the share of each partner is in both profit and loss (Tatiana, et al., 2015; Sabirzyanov and Haidir, 2015). This last feature plays an important role in our methodological approach.

In Islamic banking, investors share both benefits and losses in any business endeavour which they finance. As discussed before, the shares are pre-determined in the financing agreement, while the lender bears any financial risks except in the case of fraud or negligence in the part of the borrower. This is the profit and loss sharing principle which

is prevalent in Islamic financial transactions (Hasan, 2010). However, mixing Islamic banking principles in modern economic system can lead to disputes, the most notable of which is the case of Dana Gas (Haroon et al., 2019). In the significant benchmark case, Dana Gas, a UAE-company that had issued a sukuk (Islamic bond), proclaimed that its own product was no longer Shariah-compliant and moved for restructuring it, causing a legal battle with conflicting court rulings in the UK and the UAE (Hekmatyar and Parkar, 2018; Busari et al., 2019).

The restriction of riba results in the creation of specialised shariah-compliant product that adhere to the Islamic financial framework. Most Shariah scholars believe that common bonds are not tradable in an Islamic market, even if the premium might be missing (Halabi and Kazi, 2006; Farooq, 2015). Under the principles of mudarabah, banks can seek guarantees in securities and possibly purchase some of the borrower's asset in the form of a Shariah-compliant collateral. Once Islamic banks are introduced in a conventional banking system, the legal conflicts, such as that in the Dana Gas case, can prompt market anomalies.

Methodology

3.1 Happiness Function

We use machine learning procedures in order to build a happiness function. First, we use an eager learning naïve Bayes probabilistic classifier to create three groups of households based on their preferences (financial stability, public goods, neutral). Preferences are important as they can play an important role in the happiness outcomes. It is this important to determine the actual components of societal well-being on both Islamic and conventional economies.

We then use these clusters of individuals to compute a happiness function for each of them, during the model's training period. To achieve this, we implement an Artificial Neural Network which feeds on the data generated by the agent-based model and builds a happiness function for each individual household in the economy. Once the training period is complete, happiness is calculated (and recorded) for each household. Happiness is then recorded again after a few time periods in order to capture the short-term effects and then recorded at the end of the simulation in order to capture long-term effects.

3.1.1 Naive Bayes

Naive Bayes is a probabilistic machine learning classifier, which is based loosely on the Bayes theorem. The actual classification is conducted by deriving the maximum a posteriori (MAP) which is the maximal $P(C_i|X)$ when the attributes are conditionally

independent. In this framework, we only need to count the class distribution and, even in cases where attributes are dependent, Naive Bayes performs without any problems (Hsu et al, 2008). MAP learning selects a single most likely hypothesis given the data. For us, this hypothesis is that for each node (household), the preferences between financial stability and public goods spending are equally weighted.

Hence, in our process, we try to approximate a mapping function (f) from input variables (X) to discrete output variables (y). The input variable vector X contains the data collected from two Islamic economies (Jordan and Cairo) and one conventional economy (Estonia). The output variables are the weights w_k assigned to financial stability and public goods in the happiness function each individual, as follows:

$$H_{i,t} = w_{fin_t} fin_t + w_{pubg_t} pubg_t + \phi \#(SEQ Equation * ARABIC 1)$$

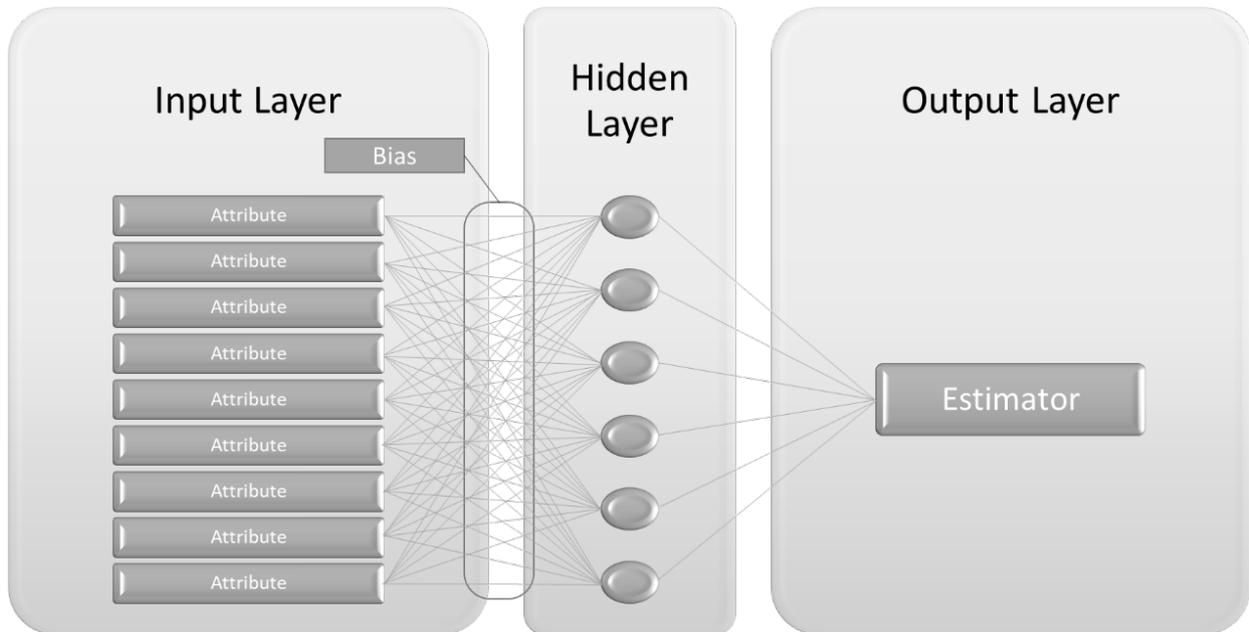
where H is the resulting happiness level (as reported individually), w_i are the weights assigned to each of the inputs (financial stability and public goods spending) and ϕ are the remaining components of the happiness functions, which we assume to be uniform for all households.

The learning algorithm is an eager learner, which means that we construct our classification model based on the collected inputs as training data before feeding the classification data. The latter comes from the agent-based model, where households are classified in the three categories as they are created, during the setup phase of the model.

Naive Bayes is a very simple algorithm to implement and good results have obtained in most cases. It can be easily scalable to larger datasets since it takes linear time, rather than by expensive iterative approximation as used for many other types of classifiers. It must be noted that the methodology can suffer from the zero-probability problem, whereby when the conditional probability for a particular attribute is zero, it fails to give a valid prediction. However, we have corrected this by using a simple Laplacian estimator in the classification process.

3.1.2 Artificial Neural Network

Exhibit 1. ANN Framework



Source: Authors

An Artificial Neural Network (ANN) is a non-linear model that is widely used in machine learning. It comprises a set of interconnected input and output units (neurons or nodes) where each connection (synapse) has a weight associated with it. An ANN model will include a learning phase and an output phase. During the learning phase, the network learns by adjusting the weights so as to be able to predict the correct class label of the input tuples.

The ANN framework (Exhibit 1) has three layers. The first is the input layer, where the input attributes are fed into the input layers. Then come the hidden layer, where the actual weight recalculation that takes place. The hidden layer calculates the output based on the weights. The weight of each neuron is the sum of weighted synapse connections. The hidden layer refines the input layer by removing redundant information. Finally, the ANN has an output Layer, where the output from the hidden layer is shown.

Our modelling approach uses a multi-layer feed-forward network. This network consists of only one layer between the input and output. The input layer receives the signal from the input attribute and buffers it to the hidden layer, while the output layer shows the output. The hidden layer is not in contact with the external environment and the nodes in the previous layer are connected to each node in the next layer.

For each observation, we implement a set of attributes x_i and multiply them by a connection weight or synapse (w_i), which shows the strength of a particular node. We also implement a bias value (b) which allows us to shift the activation function. The activation function is the actual mathematical form that activates an input node. Hence, we have:

$$b + x_1w_1 + x_2w_2 + x_3w_3 + \dots + x_nw_n = b + \sum_{i=0}^n x_nw_n \quad (\text{SEQ Equation * ARABIC 2})$$

and after applying the activation function ϕ , we have:

$$\phi\left(b + \sum_{i=0}^n x_nw_n\right) \quad (\text{SEQ Equation * ARABIC 3})$$

It must be noted that we have performed sensitivity analysis for the bias coefficient (b) and the results are available upon request.

Agent-Based Modelling

In agent-based economics (LeBaron, 2001; Tesfatsion, 2006), the economic system is modelled as a constant interaction between heterogeneous agents, with differing (and often clashing) rational objectives. In this type of model, multiple dynamic equilibria can be attained as the outcome of the aforementioned interactions. The lack of a single equilibrium is one of the key advantages of agent-based models as descriptions of real-world economic systems. In addition, the term “agent-based” describes an economy with a bottom-up approach, which begins at the individual agent level.

The agent-based system used in this study can perform multi-period simulations of the banking environment. The general model structure is based on Tsomocos (2003) and Goodhart et al. (2004), which has been extended to include four types of economic agents: banks, firms, households, and the regulator. Only one regulator can exist in the model, while the numbers of banks, firms, and households are theoretically unlimited. All types of agents share some common features and functions. This type of artificial economy setup is very popular in agent-based models, such as Iacoviello (2005) and Rashid et al. (2011). The model is comprised of two components, the training period and the simulation period, as is common in models of this genre.

These agents operate under a given supervisory framework that is set forth by a market regulator. There is a constant, but not unconditional, flow of funds between these agents, which can take place in various ways, ranging from the exchange of financial goods between banks and their customers to the payment of wages by firms to households.

Firms operate and improve their productive capacity using financing from the banking system, which draws liquidity from the funds of depositors. The model allows agents to go bankrupt. Bankruptcy occurs when agents are unable to meet their financial obligations. The insolvency conditions are stricter for banks than they are for other agents and, naturally, the consequences also differ. The model supports various methods of handling banks in distress, including the bail-in solution, which was implemented to resolve the 2013 Cyprus financial crisis.

The model performs a series of algorithmic steps on the artificial economy. In this section, we present the notation used in our model and describe the steps in detail. The notation is as follows.

1. $t \in T = \{1, \dots, T\}$: The model runs on group time periods of order $|T|$
2. $h \in H = \{1, \dots, H\}$: The artificial economy includes a set of households of order $|H|$
3. $b \in B = \{1, \dots, B\}$: The artificial economy includes a set of banks of order $|B|$
4. $f \in F = \{1, \dots, F\}$: The artificial economy includes a set of firms of order $|F|$
5. $bc \in BC = H \cup F$: The set of potential bank retail customers in the economy (i.e., firms and households)
6. $e \in E = BC \cup B = H \cup F \cup B$: Set of all economic agents in our system
7. $fa \in FA = \{1, \dots, FA\}$: The active financial assets traded at any given time t
8. $eb \in EB \subseteq E$: The set of bankrupt economic agents (the agent type can be a bank, firm, or household). This a subset of set E and is initially empty.

It must be noted that once an agent goes bankrupt, she will not participate in any financial transactions in the artificial economy. Thus, in the simulation steps described later in this section, sets E, H, F, and B actually contain only the active agents of the corresponding sets. These sets are defined as the difference of the sets at time $t=0$ from EB. Consequently, the active agent sets are as follows.

9. $h \in H = H_0 - EB_H$
 $f \in F = F_0 - EB_F$
 $b \in B = B_0 - EB_B$
 $e \in E = E - EB = (H_0 - EB_H) \cup (F_0 - EB_F) \cup (B_0 - EB_B)$
10. $g \in G_t = \{1, \dots, G_t\}$: This set contains all the goods available for sale at time t . These goods are produced at time $t-1$.
11. Total production (i.e., the total value of goods traded) at time t equals the total capacity of active firms at time $t-1$.
- $$Production_t = \sum_{\forall f \in F} Capacity_{f, t-1} = \sum_{\forall g \in G} Value_{g, t}$$
12. $un \in UN \subseteq H$: The set of unemployed households. This is a subset of H and its members change every period.

In addition, the following assumptions hold.

1. $\forall e \in E : a \in A_e \subseteq FA$: All economic agents carry a proprietary list of assets, which is a subset of FA .
2. $\forall e \in E : l \in L_e \subseteq FA$: All economic agents carry a proprietary list of liabilities, which is a subset of FA .
3. $\forall fa \in FA : \exists ! e \in E : fa \in A_e$ and $\forall fa \in FA : \exists ! e \in E : fa \in L_e$

For all financial assets, exactly one agent carries the item in her assets and exactly one agent carries the item in her liabilities.

We should note here that the banks' asset vectors are further divided into three subgroups according to the asset's liable agent. These groups can then be used to calculate the sum of weighted assets, since a different asset weight is assigned according to the type of the liable agent (bank, firm, or household).

4. $\forall g \in G_t : \exists ! h \in H : g \in Exp_e$ and $\forall g \in G_t : \exists ! f \in F : g \in Production_f$

For all goods in the market at the end of time period t , only one household has purchased the item (and thereby derived utility from it) and only one firm has produced the item at time $t-1$.

The corollary of assumption A4 is that the goods market must always clear domestically at the end of each period, since foreign trade (and hence, currency crises) is not considered for now. It should also be noted that price changes are not modeled.

The regulator decides on a vector of market rules, which includes the capital adequacy ratios (the basic Tier 1 ratio, the capital conservation buffer, and the countercyclical capital buffer) as well as the liquidity coverage ratio (LCR). The LCR, when applicable, is calculated separately for each bank in each time period and is set equal to the total outflow of funds from deposit accounts in the last time period. The resulting rule vector imposes the minimum requirements for each banking institution, thereby affecting the funds that the institution makes available to other agents in the system.

The rule vector is the following.

$$r_{b \in B, t \in T} = \left\{ CapReqVector_t, LiqC_{b,t} \right\} = \left\{ \left\{ t1, CapB, CntCapB_t \right\}, LiqC_{b,t} \right\}$$

The vector for each bank in each time period contains a Tier 1 capital requirement (t1), the capital conservation buffer, and the countercyclical capital buffer for the given time period as well as the amount resulting from implementing the LCR on the given bank in the given time period (LiqC).

This amount, LiqC, is calculated for each bank at each time step (see Step 1.1 below). The rules are applied in sets. We enforce the Basel III set of rules and thus, the vector is as follows:

$$r_{b \in B, t \in T} = \left\{ \left\{ 0.08, 0.025, CntCapB_t \in \{0.000, 0.005, 0.010, 0.015, 0.020, 0.025\} \right\}, LiqC_{b,t} \right\}$$

The countercyclical capital buffer is initiated at 0.005 (i.e., 0.5% of a bank's weighted assets).

The regulator also implements the vector by which the assets of a bank are weighted. The weight vector depends on the type of rule set and is fixed throughout each simulation.

14. $w = \{w_{b \in B}, w_{h \in H}, w_{f \in F}\}$: The weight vector w contains weights for each type of asset, which may be different from each other.
15. Hence, the sum of weighted assets of the bank can be calculated using the following equation:

$$w a_{b \in B, t \in T} = \sum_{\forall b \in B} \begin{cases} a_{b,t} \times w_b \text{ if } \exists b' \in B: a_{b,t} \in L_{b',t} \\ a_{b,t} \times w_h \text{ if } \exists h \in H: a_{b,t} \in L_{h,t} \\ a_{b,t} \times w_f \text{ if } \exists f \in F: a_{b,t} \in L_{f,t} \end{cases}$$

The sum of the bank's weighted assets is the sum of the products of each asset in the bank's asset set with the corresponding weight (for that asset) from the weight vector w . The system is initialized using the algorithm described below.

1. System Initialization:

- 1.1. Banks receive a random amount of initial cash equal to the product of a random variable times the number of households in the system

$$\forall b \in B : CB_{b, t=0} = U(1, 10) * |H|$$

- 1.2. Firms start with an initial random productive capacity equal to the product of a random variable times the number of households over the number of firms in the system

$$\forall f \in F : Capacity_{f, t=0} = U(1, 10) * \left(\frac{|H|}{|F|} \right)$$

- 1.3. Households receive a random amount of initial cash. Furthermore, firms are characterized by random precautionary demand for money¹³, which signifies the amount of money that they choose to keep outside of deposit accounts. This is a fraction of their initial cash.

$$\forall h \in H : CB_{h, t=0} = U(1, 10)$$

$$\forall h \in H : PB_{h, t=0} = U(1, 10)$$

In addition, some households behave in a risk-loving manner, opting for higher interest rates for their deposits even if the bank offering them is in distress. Finally, we implement a feature of increased vulnerability to financial crises, based on García-Palacios et al. (2014) and Giarda (2013). Giarda (2013) suggests that this affects approximately 15% of the workforce. This feature is important, because we monitor the unemployment and happiness levels of the vulnerable group separately.

Before beginning the simulation process, we introduce some further notation.

$$16. \quad \forall b \in B, t \in T: AvB_{b,t} = CB_{b,t} - \left[\sum_{Vi \in CapReqVector_t} (CapReqVector_{i,t} \times wa_{b,t}) \right] - LiqC_{b,t}$$

For each bank, the available balance is calculated by subtracting regulatory funds for the bank's cash reserves. The sum in the statement above is the sum of the products of each imposed capital buffer rule (see N13 above) with the sum of the weighted assets of the bank, as calculated in N15. This amount is subtracted from the bank's cash balance, since it cannot be used to purchase assets.

$$17. \quad \forall h \in H, t \in T: AvB_{h,t} = CB_{h,t} - PB_{h,t}$$

For each household, the available balance is given by the difference of the cash balance and the precautionary demand.

The simulation steps follow the order given below.

2. Simulation Step at Time t

- 2.1. The LCR is calculated for each bank. The required amount is the difference of deposit funds from the last period to the current one. If the outflow of funds is negative, the LCR is zero.

Assuming that the deposits of a bank at any given time are given by

$$d \in D_{b \in B, t \in T} \subseteq L_{b,t}$$

the amount required to satisfy the LCR rule is given by

$$LiqC_{b \in B, t \in T} = 100\% \times \begin{cases} 0, & \text{if outflow is negative} \\ \sum_{d \in D_{b \in B, t \in T}} d_{b,t-1} - \sum_{d \in D_{b \in B, t \in T}} d_{b,t} \end{cases}$$

2.2. Interest is added to all loans in the list of financial assets

$$\forall \lambda \in \Lambda \subseteq FA: Amt_{\lambda,t} = Amt_{\lambda,t-1} + (Amt_{\lambda,t-1} \times ir_{\lambda}),$$

where Λ is the subset of financial assets that represents a loan asset, Amt is the amount remaining in the loan, and ir is the interest rate for the particular security.

2.3. Add household income (wages or unemployment benefits) and subtract expenditure

$$\forall h \in H: CB_{h,t} = CB_{h,t-1} + Wage\left(\frac{g}{f}(Production_{t-1}, |H|)\right) + UnemploymentBenefit(if h \in UN) - Expenditure\left(\frac{g}{f}(Wage)\right)$$

Household wages are a function of last period's total production (by firms) and the number of households in the system. In addition, it is important to note that unemployment benefits are paid from government funds collected via taxation and the Tobin tax, if implemented (see step 1.12).

Banks make payments for high-risk securities as follows:
(interest is added to the amount).

In this step, the amount remaining in each security is added to the CB of the asset holder and subtracted from the CB of the liable bank. When paying out a security yield, the liable bank uses its CB value, not the AvB value (see N16).

2.5. Economic agents (banks, firms, and households) pay their loan obligations

$$\forall \lambda \in \Lambda \subseteq FA: Amt_{i,t} = Amt_{i,t-1} - Pmt_{\lambda} = Amt_{i,t-1} - InitialAmount \times \left(ir + \frac{ir}{(1 + ir)^n - 1} \right)$$

Payment Pmt is subtracted from the CB of the liable economic agent and added to the CB of the asset holder (bank). When repaying loans, the liable economic agents use their CB value, not the AvB value, since the precautionary demand (which leads to the AvB value) is not taken into account when repaying a loan. If CB does not fully cover the obligation, households have to dip into their savings (money in deposit accounts), until either all savings are withdrawn from banks or no more outstanding payments remain.

2.6 Households place their excess cash balance in a deposit account. Banks in more urgent need of cash issue high-yield securities. Only risk-loving households may opt to invest the money in a security (if any banks offer the product) or a deposit, with equal probability for each case. Meanwhile, rational, risk-averse households stick to normal deposit products. Once the choice of product is made, a random bank is chosen, with banks that offer higher interest rates having more chances of being picked.

Hence, the expected reward function of each asset for the depositor is as follows:

$$E(R)_{a, h \in H, t} = A m t_{a, t-1} \times i r_a \times \left(1 - P D_{b \in B: a \in L_b}\right) \quad \#(\text{SEQ Equation } \backslash * \text{ ARABIC 4})$$

where PD is the probability of default of the bank that carries the asset in its liabilities. The probability of default is different for each institution, depends on the regulator's solution to bank distress, and is equal to

$$P D_{b, t} = f_b(r_{b, t}) \quad \#(\text{SEQ Equation } \backslash * \text{ ARABIC 5})$$

Combining Equation 4 and 5, we obtain

$$E(R)_{a, h \in H, t} = A m t_{a, t-1} \times i r_a \times \left(1 - f_b(r_{b, t})\right) \quad \#(\text{SEQ Equation } \backslash * \text{ ARABIC 6})$$

Equation 6 signifies the importance of regulation for the utility received by depositors in the banking sector, a setup similar to social planning in García-Palacios et al. (2014).

2.7 Bank customers seek financing. In this step, any firms or households that have liabilities with missed payments or that have a negative available balance seek funds from the marketplace. Banks are selected according to the lowest interest rate offered for loans and agents ask for the full financing required. Banks in turn offer the amount they can (i.e., their AvB figure at time t) and if the required amount is not covered, the next bank in the ordered list is chosen. Banks finance the firm or household if the banking system can cover their full financing needs. If, at the end, the customer's full financial needs are not met, then no loans are taken out.

2.8 Banks seek financing. In this step, any banks that have liabilities with missed payments or that have a negative available balance seek funds from the marketplace. Financing banks are chosen in random order and the initial bank asks for the full financing it needs. Financing banks in turn offer the amount they can (i.e., their AvB figure at time t) and if the bank is not covered, the next random bank is chosen to seek the remaining financing from. Banks finance the initial bank if the banking system can cover their full financing needs.

2.9 Any agents (banks, households, or firms) that still have missed payments are candidates for default. The default criteria differ for banks and households and naturally, the consequences for the specific agent and the entire system are different. Banks with one missed payment are immediately candidates for default while for firms and households, the threshold is placed at three missed payments. The criteria for banks

are stricter, since it is not acceptable for a financial institution to be unable to make payments for its liabilities.

2.10 The government produces public goods, using the remaining funds collected from taxation in the last period. In this way, there is a trade-off between bank bailouts, unemployment benefits, and public goods. If the government chooses to rescue a bank, it has less to spend on public goods. However, if the bank fails and unemployment rises as a result of the ensuing crisis, there is less money available for public goods.

2.11 Banks re-examine their interest rate policy. The average weighted cost of capital is used as the main deposit rate, which is increased further if the bank approaches the distress zone.

2.12 Firms propose investment projects. If a firm does not currently have an investment project underway, it proposes one to the banking system. Investment projects carry a random return (this can be considered similar to the internal rate of return, IRR), which will help the firm increase productive capacity. For a project to be accepted, the firm must find a willing financier to finance the venture at a cost lower than the project's return. Each firm carries a random probability that its projects will fail. If the firm is unable to find funding for investment projects, it gradually loses productive capacity. In this way, high interest rates tend to reduce long-term economic growth and eventually lead to bank distress.

Therefore, the productive capacity for each firm at any given time is expected to be equal to

$$Capacity_{f \in F, t} = Capacity_{f, t-1} + \begin{cases} U(\text{Min}(IRR), \text{Max}(IRR)) \times (-1), & \text{without active investment project} \\ IRR_{pr, f} \times (1 - PF_f), & \text{with active investment project} \end{cases}$$

If the firm fails to find financing for its current project, its productive capacity is reduced by a random amount, with uniform distribution between the minimum and maximum IRRs of all active projects in the system. We should note that firms produce the artificial economy's goods according to their capacity and taxes are collected on production, since the market always clears.

2.13 The regulator re-examines the countercyclical capital buffer. The decision to increase the percentage for the countercyclical capital buffer is taken when three consecutive growth periods have been achieved. Similarly, it is decreased after three consecutive recession periods. This is a limited approach to the implementation of the policy (Drehmman et al., 2010).

2.14 Individual and societal subjective well-being are calculated. The function and the SVM employed for optimization are described in section 3.2.

2.15 The system recalculates each household's employment status. During an economic downturn (i.e., a reduction of GDP), there is increased chance of a negative change in households' employment status (i.e., from employed to unemployed), while the opposite occurs during economic expansion. In addition, there is increased probability of a negative change for vulnerable households and a decreased probability of a positive change, similar to Giarda (2013).

2.16 Statistics are collected.

2.17 The system progresses to the next time period.

Empirical Results

Exhibit 2. Combinations of Conventional and Islamic Banks

Combination Name	Conventional Banks	Islamic Banks	Total Banks	Number of Simulations
Conventional	15	0	15	3,000
Predominantly Conventional	10	5	15	3,000
Predominantly Islamic	5	10	15	3,000
Islamic	0	15	15	3,000

We designed an artificial economy with 15 banks, 60 firms, and 2,000 households. We executed 12,000 simulations with four different combinations of Islamic and conventional banks. The combinations are presented in Exhibit 2.

For each simulation set, we monitored both the average values and standard deviations of the principal economic variables. Based on Polyzos and Samitas (2016), the average values indicate the level of economic activity, while the standard deviations indicate financial and economic stability. The results are presented in Exhibit 3.

Exhibit3. Average Values of Monitored Variables at Different Banking Systems

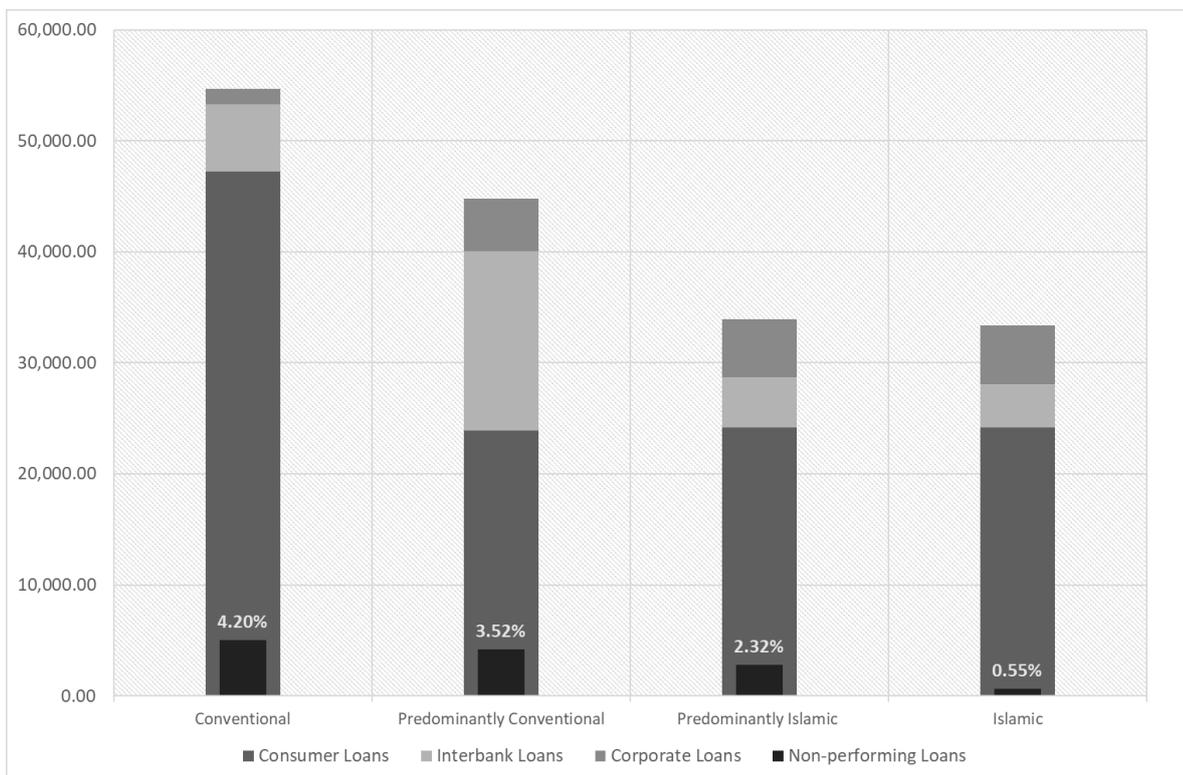
	Conventional	Predominantly Conventional	Predominantly Islamic	Islamic
Number of Bank Defaults	4.452	3.300	1.240	0.325
Number of Attempted Defaults	14.086	6.330	3.234	0.423
Real Contagion	97.6%	52.0%	46.3%	10.6%
Welfare Contagion	29.9%	9.0%	5.6%	0.2%
Recovery Periods (Financial Crisis)	2.283	1.859	1.329	1.006
Recovery Periods (Welfare Crisis)	1.861	0.539	1.039	1.044
Deposits	9,476.44	14,083.87	14,571.28	14,617.77
High-yield Securities	3,790.26	522.52	511.84	472.39
Consumer Loans	47,219.00	23,909.43	24,196.14	24,173.65
Interbank Loans	6,055.65	16,135.93	4,521.69	3,919.62
Corporate Loans	1,434.73	4,746.89	5,193.33	5,282.72
Non-performing Loans	4.20%	3.52%	2.32%	0.55%
Bank Available Balance	40,048.81	69,223.85	69,410.38	69,334.31
Production	5,355.82	2,833.47	2,394.64	2,287.79
Consumption	4,286.21	3,407.63	2,990.45	2,886.61
Wage per Household	5.083	2.757	2.348	2.246
Wage per Active Household	6.812	4.112	3.499	3.343
Subjective Well Being	20,734.88	21,460.99	32,453.79	32,749.06
Vulnerable	2,767.00	2,875.18	4,535.60	4,764.30
Non-vulnerable	17,967.88	18,585.82	27,918.19	27,984.76
Unemployment Rate	6.00%	7.67%	7.97%	8.00%
Vulnerable	7.70%	10.17%	10.50%	10.53%
Non-vulnerable	5.70%	7.23%	7.50%	7.53%

Note: This table shows the average values of key monitored variables in the virtual economy over 3,000 simulations for each combination of Islamic and conventional banks. Subjective well-being and Unemployment are also monitored based on employee class, based on Giarda (2013).

Starting from the top of the table, our first observation is that a greater percentage of Islamic banks in the economy significantly improves financial stability. We can see the number of bank defaults is much lower and so is the number of attempted defaults, which signifies the banks that have experienced distress. Interestingly enough, despite the fact that in a purely conventional banking system, nearly each (conventional) bank will experience distress at some point, once Islamic banks are introduced, the stability of conventional banks is improved even in a predominantly conventional banking system. In addition, the transmission of crisis from the banking sector to the real economy (Real

contagion) and from the banking sector to happiness (Welfare contagion) is significantly reduced. We believe that the latter is due to the lower financial hardship experienced by households, under an Islamic financial regime. The PLS paradigm means that if a household is unable to pay their obligation, this loss is shared among lender and borrower, thus limiting potential problems for the household. Since, as we saw earlier, one of the principal components of the happiness function is stability and personal wealth, the lack of financial complications in case of insolvency limit the welfare losses of banking crises.

Exhibit 4. Loan Portfolio Composition & Non-performing Loans

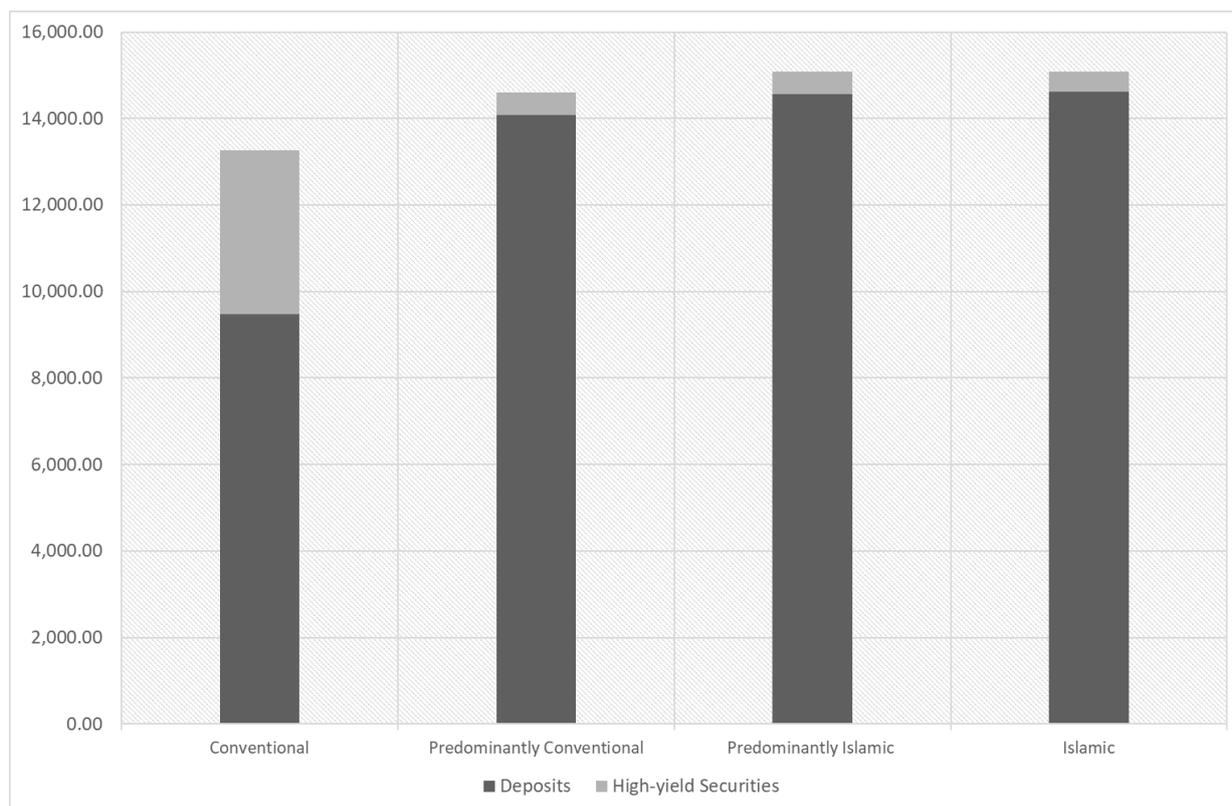


Note: This figure shows the average composition of the loan portfolios of banks at different regimes, over the simulation period. We also display the average percentage of non-performing loans. The graph clearly demonstrates the lower amount of dispensed loans, as the number of Islamic banks increases.

Moving on the banking variables, Exhibit 4 demonstrates the composition of the banks' loan portfolios, under the different regimes. We can see that under a conventional banking scheme, banks are able to give out more loans. However, it is important to note that an Islamic or a predominantly Islamic banking system is able to give out more loans to corporations, thus financing economic growth more efficiently. Additionally, a predominantly conventional banking sector requires more interbank loans, which, in our opinion, are misused economic resources since the funds could be put to better use either financing investments or consumption.

It is important to note that once (few) Islamic banks are introduced in the system (a predominantly conventional banking sector), they seem to finance conventional banks to a greater extent than in the other scenarios. In this sense, a predominantly conventional banking system, with few Islamic banks is less efficient than other scenarios. Additionally, the lower amount of NPLs under Islamic and predominantly Islamic regimes is noteworthy.

Exhibit 5. Deposit Portfolio Composition

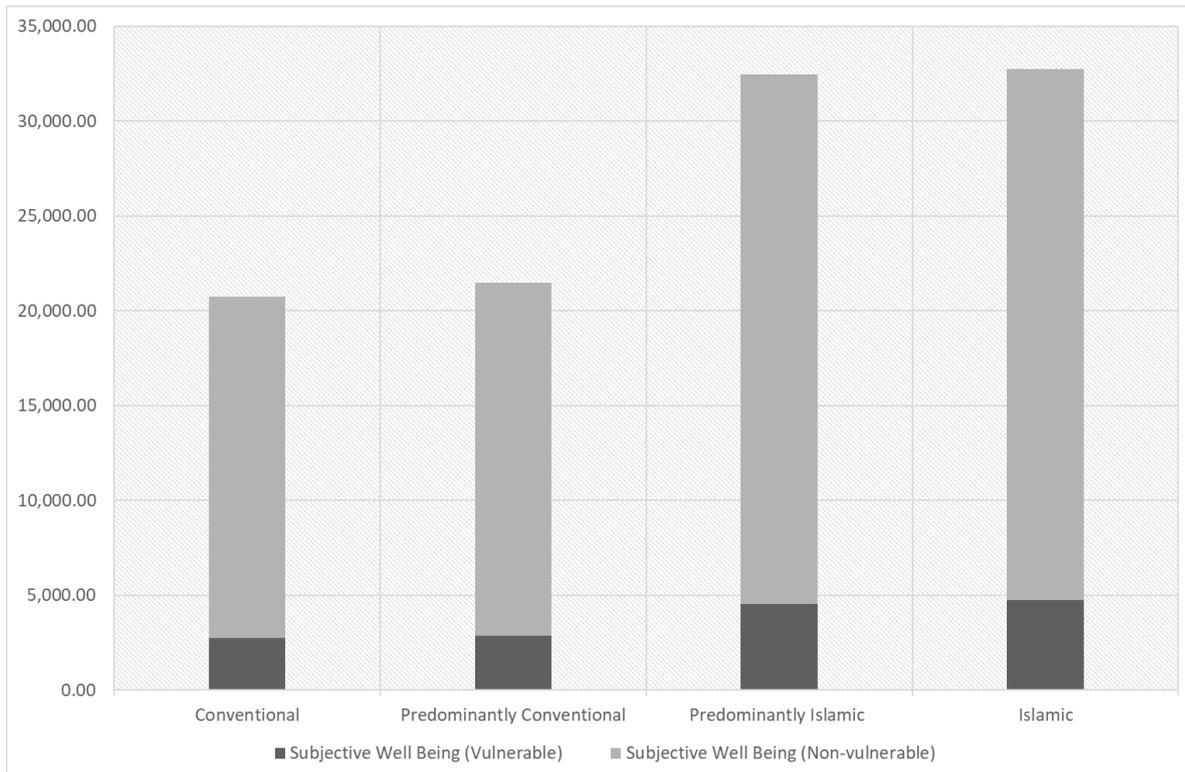


Note: This figure shows the average composition of the deposit portfolios of banks at different regimes, over the simulation period. The graph shows that once Islamic banks are introduced to the economy, the total value of deposits increases, while the value of high-risk, high-yield securities decreases.

Turning to deposits now (Exhibit 5), we can see how the introduction of any number of Islamic banks significantly improves the value of deposits held by banks. When combined with the lower amounts of bank loans, this finding suggests a healthier banking system, as long as there at least some Islamic banks. We add to this important finding by noting that the value of high-yield securities is significantly reduced. We consider this finding to occur because of two reasons: first, the limitations on ribah implemented under Islamic finance, which reduce the availability of these products in the market, and second the improved financial stability limits the need for banks to offer these products (which are also high-risk) in order to attract cash.

The greater amount of loans given out seems to spur economic growth. Under a conventional banking system, total production and total consumption are higher. This is consistent with the relevant literature on the role of the banking sector as a driving force for economic growth. In addition, wages are also reduced as Islamic banks enter the system, which is consistent with lower GDP. However, the reduction in economic activity is not coupled with decreased levels in reported societal happiness.

Exhibit 6. Total Level and Distribution of Happiness Levels



Note: This figure demonstrates the average reported societal well-being at different regimes, over the simulation period. The graph shows that once increasing the number of Islamic banks in the banking sector improves happiness.

Exhibit 6 demonstrates the total happiness levels reported by households on average under the different combinations of conventional and Islamic banks. In addition, we can see the different reported levels of the vulnerable and the non-vulnerable population. It is clear that the improved financial stability of the economy as well as the reduced financial hardships experienced by individuals when dealing with Islamic banks significantly improves the reported happiness levels, despite lower economic activity. It is clear that under these regimes, happiness is not driven so much by consumption or personal wealth, but by financial stability both personal and systemic. This finding is central to our assertion that Islamic banking practices improve societal well-being both through the financial stability channel (general effect) and through the personal happiness function (individual effect).

What is more, reported happiness is increased in both employee classes, with the vulnerable employee class seeing an increase of approximately 72% between the two extreme cases of a purely conventional and a purely Islamic banking system, as opposed to a 55% increase for the non-vulnerable class. This is an important result that demonstrates how an Islamic banking sector does indeed serve to improve prosperity in those less fortunate, as stated by Shariah principles. However, it should be pointed out that the decreased economic activity results in higher unemployment, with the vulnerable class taking a bigger hit. Average unemployment increases by approximately 3 percentage points for the vulnerable class and by 2 points for the non-vulnerable class. This is definitely an issue that needs to be handled, despite the fact that it does not result in decreased household happiness.

Exhibit 7. Average Standard Deviations of Monitored Variables at Different Banking Systems

	Convention- al	Predomi- nantly Con- ventional	Predom- inantly Islamic	Islamic
Deposits	9,442.54	7,245.64	7,157.61	7,097.43
High-yield Securities	1,991.02	287.18	246.26	226.30
Consumer Loans	21,489.34	14,156.32	14,334.67	14,309.29
Interbank Loans	5,038.66	10,465.78	1,859.25	1,303.73
Corporate Loans	970.64	172.56	31.32	22.96
Production	3,038.26	887.15	963.35	979.85
Consumption	1,277.33	100.58	94.24	87.55
Subjective Well Being	8,637.64	4,056.09	3,173.01	2,667.43

Note: This table shows the average standard deviations in the key monitored variables of the virtual economy over 3,000 simulations for each combination of Islamic and conventional banks. Lower standard deviation is linked to financial stability.

In addition to the aforementioned benefits of Islamic banking, Exhibit 7 demonstrates one more. In this table, we can see the standard deviations of the monitored variables for each regime. We can see that as the number of Islamic banks in the system increases, the standard deviation in all monitored variables decreases. According to Polyzos and Samitas (2015), lower standard deviation in agent-based simulations is linked to financial stability since it means that the variables do not fluctuate as much in the progress of simulation steps. It is important to note, at this point, that we record the values of the variables in each step of each simulation and then proceed to calculate the standard deviation for each simulation. We then compute the average for each regime, as shown in Exhibit 7. Consequently, the fact that Islamic and predominantly Islamic banking systems result in lower standard deviation suggests that this promotes stability, helping the economy run a smoother path.

Conclusion

Using a machine-optimised, agent-based financial model, we have demonstrated the advantages of Islamic banking over conventional banking with respect to financial stability, efficiency and societal happiness. Our empirical findings showed how the PLS paradigm results in a banking sector better equipped at dealing with banking crises and that it helps keeping these crises from propagating to the real economy and from damaging societal happiness. On the other hand, increasing the number of Islamic banks in the banking system limits bank lending activities, even though proportionately more funds are allocated to corporate loans, resulting in a more efficient banking sector. However, this leads to lower economic activity, decreasing total output. Lastly, the decreased output does not impair societal happiness, since reported happiness levels, based on our machine-learning happiness function, were higher both for the society as a whole and for different employee classes, with a bigger improvement being registered for the vulnerable employee class.

Before discussing the implications of our research, it is important to note that our methodology does not account for two factors. First, the agent-based methodology is unable to perform a search for Shariah-compliant firms which Islamic banks can finance, since this characteristic cannot be integrated into the model. Second, any further research needs to discuss the increased moral hazard of borrowers under the PLS paradigm. If there are no repercussions for insolvency, it is possible that this can work as incentive for fraudulent behaviour by borrowers. Our model does not take this into account, as this type of behaviour cannot be easily modelled in an agent-based framework.

Despite these limitations, our findings have important implications for policymakers. First, the increased stability offered by introducing Islamic banks into an otherwise conventional banking system should serve as an indicator to western economies that increasing the number of Islamic banks will improve financial stability and improve societal happiness. Thus, authorities should welcome and facilitate the establishment of Islamic finance institutions, always keeping an eye out for potential legal conflicts, such as the Dana Gas case. On the other hand, the expected economic deceleration and the resulting unemployment, as Islamic banks proliferate, should be dealt with proactively. In both western economies and Islamic economies, the lower, most vulnerable employee class is struck with the peril of unemployment. Hence, policy measures need to be taken to support this issue by improving job opportunities in a stable economy. Finally, the decreased happiness levels reported in conventional banking system should worry policy makers, regarding the stresses of financial duress. In our opinion, loosening the adversities of insolvency, while always keeping an eye out for potential increases in moral hazard, could improve societal happiness in the western world.

References

- Arampatzi, E., Burger, M.J. and Veenhoven, R., 2015. Financial distress and happiness of employees in times of economic crisis. *Applied Economics Letters*, 22(3), pp.173-179.
- Bashir, A.-H. M., 2001, Assessing the Performance of Islamic Banks: Some Evidence from the Middle East, American Economic Association Annual Meeting, New Orleans, Louisiana.
- Busari, S.A., AbdulAziz, A., Zakariyah, L. and Amanullah, M., 2019. Dana Gas Sukuk default: a juristic analysis of court judgement. *International Journal of Islamic and Middle Eastern Finance and Management*.
- Chapra, M. Umer, 1992. *Towards a Just Monetary System*. The Islamic Foundation, Liecester.
- Di Tella, R., MacCulloch, R.J. and Oswald, A.J., 2003. The macroeconomics of happiness. *Review of Economics and Statistics*, 85(4), pp.809-827.
- El Massah, S., 2015. Banking Sector Performance: Islamic and Conventional Banks in the UAE. *International Journal of Information Technology and Business Management*, 69-81.
- Ervasti, H. and Venetoklis, T., 2010. Unemployment and subjective well-being: An empirical test of deprivation theory, incentive paradigm and financial strain approach. *Acta Sociologica*, 53(2), pp.119-139.
- Farooq, M., 2015. Are Islamic Banks More Resilient during Financial Panics? *International Monetary Fund, Working paper*, 1-28.
- Financial Times, 2016. Growth of Islamic finance drives demand for degrees. *Ft.com*
- Giarda, E., 2013. Persistency of financial distress amongst Italian households: Evidence from dynamic models for binary panel data. *Journal of Banking & Finance*, 37(9), pp.3425-3434.
- Goodhart, C. A., Sunirand, P., & Tsomocos, D. P., 2004. A model to analyse financial fragility: applications. *Journal of Financial Stability*, 1(1), pp. 1-30.
- Halabi, A. and Kazi, A., 2006. The influence of Quran and Islamic financial transactions and banking. *Arab Law Quarterly*, 20(3), pp.321-331.
- Haroon, O., Meenai, S.F. and Rizvi, A.R., 2019. Dana Gas: The Sukuk Dispute. *Asian Journal of Management Cases*, p.0972820119884395.
- Hasan, M., 2010. The Effects of the Global Crisis on Islamic and Conventional Banks: A Comparative Study. *International Monetary Fund, Working paper*.

- Hekmatyar, M.S. and Parkar, E., 2018. An evaluation of Dana Gas's Mudarabah Sukuk from shariah and legal perspectives. *European Journal of Islamic Finance*, (9).
- Hesse, M. Č., 2010. Islamic Banks and Financial Stability: An Empirical Analysis. *Journal of Financial Services Research*, 95-113.
- Hussain, M., Shahmoradi, A. and Turk, R., 2015, An Overview of Islamic Finance, IMF Working Paper No WP/15/120
- Iqbal, Zamir, 1997. Islamic financial systems. *Finance & Development* 43, 42–45.
- Johnes, J. I., 2014. A Comparison of Performance of Islamic and Conventional Banks 2004-2009. *Journal of Economic Behavior and Organization*, 93–107.
- Kapetanovic, H., 2016. Bridging the Gulf in Islamic Finance: The Role of Institutional Investors and Dubai in Development of Global Islamic Financial Services. In *Islamic Finance: Political Economy, Values and Innovation (Volume 1)* (pp. 79-98). Gerlach Press.
- Khan, Mohsin S., 1986. Islamic interest-free banking. *IMF Staff Papers* 33, 1–27.
- Khan, Mohsin S., Mirakhor, Abbas, 1989. Islamic banking: experiences in the Islamic Republic of Iran and Pakistan. *IMF Working Paper No. WP/89/12*. International Monetary Fund, Washington DC
- Koji Muto, N. A., 2015. Understanding the Values and Attitudes in Islamic Finance and Banking. In *Islamic Finance: Political Economy, Values and Innovation (Volume 1)* (pp. 253-280). Gerlach Press.
- Mills, Paul S., Presley, John R., 1999. *Islamic finance: Theory and practice*. Macmillan, London
- Omar Salah, C. R., 2015. Islamic finance: a corollary to legal pluralism or legal diversity in South Africa and the Netherlands? *The Comparative and International Law Journal of Southern Africa*, 488-515.
- Polyzos, S. and Samitas, A., 2015. Banking Crises & Contagion: Why Worry About Taxation, Output and the Cost of Capital?. *Investment Management and Financial Innovations*, 12(2), pp. 65-79.
- Pomeranz, F., 1997. The accounting and auditing organization for Islamic financial institutions: An important regulatory debut. *Journal of International Accounting, Auditing and Taxation*, 6(1), pp.123-130.
- Rahim, S. R., 2013. Comparison on Stability between Islamic and Conventional Banks in Malaysia. *Journal of Islamic Economics, Banking and Finance*, 131-149

- Rashid, S., Yoon, Y. and Kashem, S.B., 2011. Assessing the potential impact of Microfinance with agent-based modeling. *Economic Modelling*, 28(4), pp.1907-1913.
- Riccetti, L., Russo, A. and Gallegati, M., 2016. Financialisation and crisis in an agent based macroeconomic model. *Economic Modelling*, 52, pp.162-172.
- Sabirzyanov, R. & Haidir, H. M., 2015. Islamic Banking and Finance: Concept and Reality. *Journal of Islamic Banking and Finance*, Volume 32, pp. 88-102.
- Samad, A., and M. K. Hassan, 1999, The Performance of Malaysian Islamic Bank During 1984-1997: An Exploratory Study, *International Journal of Islamic Financial Services*, 1.
- Senik, C., 2014. Wealth and happiness. *Oxford Review of Economic Policy*, 30(1), pp.92-108.
- Tatiana, N., Igor, K. & Liliya, S., 2015. Principles and instruments of Islamic financial institutions. *Procedia Economics and Finance*, Volume 24, pp. 479-484.
- Tawari, I. A., 2015. What Factors Are Affecting the Development of Islamic Financial Institutions in the GCC. Gerlach Press.
- Tesfatsion, L., 2006. Agent-based computational economics: A constructive approach to economic theory. *Handbook of computational economics*, 2, pp.831-880.
- Tsomocos, D. P., 2003. Equilibrium analysis, banking and financial instability. *Journal of Mathematical Economics*, 39(5), pp. 619-655.
- Van Praag, B.M., Frijters, P. and Ferrer-i-Carbonell, A., 2003. The anatomy of subjective well-being. *Journal of Economic Behavior & Organization*, 51(1), pp.29-49.
- Verbeet, M., 2014. Islamic Banking and Financial Crisis: Reputation, Stability and Risks . Edinburgh University Press .
- Zaher, S. T. & Hassan, M. K., 2012. A Comparative Literature Survey of Islamic Finance and Banking. *Financial Markets. Institutions and Instruments*, 10(4), pp. 155-199.
- Zhu, H., 2005. Bank runs, welfare and policy implications. *Journal of Financial Stability*, 1(3), pp.279-307.

Editors

This Proceedings Report was edited by:

Melodena Stephens

Professor of Innovation Management, Mohammed Bin Rashid School of Government, Dubai, UAE.

Scott Fargher

Associate Professor, Mohammed Bin Rashid School of Government, Dubai, UAE.

Lama Zakzak

Associate Researcher, Mohammed Bin Rashid School of Government, Dubai, UAE.

With help from

Faisal Lalani

MPP Student, Mohammed Bin Rashid School of Government, Dubai, UAE.

Author(s)

Aristeidis Samitas

Arun Joshi

Costas Siriopoulos

Dirk Nicolas Wagner

Ferran Pijol

Himanshu Vashishtha

Hossam Mohamed Elhamy

Jose Berengueres

Kristian Alexander

Louise Bielzer

Melodena Stephens

Omneya Omar

Raed Awamleh

Stathis Polyzos,

Sid Ahmed Benraouane

Salah Rasheed AlHamran

To cite, please use the following format: Stephens, M., Fargher, S. and Zakzak, L. (eds.) 2020. Agile Government - Becoming Future-Proof. 4th UAE Public Policy Forum, 17-18 February, 2020. Dubai: Mohammed Bin Rashid School of Government.

The views expressed in this report are those of the author(s) and do not necessarily reflect those of the trustees, officers and other staff of the Mohammed Bin Rashid School of Government (MBRSG) and its associated entities and initiatives.

Acknowledgements

This report was edited by **Lama Zakzak** and **Engy Shibl**.

The author(s) wishes to express personal appreciation to the following individuals for their input to the different stages of producing this report and for providing essential input and assistance into the report and its related materials:

Lama Zakzak | Engy Shibl | Marouen Ghezal | Shuaib Kunnoth | Ghaith Yagan

Special thanks to MBRSG Board of Trustees, the Executive President and the Dean for their support of the forum. We acknowledge the efforts of MBRSG staff and faculty for their support and hard work in organizing the events of the forum especially the UAE PPF Committee, the UAE PPF Academic Content Development team, the Marketing team, the Logistics team, the Finance team, and all other individuals and department who worked tirelessly to make the event possible. It was a team effort, highlighting the value of our organization! We would also like to thank the panelists, the presenters, participants and moderators for their insights and for sharing their research and valuable knowledge with us. A special thanks to the Mohammed bin Rashid Centre for Innovation for their partnership. We would also like to thank our knowledge partners - Academy of International Business - Middle East North Africa Chapter, Sixth Factor and Meraki.

Copyright Information

Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

Readers are free to copy, re-distribute, transmit and adapt the work, on the following conditions: You must attribute ownership of the work to the Mohammed Bin Rashid School of Government; you must not use the work for commercial purposes; and, if you share, alter, transform or build upon the work, you must distribute the resulting work only under the same or similar conditions. These conditions may be waived if you obtain written permission from the Mohammed Bin Rashid School of Government. Where the work or any of its elements is in the public domain under applicable law, that status is in no way affected by the license. For further copyright information, please visit the website: www.mbrsg.ac.ae or contact the author(s).

For reprints or permissions regarding using any of the material included in the publication, please get in touch with MBRSG through: permissions@mbrsg.ac.ae

Research at The Mohammed Bin Rashid School of Government

The Mohammed Bin Rashid School of Government (formerly Dubai School of Government) is a research and teaching institution focusing on public policy in the Arab world. Established in 2005 under the patronage of HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the United Arab Emirates and Ruler of Dubai, in cooperation with the Harvard Kennedy School, MBRSG aims to promote good governance through enhancing the region's capacity for effective public policy.

Toward this goal, the Mohammed Bin Rashid School of Government also collaborates with regional and global institutions in delivering its research and training programs. In addition, the School organizes policy forums and international conferences to facilitate the exchange of ideas and promote critical debate on public policy in the Arab world. The School is committed to the creation of knowledge, the dissemination of best practice and the training of policy makers in the Arab world. To achieve this mission, the School is developing strong capabilities to support research and teaching programs, including:

- Applied research in public policy and management;
- Master's degrees in public policy and public administration;
- Executive education for senior officials and executives; and,
- Knowledge forums for scholars and policy makers.

The MBRSG Research Department focuses on the following six priority policy areas:

- Future Government and Innovation
- Education Policy
- Health Policy
- Public Leadership
- Social Policy, Wellbeing and Happiness
- Sustainable Development Policy
- Economic Policy



Scan the code to access
MBRSG research

For more information on research at the Mohammed Bin Rashid School of Government, please visit: <http://www.mbrsg.ae/home/research.aspx>

The funding for this research was partially covered by a UAE National Research Foundation Grant.

