



ELSEVIER

Contents lists available at ScienceDirect

Government Information Quarterly

journal homepage: www.elsevier.com/locate/govinf

Factors influencing e-diplomacy implementation: Exploring causal relationships using interpretive structural modelling

Hamad Al-Muftah^a, Vishanth Weerakkody^a, Nripendra P. Rana^b, Uthayasankar Sivarajah^{a,*}, Zahir Irani^a^a University of Bradford, Emm Lane, Bradford BD9 4JL, UK^b Swansea University, Sketty, Swansea SA2 8PP, UK

ARTICLE INFO

Keywords:

e-Diplomacy
Digital diplomacy
Interpretive structural modelling (ISM)
ICT maturity
e-Government

ABSTRACT

Electronic diplomacy (E-diplomacy) is the use of technology by nations to define and establish diplomatic goals and objectives and to efficiently carry out the functions of diplomats. These functions include representation and promotion of the home nation, establishing both bilateral and multilateral relations, consular services and social engagement. It encapsulates the adoption of multiple ICT tools over the Internet to support a nation's interests in other countries while ensuring that foreign relations are improved between the countries. Given its embryonic nature, little scholarly research has been undertaken to study its influence on diplomatic functions and the various factors that influence its implementation. This paper applies the Interpretive Structural Modelling (ISM) methodological approach to identify factors that impact the implementation of e-diplomacy and to determine their causal relationship and rankings. This study applies the ISM methodology to the subject of e-diplomacy. The ISM-based model provides a framework for practitioners to aid decision-making and manage the implementation of e-diplomacy.

1. Introduction

Diplomacy plays an important role in implementing foreign policies through bilateral relations, consular services, communication and negotiations, i.e. making one country's policies understood and accepted by other states (Todhunter, 2013). While the policies offer direction and outline the outcomes to be achieved through diplomatic relationships, diplomacy itself involves the implementation of initiatives to realise the outcome and associated communications that take place around these initiatives and outcomes (Murray, Sharp, Wiseman, Crikemans, & Melissen, 2011). Ministers in MFA (ministry of foreign affairs) are responsible for a plethora of diplomatic duties, for example hosting foreign leaders from different parts of the world and attending state meetings in other countries (Baxter & Stewart, 2008). In recent times, MFAs have undergone significant changes in the way they handle foreign affairs as governments have adopted different approaches to interact with foreign countries (Hanson, 2010). It has been observed that foreign ministries are increasingly making exemplary use of the potential of technology (Ehiane et al., 2013; Hockings & Mellisen, 2015). Heeks and Bailur (2007) posit that ICT has penetrated all societal aspects and become an indispensable tool for delivering government

services in an open, transparent and auditable way. Ministries of Foreign Affairs have also used ICT frameworks to reduce the complexity of overall operations (Batora, 2008; Hanson, 2010) and technical infrastructures have been continuously updated over the years to improve the efficiency levels of foreign ministries' computing networks (Ehiane et al., 2013). However, the use of ICT in foreign ministries has been largely focused on internal operations, until recently, and in the last few years the concept of e-diplomacy has started to challenge and replace traditional methods of diplomacy to support the multiple function of diplomats.

E-diplomacy (also popularly known as digital diplomacy) is the use of communication and information technology for the purpose of attaining foreign policy goals (Hanson, 2010; Holmes, 2013; Ipu, 2013). Currently, there is no single definition of the term (Hanson, 2010). Some experts have defined e-diplomacy as the electronic component of public diplomacy (Hanson, 2010) while others have focused on the use of the Internet to help achieve policy goals and objectives (Permyakova, 2014), or the use of the Web and associated ICTs including social media tools to solve foreign policy problems (Huxley, 2014; Jones, Irani, Sivarajah, & Love, 2017; Sivarajah, Irani, & Weerakkody, 2015). Digital diplomacy is therefore an emerging field and its online application has

* Corresponding author.

E-mail addresses: hmhalmuf@bradford.ac.uk (H. Al-Muftah), v.weerakkody@bradford.ac.uk (V. Weerakkody), n.p.rana@swansea.ac.uk (N.P. Rana), u.sivarajah@bradford.ac.uk (U. Sivarajah), z.irani@bradford.ac.uk (Z. Irani).<https://doi.org/10.1016/j.giq.2018.03.002>

Received 9 October 2017; Received in revised form 13 December 2017; Accepted 9 March 2018

0740-624X/© 2018 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

promoted its vast scope and uses (Hanson, 2010). However, each country follows a different approach to e-diplomacy due to differences in foreign policies and perspectives on technology (Al-Muftah & Sivarajah, 2016; Al-Muftah, Weerakkody, & Sivarajah, 2016).

The unique field of digital diplomacy has been largely neglected in academic research and most scholars focus on the diplomatist literature, which emphasise the diplomatic function, negotiation, mediation and others. In practice, this area has been evolving slowly compared to other areas of public services, such as e-government, e-commerce and e-health. Therefore, it is important and timely to investigate the variables that impact this important field of e-diplomacy. More specifically, very few studies explore factors affecting the implementation and diffusion of digital diplomacy. In this study, the authors seek to evaluate the use of inter-organisational and intra-organisational uses of digital diplomacy within foreign ministries and embassies. The study will focus on formulating a model of digital diplomacy that encapsulates ICT use across inter- and intra-organisational contexts.

The model aims to illustrate factors that impact digital diplomacy. To achieve this research aim, two research questions are posed:

RQ1. What factors influence implementation of e-diplomacy within a foreign ministry?

RQ2. What is the relationship between the defined factors?

To define the factors that can influence e-diplomacy implementation, interviews were conducted with key government officials responsible for e-diplomacy. The interviews were conducted with participants from three different countries: the USA, the UK and Qatar.

To explore this domain, the researchers applied ISM method (Interpretive Structural Modelling) to determine which factors impact e-diplomacy implementation.

The paper is organised and presented in the following structure: First, a brief literature review is presented. Then, the research methodology used to collect the variables of e-diplomacy implementation are outlined. Next, the empirical findings are presented. A section detailing the ISM method employed to determine the significance of each factor in driving implementation of e-diplomacy is then discussed. This is followed by further sections presenting the results and examining their implications. Finally, the paper concludes by outlining the limitations and discussing the contribution of the research.

2. Literature review

With the evolution of ICTs in the Internet-era, public institutions have continued to exploit the potential of technology in their policy-making efforts in both the domestic and international (or diplomatic) service landscape (Jones et al., 2017; Omar, Weerakkody, & Sivarajah, 2017). The establishment of e-government in mainstream public administration has allowed governments to maintain improved levels of efficiency, transparency and relationships with their citizens in a number of areas including in education, health, transport, commerce and diplomacy (Asgarkhani, 2005; Heeks & Bailur, 2007). Scholars defined e-government as the integration and use of information technologies such as the internet, World Wide Web networks and mobile computing in different areas of the governmental activities, which is primarily undertaken by government agencies to facilitate the interactions with the citizens (Fountain, 2001; Kettani & Moulin, 2014). According to Bekkers and Homburg (2007), the concept of e-governance has emerged with the increased use of ICT tools. This technology-based platform has supported a wide range of administrative tasks and even facilitated the integration of governmental operations. Public services are also positively affected by the increased use of social media, smart phones, Web 2.0 technologies etc., since they influence citizens' levels of engagement with government operations. However, Janssen and Cresswell (2005) posit that advanced and integrated government services require more comprehensive and integrated architectures.

Janssen, Konopnicki, et al. (2017) suggested that public sector innovation is linked with ICT where it is not only developing new products but also facilitating value creation. These authors go on to explain that innovation in government is about finding new ways to develop the relationship between the government and the public. According to Asgarkhani (2005), ICT policies in the public sector have been able to shape e-government projects effectively as these were adopted at the same time as a technological shift took place in the public sector. Institutional changes that are also closely associated with the adoption of ICT during the mid 2000s focused on: public service delivery; government operations; reform of governance; citizen participation and policy making. For instance, new technologies such as Shared Service Centres (SSCs) have gained the interest of decision makers and public administrations as an approach to improve efficiency and reduce costs (Janssen & Joha, 2006). According to Janssen, Loukis, Dawes, and Zheng (2016) ICT plays a major role to help both private and public-sector organisations to access knowledge, skills and resources present in other organisations; a key requirement in diplomatic operations. Janssen, Klievink, and Tan (2012) mentioned that sharing information can cause resistance in businesses, as information is seen as key to competitive advantage, whereas governments need information to conduct their tasks under a low cost model to preserve the public purse. At a societal level, intercultural dialogue has become more common and the interaction between citizens of different nationalities is a routine (Ramzan, 2013). Also, the exchange of information between countries has become more and more important (Janssen, Bharosa, Winne, Wijk, & Hulstijn, 2011). A reflection of literature suggests that many digital diplomacy studies have focused on one tool of digital diplomacy i.e. the use of social media (Bjola & Holmes, 2015; Cassidy & Manor, 2016; Costa, 2017; Kampf, Manor, & Segev, 2015; Manor, 2016). Research by Kampf et al. (2015) is based on data collected from eleven Ministries of foreign affairs (MFAs). The countries were chosen for their extensive use of Social Networking Sites (SNS) such as Facebook and Twitter. Bjola and Holmes (2015) conducted research based on extensive secondary data, which affirms the value of Social Networking Sites and the use of social media to transform public diplomacy. Manor (2016) suggested that Foreign Ministries are more inclined toward using social media to attract elite population instead of bridging the communication gap with foreign populations. Costa (2017) highlights the issues that are associated with social media use in public diplomacy. Cassidy and Manor (2016) expose the myths related to digital diplomacy in terms of its effectiveness, reach and impacts.

e-Diplomacy is about how countries contact and communicate with each other, share information, and also influence each other through using ICTs. It also promotes the idea of transparency, transfer of information and increased interaction between countries (Hanson, 2010). In the recent past, ICT has significantly been integrated with the affairs of diplomacy (Ehiane et al., 2013; Zaharna, 2007). This situation has long escalated a paradigm shift in the manner in which the political scientists view this as process transformation in diplomacy. For example, due to the advancements made in the ICT sector, e-diplomacy has evolved its functions whereby it allows digital delivery of information and enables the governments to link with other states across the world (Heeks & Bailur, 2007). Further, e-diplomacy has instigated a shift in the roles of diplomats by bolstering storage of office documents in the cloud and guarantees access from anywhere. Therefore, ministries need to rip the benefits of IT. The situation can have an achievement in the realm of competing with other states, parts of their governments, and the way they deliver their analogues in respective situations (Eldon, 1994). According to the digital strategy of the Foreign and Commonwealth Office of the UK (2012), digital diplomacy has been found to be a crucial tool in the management of issues that surround foreign policies. However, e-diplomacy has had limited definitions, with current definitions failing to cover its apparent scope. For instance, the current definitions miss out on the internal electronic processes, major mobile applications, and the various novel

technologies that can be applied in diplomacy. In this perspective, IRM'S Office of eDiplomacy (2015) acknowledges the ideologies developed in the 21st Century, including, Statecraft as a domain that involves applications and essentials of e-diplomacy. In this regard, e-diplomacy has foci on three broad aspects of information networks including personal communications, international relations, and mass media. China, the powerhouse of the Asian economy, understands the importance of digital diplomacy (Wang, 2008). The Chinese use the policy called, "Step Out, Welcome In", for balancing out the international influence through social media (Chen, 2012). Indeed, the world is becoming increasingly connected, and it is technology that is driving most of the social and economic changes. One recent example is the failed coup attempt in Turkey where the country's president used FaceTime to make his first interaction with the media and the citizens of Turkey to rally supporters (AppyGeek, 2016).

Al-Muftah et al. (2016) carried out a study in a bid to understand, dissect, and analyse trends identified in the existing literature on e-diplomacy. The study seeks to provide a wide-ranging summary of the existing digital diplomacy literature. The analysis looked at 25 publications that were classified according to relevance, countries of study, study methodology and then drew up a profiling table. Most of the research was done in North America and Europe but a portion was conducted in Asia and the Far and Middle East. Of the studies surveyed, most followed qualitative methods such as interviews, case studies, and literature reviews. No surveys were used, indicating that researchers preferred qualitative methodologies (Al-Muftah et al., 2016). Most of the studies reviewed literature but did not delve into empirical evidence; some used case studies but these were limited to small populations. For example, Al-Muftah et al.'s (2016) study revealed that the United States Digital Outreach Team was studied by Cull (2013), Wichowski (2013) and Khatib and Thelwall (2012) where these authors found Twitter as the main influential driver impacting social and digital diplomacy in the US. Al-Muftah & Weerakkody's paper also discuss a study by Huxley (2014) where the influence of social media on matters pertaining to Finland's foreign relations was researched and another study by Batora (2008) where the author sought to determine how secrecy, one-way communication and hierarchy impact on the deliberation of foreign relations conducted via ICT.

In an initial study, a conceptual framework for measuring the maturity of e-diplomacy was presented by Al-Muftah and Sivarajah (2016). This framework outlined four basic stages. In the initial stage, foreign-affairs agencies of the government are cloud-linked via an ICT framework that facilitates the coordination of activities in embassies in those countries by providing intra-organisational digital capabilities (Jones et al., 2017). In the intermediate stage, the effects of ubiquitous Internet access are felt by diplomats and other staff within embassies. At the third stage, citizens' interactions can be evidenced by the diffusion and consumption of ICT tools. By the fourth stage, an innovative platform can provide collaborative Digital Diplomacy (Al-Muftah & Sivarajah, 2016). In addition, factors influencing uptake of e-diplomacy were outlined by these authors.

3. Research approach and methods

A qualitative method is used in this study as it takes validity of data processing into account and contributes to an in-depth understanding of the results and outcomes. A case-study research strategy was chosen for this research and interviews were used as the source of case-study evidence. According to Benbasat, Goldstein, and Mead (1987), case studies are highly convenient for IS research because they can generate a theory effectively through the study of natural settings of phenomena; this makes them particularly apposite to research areas where little or no research has been done.

In determining those factors that influence the implementation of e-diplomacy, interviews were conducted with key government employees responsible for e-diplomacy. The interviews were conducted with

participants from three different countries: the US, the UK and Qatar. In the UK, interviews were conducted in the Foreign and Commonwealth office; in the US, the State Department; and in Qatar, the Ministry of Foreign Affairs. The US and the UK are leaders in both e-diplomacy practice. According to Al-Muftah et al. (2016), most of the e-diplomacy research was done in North America and Europe (particularly in the US and the UK) with a few studies conducted in Asia, Far and Middle East. The US is the leading country for using e-diplomacy tools with the office of e-diplomacy founded in 2003. The UK is ranked second after the US in its use of advanced tools for public diplomacy (Digital strategy of the FCO, 2012). The choice of the state of Qatar is viewed as an example of an emerging economy which has been influenced heavily by the political administrative processes of the UK and US. Qatar was among the first in the GCC to implement e-government systems and the ministry of foreign affairs of Qatar has developed a standard e-transformation model for the region focused on optimising the use of electronic networks. In its 2008–2010 ICT plan, the Ministry deployed many projects that contributed to achieving e-diplomacy (ICTQ, 2011). Therefore, the three cases offer the right context of this study.

The purpose of conducting the interviews was to explore intensively the opinions of selected professionals on the use and implementation of ICT in diplomatic services and to determine which factors affect the implementation of e-diplomacy. Table 1 presents a short profile of participants who took part in the interviews:

The interviewees were selected carefully based on their experience and involvement with e-diplomacy in their respective foreign missions. The data collection process started with the US embassy (as the leading country for e-diplomacy) by interviewing two key officials and moved on to the UK FCO to repeat the process. Finally, the interviewees from the MOFAQ were consulted as the emerging country in the use of e-diplomacy. Similar to the US and the UK, the process started by consulting two senior officials who were involved in e-diplomacy implementation in Qatar (Q2 and Q4). However, with a view of eliminating any bias from the interviewees at MOFAQ (as e-diplomacy is relatively new to Qatar), two former senior diplomats and a current ambassador was interviewed. This allowed to triangulate the key issues uncovered across the three countries.

3.1. Interpretive structural modelling (ISM)

Subsequent to the interviews, an ISM method was used to determine factors that influence e-diplomacy implementation. ISM is an analytical tool that can be used to evaluate the different factors concerning the implementation of e-diplomacy. The ISM process is an interactive process in which a group of both directly-related and different elements are organised into an all-inclusive systematic framework (Attri, Dev & Sharma, 2013; Raj & Attri, 2011). The structure, therefore, acquired through the application of this method provides a framework of an

Table 1
Interview participant

Cases/participants
State department of the USA
- A senior manager in the e-diplomacy office, US State Department (US1)
- A senior diplomat and an IT professional in the US embassy in London (US2)
The UK foreign and common wealth office
- A senior personal in the digital outreach department, FCO, UK (UK1)
- A senior manager in the digital outreach department, FCO, UK (UK2)
The Ministry of foreign affairs of Qatar (MOFAQ)
- A Senior Qatari ambassador (Q1)
- A public diplomacy officer at the Qatari embassy in London (Q2)
- An Ambassador and a former ICT manager (Q3)
- A senior IT personal at a Qatari embassy in London (Q4)
- A senior diplomat and a former IT personnel member (Q5)

intricate problem/issue, in a meticulously designed system involving words as well as graphs. ISM has been chosen as the preferred method after reviewing other alternative methods such as analytic hierarchy process (AHP), decision making trial and evaluation laboratory (DEMATEL) etc.,. The reason for selecting ISM is that it is a well-established methodology for identifying relationships among specific items, which define a problem or an issue and a relevant modelling technique for analyzing the influence of one variable on other variables, more frequently used to provide a fundamental understanding of complex situations and putting together a course of action for solving a problem (Agarwal, Shankar, & Tiwari, 2007; Attri et al., 2013). However, AHP is a system analysis technique for solving decision problems. It is fundamentally used to transform a complex decision into elemental issues (i.e. clustering) to create a hierarchical model. For a typical hierarchy, the selection of the best alternatives is situated at the highest level, elements with similar nature are grouped at the same interim level(s) and the decision variables are located at the lowest level (Tung & Tang, 1998). Moreover, DEMATEL is based on digraphs, which can separate involved factors into cause group and effect (Wu, 2012). As we want to represent the visual depiction of the variables and their associations with each other within the individual stages, the ISM is the most suited methodology used for this research (Hughes, Dwivedi, Rana, & Simintiras, 2016). Janes (1988) posited that the ISM modelling not only provides insights into the correlation between the different factors, but additionally assists in developing a hierarchy, based on the significance of every factor. In addition, it provides a visual depiction of the situation. For instance, Singh, Garg, and Deshmukh (2007) used ISM to develop relationships between factors that lead to strategic decisions of firms. Similarly, Agarwal et al. (2007) used ISM to determine factors affecting supply-chain agility. Talib, Rahman, and Qureshi (2011) applied ISM to quality-management implementation. Dwivedi et al. (2017) used ISM to identify factors affecting innovation through Big Open Linked Data (BOLD). Jayant, Azhar, and Singh (2014) composed a paper about ISM to show the most up-to-date of the recent ISM literature and applications. They collected 43 papers that mentioned ISM. In Fig. 1, the ISM research process is outlined:

Further details of the process outlined in Fig. 1 are set out in the following Results and Data Analysis section. The methodology used draws from other ISM Based journal papers, which have utilized a similar methodology as shown in Fig. 1 (e.g. Agarwal et al., 2007; Dwivedi et al., 2017; Talib et al., 2011).

3.2. Results and data analysis

The discussion is divided into two parts. In the first, results from responses to Question 1 is presented. In the second, the ISM results in response to Question 2 of the research is presented.

3.2.1. Results from the interviews: empirical findings

The interviews revealed a range of significant issues. It was clear that there is a range of motivating factors influencing the use of e-diplomacy. All interviewees highlighted the ability of digital platforms to simplify the management of diplomatic responsibilities, for example, by creating environments similar to face-to-face interactions. From the interviews, it emerged that an important benefit (and thus motivation for implementation) of e-diplomacy was its ability to engage audiences that are unable to meet face-to-face. In addition, implementation of e-diplomacy is enhanced by the improvements to and increases in the take-up of technologies that provide connectivity between people. For instance, US1 stated “e-diplomacy has huge leverage in engaging audiences that you usually cannot meet face to face”. Also, Both Q1 and UK2 also stressed that the implementation of this approach to diplomacy is influenced by the ongoing development of technology that has increased connectivity between people.

Interviewees acknowledged the four-stage framework which reflects the implementation of e-diplomacy discussed by Al-Muftah and

Sivarajah (2016). This framework was used as a frame of reference when conducting the interviews. Participants agreed that the initial stage of e-diplomacy implementation, i.e. achieving intra-organisational digital capabilities (as discussed by Al-Muftah & Sivarajah, 2016), is key to building a robust e-diplomacy system. US2 stated that in the first stage, the focus is on organising those features needed to support the implementation of e-diplomacy platforms. These include development of infrastructures that contribute to the implementation of digital diplomacy. Interviewees also agreed with the notion that e-diplomacy supports the mobility of foreign-ministry employees. According to Q4, diplomats' mobility can be supported with Wi-Fi infrastructure, smartphones and effective mobile support software. Such systems increase the scope for digital diplomacy by increasing the channels through which personnel can operate and access data online. A further important outcome of implementing e-diplomacy is that it provides a means for diplomats to interact with the people they represent. For example, Q5 said “ICT has improved the range of consular services that diplomats can offer to the people, increasing their ability to address their problems directly. The use of social media to provide diplomatic services has further enhanced the possibility of this approach.” The last stage of the framework results in the implementation of collaborative digital diplomacy. This enhances connectivity between offices established in different regions or countries that manage diplomatic responsibilities and connects all diplomacy stakeholders (UK1, Q5, Q4).

Traditionally, diplomacy is considered to have three main features; these are (i) a hierarchy; (ii) one-way communication with the public; and (iii) secrecy (Batora, 2008). The participants acknowledged these, and also a range of additional factors; political, legal, economic, social and cultural. The discussion that follows shows how these factors can serve to reduce the use of ICT in diplomacy. Organisational factors vary, and start with the bureaucracies involved in implementing digital diplomacy. In organisations of this nature, bureaucracies play a significant role in decision making and managing the major aspects of the diplomat's role (UK2, UK1, Q3). The senior diplomat at the US embassy in London said that “If we want to implement an ICT project at this embassy here in London, we have to seek permission from the home office. That bureaucracy can definitely slow down e-diplomacy implementation”. He also stressed that bureaucracy is not the only factor that slows the process of ICT implementation, other organisational factors can also exert delays, such as decision-making and resistance to change. Similarly, Q3 added that bureaucracies and highly sophisticated organisational structures can negatively impact decision-making and the allocation of resources, which have in turn impact the effectiveness of digital diplomacy. He also noted that organisational structures and leadership can act either as a driver for change or as an obstacle.

All respondents believe that the implementation of digital diplomacy raises issues of privacy and confidentiality of the data shared on these platforms, and this could be the greatest single obstacle to implementing e-diplomacy. Both respondents from the UK confirmed that one of the increasing concerns on the implementation of technology in diplomatic roles is security. The increased likelihood of data loss or access to data by unauthorized parties increases the fears of implementing digital diplomacy. They also raised concerns about maintaining confidentiality and privacy, which are essential to maintain the dignity of diplomats and allowing them to retain respect in their roles. An example of a security concern was provided by UK1, who said “on our FCO's computers we are not able to look at YouTube because it has been blocked for security reasons. Therefore, security does definitely stop us doing things” He also added that they encounter many items which are classified. Although these items might be interesting information to broadcast, they are not allowed to do so because the information is classified.

Political factors may also amount to challenges in implementing digital diplomacy. Diplomats from politically unstable countries have greater difficulties carrying out their responsibilities. For some, political instability leads to restrictions in the use of digital services, increasing

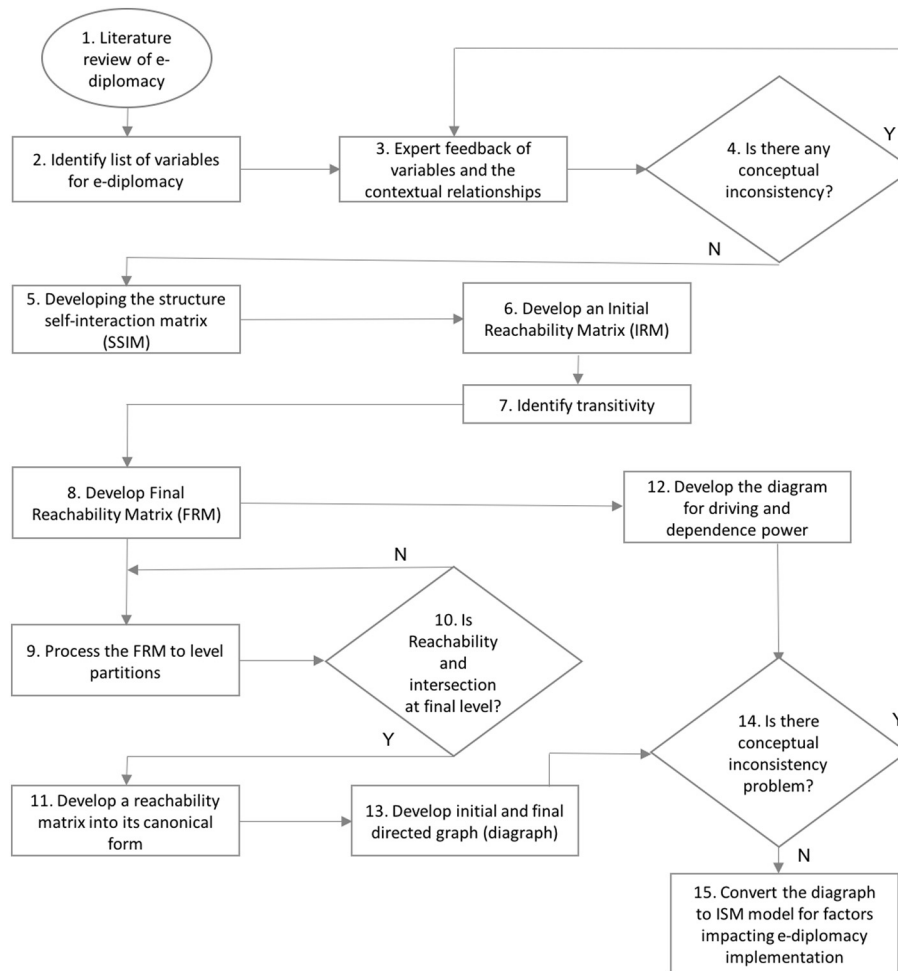


Fig. 1. ISM flow chart.

reliance on traditional measures (UK1, Q3, Q1). However, security issues that result from political instability may also leave diplomats with no option but to engage with their partners via digital means, in spite of heightened security fears, even for their lives, as affirmed by the respondent (UK1). Regarding legal factors, US1 said “in foreign services we need to deal with so many different countries with different legal systems and procedures. For instance, sometimes an American IT product can't be exported and used in some countries because of their legal system”. US2 also mentioned an example of social media which can't be used in some foreign countries. In addition, e-diplomacy projects require long-term financial support. The budget for ICT projects are usually limited, and this can be an obstacle to e-diplomacy implantation (Q3, Q4). Economic obstacles also feature among the factors affecting the implementation of e-diplomacy. Poor economic policies that affect the work of diplomats and their implementation of digital diplomacy affects their ability to perform their duties. (US1, UK2).

Operating in different cultures and traditions, citizen-centric policies, the digital divide, and social environments were identified as examples of relevant socio-cultural factors. US2 mentioned that cultural aspects often depend on the personnel. Some consider security concerns as part of the cultural context and these may affect their decisions to implement digital diplomacy (UK1). Q3 added that language plays a significant role in failures of digital diplomacy approaches. Language barriers may affect the ability of diplomats to communicate effectively. Cultures that discourage the use of social media or other digital platforms make it a challenge to implement digital diplomacy compared to those countries that allow its development (Q1). Interviewees also

claimed that the nature of the communication between diplomats and the public, or the people they interact with, determines the ability to implement digital diplomacy. Traditional diplomats oppose the notion of using ICT tools in diplomacy, such as social media, as it encourages two-way communication with the public, which is against the traditional norms of diplomacy (US2, UK1, UK2, Q3).

Awareness and training campaigns to promote e-diplomacy services and increase their uptake can play a crucial role (US2). In this regard, UK1 confirmed that “Yes, there is very little awareness of how important it is to have good ICT to use every day and so there is very little investment and very little sense of urgency that these people need mobile phone. So, the leaders do not understand why digital tools are so important”. He advised that a rapid program to educate leaders about the importance of e-diplomacy was called for. Interviews also revealed that the ability of diplomats to embrace digital technologies in their roles also features among the challenges. Some may require intense training to obtain the requisite skills in handling digital devices, addressing the security risks that arise from their use in diplomatic contexts at a later stage (UK1, UK2, Q5, Q1). Q1 and Q3 also advised that additional risks associated with e-diplomacy arise from the non-predictable and unmeasurable risks of the technologies used. In this context, they also noted the presence of “resistance to change” which they defined as “the Opposition to new ideas especially from the elder generation of diplomats”. They concluded that trust and acceptance of new ICT tools are major variables that must be considered when implementing e-diplomacy.

By using a thematic synthesis process of qualitative research (Thomas & Harden, 2008), the factors that impact the implementation

Table 2
Identified ISM factors that impact e-diplomacy.

Factor	Explanation
1 Resistance to change	Resistance to change means that states and non-state actors are not ready to accept change, especially the use of e-diplomacy to share sensitive information. Change is crucial to current societies; the Internet has revolutionised everything, including diplomatic relations and information gathering. Rapid advances in technology lead to “resistance to change”. Keeping up with the latest technologies makes it difficult for any system to reach maturity before it is considered obsolete.
2 Awareness/ training	This element comprises awareness and training campaigns that promote e-diplomacy services to increase implementation and use. The level of awareness of personnel depends on their knowledge and ability to use digital platforms. These may require training which will improve their ability to use digital diplomacy in carrying out their roles.
3 Secrecy	All respondents think that the implementation of digital diplomacy raises issues of privacy, security and confidentiality of the data shared on these platforms, and this can be the major obstacle in implementing e-diplomacy. Diplomatic data should be protected from destructive forces and unwanted actions by unauthorized users.
4 Acceptance	Acceptance of new ICT positively affects the implementation of ICT in technology. In most countries, the Internet has been accepted as the primary tool for information sharing. Social media serves as a central platform, where ideas are shared and transmitted globally. Countries have adopted e-governance in cases where the government uses websites to communicate information to its citizens. Most states and non-state actors accept the use of Internet and telecommunication strategies and tools in their organisations. In these cases, the introduction and implementation of e-diplomacy is unlikely to face resistance
5 Trust	Confidence is a strong belief that something is going to work as intended. In the case of e-diplomacy, trust means that users of digital diplomacy believe that it is useful and greatly assists the diplomatic process, and will contribute to achieving strategic objectives. In other words, users have faith in that digital diplomacy will provide superior results. Trust may affect implementation of digital diplomacy either positively or negatively. For instance, when high confidence in e-diplomacy tools encourages states and non-state actors to implement the use of digital diplomacy. For example, when senior diplomats (such as ambassadors) do not trust or agree that social media is an important medium of communication, the implementation of e-diplomacy is negatively impacted.
6 Risk	Risk is defined as a possible adverse outcome, such as a danger. In other words, the risk equates to holding doubts about the future outcome. This is a critical factor affecting ICT and digital diplomacy. The risk factor has changed the adoption of ICT in any sector since uncertainties are associated with adverse outcomes. The introduction and implementation of digital diplomacy is also prone to risks. State and non-state actors may experience risks such as the hacking of e-diplomacy tools which impacts the implementation process negatively to and, at the same time, may lead to diplomatic crises, such as the “WikiLeaks” issue.
7 Competitive advantage/ Benefits/motivation	A range of motivations hold influence over the use of e-diplomacy. The interviewees referred to the simplicity offered by the digital platforms, which improves the ease of managing diplomatic responsibilities, such the ability to create environments similar to face-to-face interactions. Moreover, e-diplomacy tools are proven to enhance the functions of diplomats, such as communication, negotiations, bilateral engagements, consular services ... etc.
8 Human resource factors	“Human resources” refers to the people who make up an organization’s workforce. Human resource factors are critical when it comes to implementing ICT in diplomacy. When employees in an organization have sufficient practical knowledge and skills on the use of ICT in diplomacy, its advantages and benefits, they can accelerate its implementation. Relevant HR factors include: leadership, management competence, knowledge, and capacity building.
9 Organisational factors	Organisational factors according to the nature of the bureaucracies involved in the implementing digital diplomacy. In any organization of this nature, bureaucracies play a significant role in decision making and handling of the major features of the job. Other organisational aspects include Organisational structure, Power distribution, Future needs of the organization, and Organisational culture.
10 Economic aspect	E-diplomacy projects require financial support over the long term. Budgets for ICT project are usually limited, which can limit e-diplomacy implementation. Other economic factors (e.g. cost, financial issues, economic environment) are among the potential obstacles that affect the implementation of e-diplomacy. Poor economic policies affect the work of diplomats, implementation of digital diplomacy affects diplomats’ ability to perform their duties.
11 Culture and tradition	The impact that cultural aspects can have on e-diplomacy implementation depends on the quality of the personnel. Some consider security concerns as part of the cultural factors they must address, and this may affect their decisions concerning implementation of digital diplomacy. The issue of language plays a significant role in the failures of digital-diplomacy approaches. Language barriers may affect the ability of diplomats to communicate with their partners effectively. Cultures that discourage the use of social media or other digital platforms make it challenging to implement digital diplomacy, compared to those countries that may allow its development.
12 Social aspects	“Social aspects” refers to all aspects of the society. The term “social” refers to interactions and relations that take place between people. Social issues are paramount when it comes to the adoption of e-diplomacy. E-diplomacy should be performed within set policies and frameworks to ensure that there is no violation of other people’s rights in the society. The adoption process should be citizen-centric and contribute to an improvement of the social environment and social standards. Dealing with disparate societies and traditions, achieving citizen-centric policies, the digital divide and the social environment are examples of relevant social factors.
13 Political aspects	Political factors may impede the implementation of a digital approach in diplomacy. Political instability may make it more difficult for diplomats to carry out their responsibilities. In some cases, political instability necessitates restrictions of the use of digital measures, increasing reliance on traditional measures. Relevant political aspects include: government support, leadership, and commitment from senior management.
14 Legal aspect	“Legal aspects” can be defined as regulations and legislative that act to cope with the changes caused by e-diplomacy. For example, in some countries, communication via social media channels is accepted, whilst in others it is illegal. The degree of openness that each country embraces and the level of restrictions they impose on relations with other countries can contribute to the enactment of legislation and policies that impact the roles of diplomats in their countries.
15 Intra-organisational digital capabilities/ Technical infrastructure	This stage is the key to achieving a robust e-diplomacy system. The first stage focuses on organising the features required to support the successful implementation of e-diplomacy platforms. These include infrastructure development as well as the required hardware and software.
16 Ubiquitous access	This stage focuses on the provision of a potentially multi-channelled approach to support the mobile nature of diplomatic responsibilities. The interviewees favoured supporting the mobility of employees in foreign ministries by providing Wi-Fi infrastructures, smart phones and software to support mobile access within the diplomatic premises. To

(continued on next page)

Table 2 (continued)

Factor	Explanation
17	Citizens' interactions/ Nature of communications
18	Collaborative digital diplomacy

of e-diplomacy have been extracted from the experts' feedbacks presented above. These factors are listed in Table 2, and analysed in the next section by applying the ISM process.

3.3. Data analysis: applying ISM

While the results of the interviews showed the factors that impact the implementation of e-diplomacy, ISM method is used to find the relationships between these factors. In this section, the research findings concerning responses to the second research question are presented. It explains how the ISM method was applied to determine relationships between factors affecting e-diplomacy implementation, listed above.

3.3.1. Structural self-interaction matrix (SSIM)

To evaluate the correlation between the various factors affecting e-diplomacy, a contextual link of leads to type is selected. This ensures that one factor assists in ameliorating the effects of another. The contextual correlation between the variables is enhanced. After establishing the definition of each variable, the correlation between any two sub-elements (i and j) as well as the associated course of relation is further examined. Four symbols have been used for the category of the correlation that exists between the identified sub-variables under consideration (Raj & Attri, 2011).

- V: factor i will help achieve or have influence on factor j;
- A: factor j will help achieve or have influence on factor i;
- X: factors i and j will help achieve or influence each other;
- O: factors j and i have no correlation with each other

Based on the contextual relationship discussed above, the SSIM is developed as shown in Table 3, below, by conducting a round-table

Table 3
Structural self-interaction matrix.

i/j	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	A	A	A	A	A	A	A	A	A	A	A	V	A	O	O	A	A	
2	V	V	V	A	O	O	O	O	O	O	O	X	X	V	X	X		
3	X	X	X	A	O	O	O	O	A	O	A	O	X	V	V			
4	V	V	V	O	A	A	A	A	O	A	O	V	V	X				
5	V	V	V	A	O	O	O	O	A	O	X	O	A					
6	X	X	X	A	X	O	O	O	V	O	V	O						
7	A	A	A	A	O	O	O	O	A	X	A							
8	V	V	V	X	O	O	A	A	A									
9	V	V	V	V	O	O	O	O										
10	V	V	V	V	O	O	O											
11	V	V	V	V	O	O												
12	V	V	V	V	O													
13	V	V	V	V	O													
14	V	X	X	X														
15	V	V	V															
16	X	X																
17	X																	
18																		

discussion with experts in the field of e-diplomacy (Q3, Q4 and Q5):

3.3.2. Reachability matrix

The SSIM is transformed into a reachability matrix. A reachability matrix is a binary matrix that consists of 0's and 1's (Mishra, Singh, Rana, & Dwivedi, 2017). The reachability matrix follows simple rules of substitution, as described below:

- Based on the original SSIM, any (i, j) entry corresponding to factor V is denoted as 1 (numeric) in the reachability matrix, and subsequently, the (j, i) entry changes to numeric 0
- Any (i, j) entry corresponding to factor A in the SSIM is denoted as 0 in the reachability matrix, and subsequently, the (j, i) entry is denoted as 1
- Any (i, j) entry corresponding to factor X in the SSIM is denoted as 1 in the reachability matrix, and subsequently, the (j, i) entry is denoted as 1
- Any (i, j) entry corresponding to factor O in the SSIM is denoted as 0 in the reachability matrix, and subsequently, the (j, i) entry is denoted as 0 (Table 4)

3.3.3. Final reachability matrix

The final reachability matrix (see Table 5) is formed by applying the contextual relation in which if variable A is related to B and B is related to C, then A will be necessarily related to C.

3.3.4. Partitioning of the FRM

From the reachability matrix, level partitioning is executed through the assessment of the reachability matrix, as well as the precursor groups of every factor. The reachability group is comprised of the factor itself as well as other factors, which may assist in achieving the factor. Conversely, the precursor sets comprise the factor, as well as other

Table 4
Initial reachability matrix.

i/j	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1
3	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1
4	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1
5	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	1
6	1	1	1	0	1	1	0	1	0	1	0	0	0	0	0	1	1	1
7	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8	1	0	1	0	1	0	1	1	0	0	0	0	0	0	1	1	1	1
9	1	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	1	1
10	1	0	1	0	1	0	1	1	0	1	0	0	0	0	0	1	1	1
11	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	1	1
12	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	1
13	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	1
14	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1
15	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1
16	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1
17	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1
18	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1

Table 5
Final reachability matrix (FRM).

i/j	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	DRP
1	1	1*	0	0	0	0	1	0	1*	0	0	0	0	0	0	0	0	0	4
2	1	1	1	1	1	1	1	1*	1*	1*	0	0	0	0	0	1	1	1	13
3	1	1	1	1	1	1	1*	1*	0	1*	0	0	0	0	0	1	1	1	12
4	1*	1	1*	1	1	1	1	1*	1*	1*	0	0	0	0	0	1	1	1	13
5	1*	1*	1*	1	1	1*	1*	1	0	0	0	0	0	0	1*	1	1	1	12
6	1	1	1	1*	1	1	1*	1	0	1	0	0	0	0	1*	1	1	1	13
7	1*	1	1*	1*	1*	1*	1	1*	1	0	0	0	0	0	0	1*	1*	1*	12
8	1	1*	1	1*	1	1*	1	1	1*	0	0	0	0	0	1	1	1	1	13
9	1	1*	1*	1	1*	1*	1	1	1	0	0	0	0	0	1*	1	1	1	13
10	1	1*	1	1*	1	1*	1	1	1*	1	0	0	0	0	1*	1	1	1	14
11	1	1*	1*	1	1*	1*	1*	1	0	0	1	0	0	0	1*	1	1	1	13
12	1	1*	1*	1	1*	1*	1*	1	0	0	0	1	0	0	1*	1	1	1	13
13	1	1*	1*	1	1*	1*	1*	0	0	0	0	0	1	0	0	1	1	1	11
14	1	1*	1*	1	1*	1*	1*	0	0	0	0	0	0	1	0	1	1	1	11
15	1	1	1	1	1	1	1	1*	1*	1*	0	0	0	0	1	1	1	1	14
16	1	1*	1	1*	1*	1	1	1*	1*	1*	0	0	0	0	0	1	1	1	13
17	1	1*	1	1*	1*	1	1	1*	1*	1*	0	0	0	0	0	1	1	1	13
18	1	1*	1	1*	1*	1	1	1*	1*	1*	0	0	0	0	0	1	1	1	13
DNP	18	18	17	17	17	17	18	15	11	9	1	1	1	1	8	17	17	17	220

[Legend: 1* shows transitivity, DNP = Dependence Power, DRP = Driving Power].

Table 6
Partition on reachability matrix: Iteration I.

Element P(i)	Reachability Set: R(Pi)	Antecedent Set: A(Pi)	Intersection: R(Pi) & A(Pi)	Level
1	1,2,7,9	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	1,2,7,9	I
2	1,2,3,4,5,6,7,8,9,10,16,17,18	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	1,2,3,4,5,6,7,8,9,10,16,17,18	I
3	1,2,3,4,5,6,7,8,10,16,17,18	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	2,3,4,5,6,7,8,10,16,17,18	
4	1,2,3,4,5,6,7,8,9,10,16,17,18	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	2,3,4,5,6,7,8,9,10,16,17,18	
5	1,2,3,4,5,6,7,8,15,16,17,18	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	2,3,4,5,6,7,8,15,16,17,18	
6	1,2,3,4,5,6,7,8,10,15,16,17,18	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	2,3,4,5,6,7,8,10,15,16,17,18	
7	1,2,3,4,5,6,7,8,9,16,17,18	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	1,2,3,4,5,6,7,8,9,16,17,18	I
8	1,2,3,4,5,6,7,8,9,15,16,17,18	2,3,4,5,6,7,8,9,10,11,12,15,16,17,18	2,3,4,5,6,7,8,9,15,16,17,18	
9	1,2,3,4,5,6,7,8,9,15,16,17,18	1,2,4,7,8,9,10,15,16,17,18	1,2,4,7,8,9,15,16,17,18	
10	1,2,3,4,5,6,7,8,9,10,15,16,17,18	2,3,4,6,10,15,16,17,18	2,3,4,6,10,15,16,17,18	
11	1,2,3,4,5,6,7,8,11,15,16,17,18	11	11	
12	1,2,3,4,5,6,7,8,12,15,16,17,18	12	12	
13	1,2,3,4,5,6,7,13,16,17,18	13	13	
14	1,2,3,4,5,6,7,14,16,17,18	14	14	
15	1,2,3,4,5,6,7,8,9,10,15,16,17,18	5,6,8,9,10,11,12,15	5,6,8,9,10,15	
16	1,2,3,4,5,6,7,8,9,10,16,17,18	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	2,3,4,5,6,7,8,9,10,16,17,18	
17	1,2,3,4,5,6,7,8,9,10,16,17,18	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	2,3,4,5,6,7,8,9,10,16,17,18	
18	1,2,3,4,5,6,7,8,9,10,16,17,18	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	2,3,4,5,6,7,8,9,10,16,17,18	

factors, which may assist in achieving it. Then the meeting point of these groups is derived from all the factors. The factors for which the intersection and reachability sets are similar are the highest ranked factors in the ISM grading. The highest ranked factors in the grading system would not help to achieve any other factor above its level. In Table 6, variables 1 (resistance to change), 2 (awareness/training), and 7 (i.e. competitive advantages), are found at Level I as the elements for all these factors at the reachability set are equal to intersection set. For these variables, the reachability and intersection set are the same. So, they will be located at the highest of the hierarchy of the ISM model.

In Table 7, variables 3 (security/privacy), 4 (acceptance), 5 (trust), 6 (risk), 8 (i.e. human resource factors), 16 (ubiquitous access), 17 (citizens' interactions/ nature of communications), and 18 (collaborative digital diplomacy) are put at Level II as the elements for these variables, such as reachability and intersection set, are the same. Thus, they will be placed at Level II in the ISM model. Furthermore, we also eliminate the rows corresponding to variables 1, 2, and 7 from Table 6, which are already located at the top level (Level I). The same procedure of deleting those rows that conform to the previous level and marking the next level location in the new table is repeated until we reach the final variable in the table.

In Table 8, below, variables 9 (organisational factor), 13 (political),

14 (legal), and 15 (technical infrastructure) are placed at Level III as the elements of these variables at reachability set and intersection set are the same. Thus, they will be placed at Level III in the ISM model.

Finally, in Table 9 variables 10 (economic aspects), 11 (culture and tradition) and 12 (social factors) are put at the lowest level as the elements at reachability set and intersection set for these variables are the same. Thus, it will be positioned at Level IV in the ISM model.

3.3.5. Canonical matrix

A canonical matrix is created through grouping variables contained in the same level, across columns and rows of the final reachability matrix. The canonical matrix that shows the factors against the level is shown below (see Table 10).

3.3.6. Classification of factors impacting e-diplomacy

Factors impacting e-diplomacy implementation are categorised into four groups, based on driving power and dependence power shown in Table 5 above and Fig. 2 below. The categories are autonomous, dependent, linkage, and drivers (Mandal & Deshmukh, 1994).

Fig. 2 comprises four quadrants that represent the autonomous, dependent, linkage, and driver classes. For instance, a variable with a driving power of 11 and a dependence power of 16 is placed at a

Table 7
Partition on reachability matrix: Iteration 2.

Element P(i)	Reachability Set: R(Pi)	Antecedent Set: A(Pi)	Intersection: R(Pi) & A(Pi)	Level
3	3,4,5,6,8,10,16,17,18	3,4,5,6,8,9,10,11,12,13,14,15,16,17,18	3,4,5,6,8,10,16,17,18	II
4	3,4,5,6,8,9,10,16,17,18	3,4,5,6,8,9,10,11,12,13,14,15,16,17,18	3,4,5,6,8,9,10,16,17,18	II
5	3,4,5,6,8,15,16,17,18	3,4,5,6,8,9,10,11,12,13,14,15,16,17,18	3,4,5,6,8,15,16,17,18	II
6	3,4,5,6,8,10,15,16,17,18	3,4,5,6,8,9,10,11,12,13,14,15,16,17,18	3,4,5,6,8,10,15,16,17,18	II
8	3,4,5,6,8,9,15,16,17,18	3,4,5,6,8,9,10,11,12,15,16,17,18	3,4,5,6,8,9,15,16,17,18	II
9	3,4,5,6,8,9,15,16,17,18	4,8,9,10,15,16,17,18	4,8,9,15,16,17,18	
10	3,4,5,6,8,9,10,15,16,17,18	3,4,6,10,15,16,17,18	3,4,6,10,15,16,17,18	
11	3,4,5,6,8,11,15,16,17,18	11	11	
12	3,4,5,6,8,12,15,16,17,18	12	12	
13	3,4,5,6,13,16,17,18	13	13	
14	3,4,5,6,14,16,17,18	14	14	
15	3,4,5,6,8,9,10,15,16,17,18	5,6,8,9,10,11,12,15	5,6,8,9,10,15	
16	3,4,5,6,8,9,10,16,17,18	3,4,5,6,8,9,10,11,12,13,14,15,16,17,18	3,4,5,6,8,9,10,16,17,18	II
17	3,4,5,6,8,9,10,16,17,18	3,4,5,6,8,9,10,11,12,13,14,15,16,17,18	3,4,5,6,8,9,10,16,17,18	II
18	3,4,5,6,8,9,10,16,17,18	3,4,5,6,8,9,10,11,12,13,14,15,16,17,18	3,4,5,6,8,9,10,16,17,18	II

Table 8
Partition on reachability matrix: Iteration 3.

Element P(i)	Reachability Set: R(Pi)	Antecedent Set: A(Pi)	Intersection: R(Pi) & A(Pi)	Level
9	9,15	9,10,15	9,15	III
10	9,10,15	10,15	10,15	
11	11,15	11	11	
12	12,15	12	12	
13	13	13	13	III
14	14	14	14	III
15	9,10,15	9,10,11,12,15	9,10,15	III

Table 9
Partition on reachability matrix: Interaction 4.

Element P(i)	Reachability Set: R(Pi)	Antecedent Set: A(Pi)	Intersection: R(Pi) & A(Pi)	Level
10	10	10	10	IV
11	11	11	11	IV
12	12	12	12	IV

position with dependence power of 16 in the x-axis and driving power of 11 on the y-axis. Based on its location, it can be defined as a linkage factor. The objective behind the classification is to enable analysis of the driver power and dependency of the variables. The first quadrant contains factors defined as autonomous, which should be disconnected from the system, as they have weak driver power and weak

Table 10
Canonical matrix.

Element	1	2	7	3	4	5	6	8	16	17	18	9	13	14	15	10	11	12	Level
1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	I
2	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	I
7	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	I
3	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	II
4	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	II
5	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	II
6	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	II
8	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	II
16	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	II
17	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	II
18	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	II
9	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	III
13	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0	0	0	0	III
14	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	0	0	0	III
15	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	III
10	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	IV
11	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	1	0	IV
12	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	1	IV

dependence. None of the defined factors fit into that quadrant in the context of this research. The second quadrant contains only one factor, i.e. resistance to change, which could be expected to define it as a dependent variable with weak driving power but strong dependence power. The third quadrant contains drivers or independent factors that have strong driving power and weak dependence. Cultural, legal, economic, social, political and technical infrastructures are included in this quadrant. The fourth quadrant (linkage) contains the majority of the variables: awareness/training, security, acceptance, trust, risk, competitive advantages, human resources, organisational factor, ubiquitous access, citizen's interactions, and collaborative digital diplomacy. According to the definition of linkage variables, these factors have strong driving power and strong dependence power. These factors affect each other and also feedback on themselves.

3.3.7. Formation of structural model

In this section, the final ISM based model of factors affecting e-diplomacy implementation is constructed from both the canonical matrix shown in Table 10 and the final reachability matrix shown in Table 5. The model consists of vertices, nodes and edges that illustrate relationships among the variables. For instance, if there is a relation between the factors i and j, this is shown by an arrow pointing from i to j. The digraph is finally converted into an ISM-based model, shown in the Figure below. The different levels are identified using a level partitioning process of the ISM method, which shows the driving and dependence power of a variable and how they are connected at the same level and with the variables of the next level above.

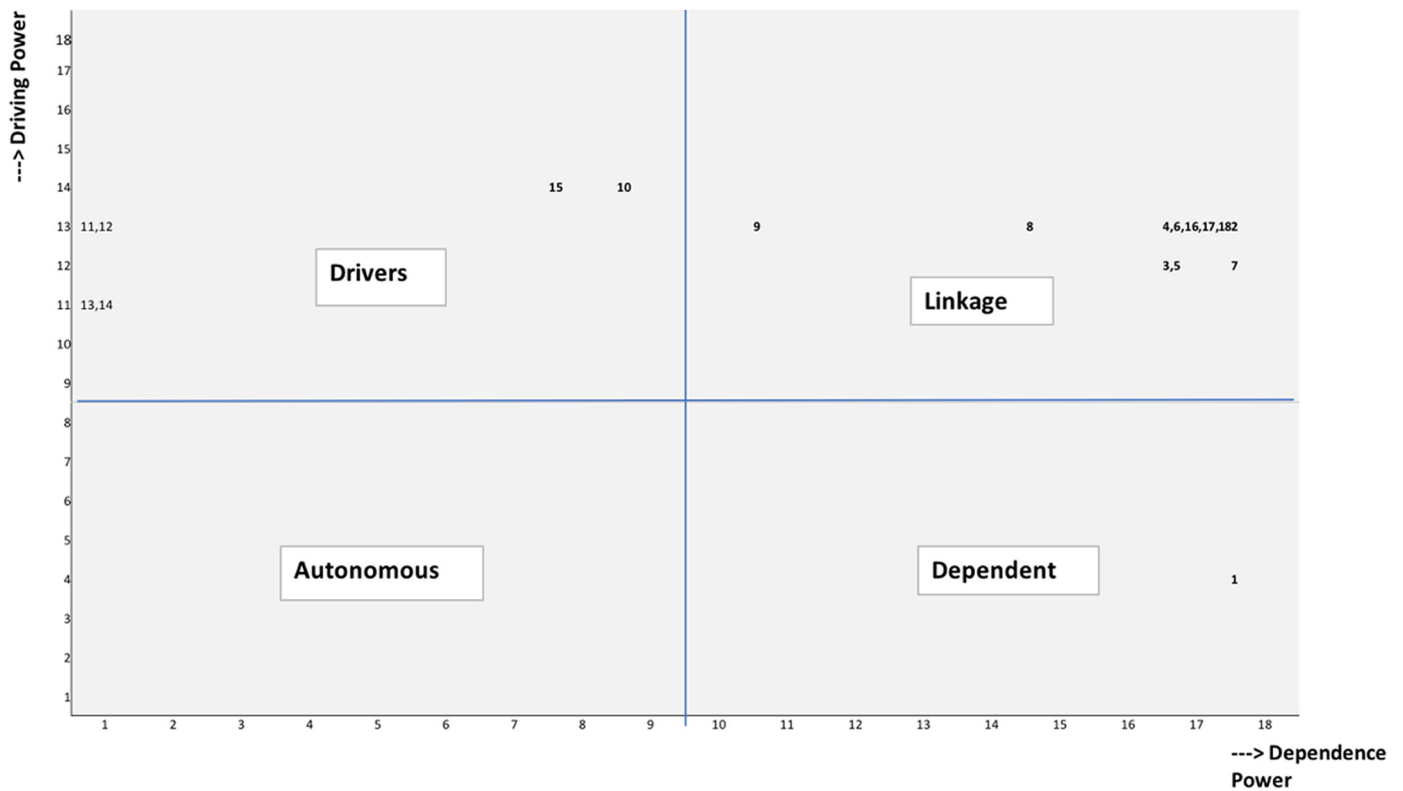


Fig. 2. Driving power and dependence diagram.

4. Discussion

As per Fig. 3 above, the empirical investigation suggests that the most fundamental considerations for an e-diplomacy implementation are cultural, social and economic. Since they operate at the same level, they have the greatest effect on the variables in the upper levels. For

example, technical infrastructure (i.e. located in Level II) requires budget and financing (i.e. the economic aspect, located in Level IV. UK2 considered limited financial resources to be the biggest obstacle in e-diplomacy implementation. He said: "I think the number one is probably cost; the biggest challenge to us is the financial to be able to fund a new system". Several economic, legal and economic factors affect the

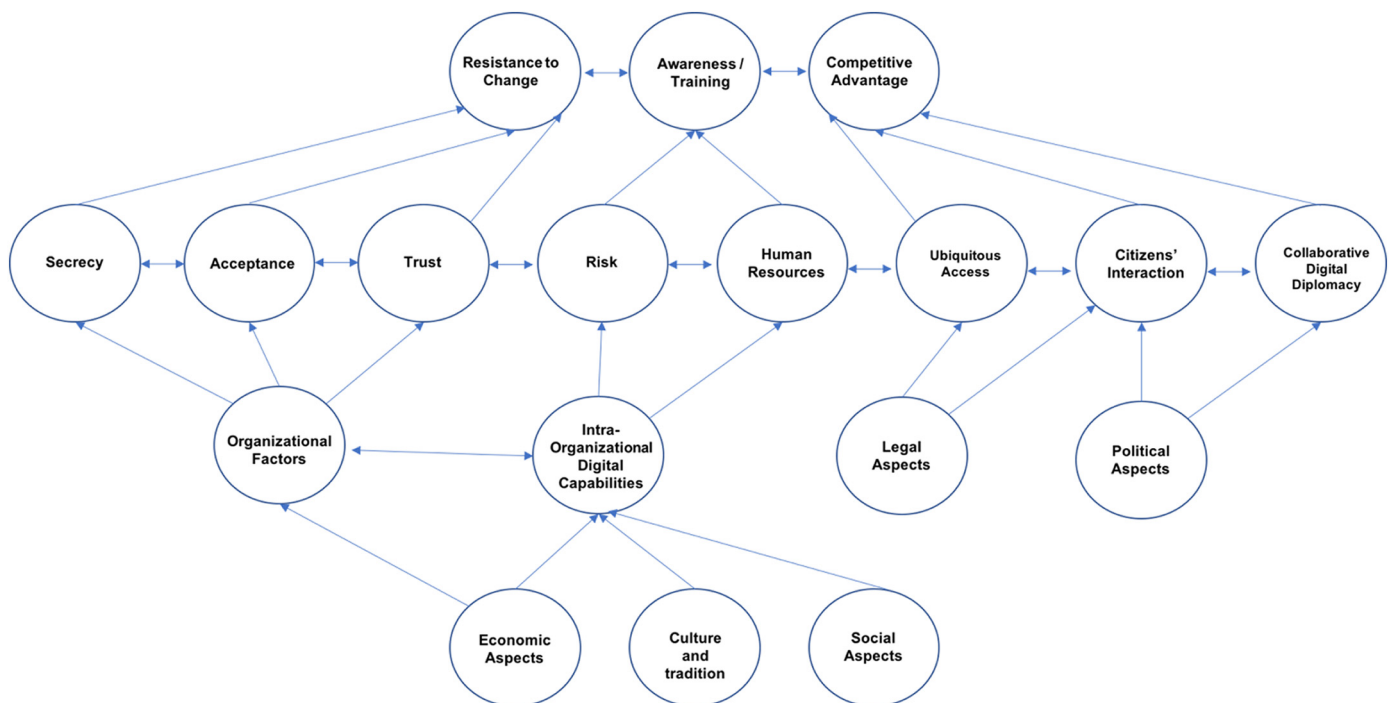


Fig. 3. ISM-based model.

implementation of ICT in the ministry of foreign affairs. Shortages of skilled staff to exploit advanced ICT services and a lack of funds appear to be vital components (Czosseck & Geers, 2009).

Social and cultural factors also play an important role in implementing ICT at diplomatic and foreign-ministry level. As outlined by Hicks (2011), implementation is not possible without the support from and engagement of the society and its prevailing culture. It can be shown that social engagement with innovation is not straightforward, specifically in environments where traditional societies and conservative infrastructures prevail (Malone, 2008). Q3 said “*there is a digital divide issue, and although digital tools themselves have become tools of making common ground for interaction, culture and language barriers are still present, and reduce the likelihood of creating commonalities*”. Also, for working in different parts of the world, it is very difficult to communicate through a shared language base thus development of multi-lingual ICT infrastructure and network can turn out to be costly for government ministries (Stauffacher, 2005).

The factors present at Level III (i.e. organisational, legal, political and technical infrastructure) can impact some factors at Level II directly. For instance, political factors such as leadership and power distribution can directly affect the next upper level variables such as using e-diplomacy tools to establish interactions with the public. In addition, having good technical infrastructure will lead to good services, shown at Level II, such as ubiquitous access, citizens' interaction and collaborative digital diplomacy stages. Regarding legal factors, US1 stated “*in foreign services, we need to deal with so many different countries with different legal systems and procedures in order to be able to implement ICT tools at foreign services*”. He also stressed that not only does bureaucracy slow down the process of ICT implementation but so also do other organisational factors, such as decision making and resistance to change. From the literature, Batora (2008) outlined two levels of operational hierarchies: bureaucratic hierarchies and hierarchies between headquarters and missions abroad. The characteristic feature of a hierarchy can greatly limit the use of ICT tools in the diplomatic function (Batora, 2006). This is because bureaucracy can have the effect of slowing the flow of important information across the various boundaries of organisational units, as well as across levels of authority (Kettani & Moulin, 2014). The above-mentioned empirical findings from the interviews and literature proved that these factors at Level III have greater impact when it comes to e-diplomacy implementation. The ISM-based model also determines organisational factors to appear on the same level as legal and political aspects, showing that both internal and external controls are of equal importance. Furthermore, the model in Fig. 3 shows that intra-organisational digital capability, i.e. the first stage of the proposed framework for e-diplomacy maturity by Al-Muftah and Sivarajah (2016), is located in the same level. This indicates that this is the most fundamental stage to be considered before moving to other stages located in the next level (i.e. ubiquitous access, citizen's interaction and collaborative digital diplomacy). Q3 stated that “*Inadequate technical capabilities and weak technical infrastructure can lead to poor e-diplomacy implementation.*”

Level II consists of the variables *security, acceptance, trust, risk, human resources, ubiquitous access, citizen's interactions, and collaborative digital diplomacy*, which affect the highest level (i.e., Level I) of the ISM model directly. For instance, aspects relating to trust can better serve resistance to change of e-diplomacy implementation. Similarly, the relationship between the need for human resource (HR) and awareness/training shows that the higher the HR factor is, the better the awareness and training for e-diplomacy will be.

Risk is defined as a possible adverse outcome. Here, risk is having doubts as to a future outcome. It is a critical factor that affects ICT and digital diplomacy (Kampf et al., 2015). The risk factor has impacted the adoption of ICT in all sectors due to being uncertainties associated with adverse outcomes (Kampf et al., 2015). State and non-state actors are likely to experience risks such as the hacking of e-diplomacy tools which is likely to negatively impact the implementation process

(Mármol & Pérez, 2016). It is worth noting that “risk” is located at the same level as other variables such as secrecy, trust, acceptance, HR and others, which indicates that these are equally important and can directly affect top-level variables, such as the competitive advantages of e-diplomacy implementation and resistance to change.

Finally, top-level variables reveal strong dependence on other variables. In the context of factors impacting e-diplomacy implementation, *awareness/training, competitive advantage* and *resistance to change* factors, which are within the upper level (i.e. Level I) show strong dependence power on other factors. Resistance to change means that state and non-state actors are not ready to accept change, especially using e-diplomacy to share sensitive information. Change is present in all aspects of society globally; the Internet has had a revolutionary impact almost everywhere, including on diplomatic relations and information gathering (Cummins & Worley, 2014). One of the experts from the case studies said that “*if diplomats trust and accept ICT tools, they will not resist the change brought about by an ICT environment (Q2)*”.

5. Conclusions

This research has examined the use of inter-organisational and intra-organisational uses of digital diplomacy within foreign ministries and embassies. The study presented a model of digital diplomacy that encapsulated ICT and showed the relationships between several variables identified during the interviews conducted with experts in e-diplomacy. The findings of the ISM process were discussed in the previous section in the context of existing literature, as well as the discussions undertaken by experts at the interviews. Eighteen different variables were found to be associated with e-diplomacy. Many variables were found to have both strong driving and dependence powers thus, classifying them as linkage factors that should be considered as relatively unstable. Therefore, in the context of e-diplomacy implementation, each variable will have an effect on the others as well as feedback on themselves. An explanation for this is that e-diplomacy is in its infancy and foreign ministries are struggling to make sense of it as discussed by several interviewees.

This research makes several significant contributions to the domain of diplomacy in general and to e-diplomacy in particular. The ISM-based model constructed for e-diplomacy was conceived and tested by exploiting indicators, which are important for assessing the maturity of ICT associated with diplomacy. One of the main gaps identified in the literature was the need for more theoretical development of e-diplomacy. As such this research showed an important input as the model developed here can now be used to explore if a particular factor needs further study. It should also assist foreign ministries identify the extent to which they should seek to exploit developments in ICT to carry out diplomatic tasks. The development of relationships among the variables as identified in this research can be considered as a significant contribution in this area.

A further key contribution of the adopted method is that it is the first study to utilise ISM as the model to identify the causal relationships from among factors impacting e-diplomacy implementation (Janssen, Rana, et al., 2017). The pyramid or level of the variables presented in the ISM-based model specifies the relative importance of different variables as drivers and the dependent or independents factors, which will allow researchers to select the relevant factors for further framework development and validation. A further key contribution within this study is the identification of links between the factors affecting the implementation of e-diplomacy and how these links are represented in context of their dependence and driving power in relation to other factors. This can be seen through the ISM model shown in Fig. 3. The model presents the top-level variables as: *resistance to change, awareness/training* and *competitive advantage*. As these factors are all represented at the top of the model, they are considered to be the factors that have highest significance in terms of their dependency on the other

- Research, 7(4), 35–45.
- Janssen, M., & Cresswell, A. M. (2005). An enterprise application integration methodology for e-government. *Journal of Enterprise Information Management*, 18(5), 531–547.
- Janssen, M., & Joha, A. (2006). Motives for establishing shared service centers in public administrations. *International Journal of Information Management*, 26(2), 102–115.
- Janssen, M., Klievink, B., & Tan, Y. (2012). A stakeholder analysis of business-to-government information sharing: The governance of a public-private platform. *International Journal of Electronic Government Research*, 8(4), 54–64.
- 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.
- Janssen, M., Loukis, E., Dawes, S., & Zheng, L. (2016). Evolving ICT and governance in organizational networks - conceptual and theoretical foundations. *Electronic Markets*, 26(1), 7–14.
- Janssen, M., Rana, N. P., Slade, E. L., & Dwivedi, Y. K. (2017). Trustworthiness of digital government services: Deriving a comprehensive theory through interpretive structural modelling. *Public Management Review*, 1–25. <http://dx.doi.org/10.1080/14719037.2017.1305689>.
- Jayant, A., Azhar, M., & Singh, P. (2014). Interpretive structural modeling (ISM) approach: A state of the art literature review. *International Journal of Research in Mechanical Engineering and Technology*, 5(1), 15–21.
- Jones, S., Irani, Z., Sivarajah, U., & Love, P. E. (2017). Risks and rewards of cloud computing in the UK public sector: A reflection on three Organisational case studies. *Information Systems Frontiers*, 1–24.
- Kampf, R., Manor, I., & Segev, E. (2015). Digital diplomacy 2.0? A cross-national comparison of public engagement in Facebook and twitter. *The Hague Journal of Diplomacy*, 10(4), 331–362.
- Kettani, D., & Moulin, B. (2014). E-government for good governance in developing countries: Empirical evidence from the eFepz project. London; New York, NY : Anthem Press..
- Khatib, L. D., & Thelwall, M. (2012). Public diplomacy 2.0: A case study of the US digital outreach team. *Middle East Journal*, 66(3), 453–472.
- Malone, L. A. (2008). *International law*. New York: Aspen Publishers.
- Mandal, A., & Deshmukh, S. G. (1994). Vendor selection using interpretive structural modelling (ISM). *International Journal of Operations & Production Management*, 14(6), 52–59.
- Manor, I. (2016). *Are we there yet: Have MFAs realized the potential of digital diplomacy?: Results from a cross-national comparison*. Leiden: Brill.
- Mármol, F. G., & Pérez, G. M. (2016). I don't trust ICT: Research challenges in cyber security. *IFIP International Conference on Trust Management (129–136)*. Springer International: Publishing.
- Mishra, N., Singh, A., Rana, N. P., & Dwivedi, Y. K. (2017). Interpretive structural modelling and fuzzy MICMAC approaches for customer centric beef supply chain: Application of a big data technique. *Production Planning and Control*, 28(11–12), 945–963.
- Murray, S., Sharp, P., Wiseman, G., Crikemans, D., & Melissen, J. (2011). The present and future of diplomacy and diplomatic studies. *International Studies Review*, 13(4), 709–728.
- Omar, A., Weerakkody, V., & Sivarajah, U. (2017). Digitally enabled service transformation in UK public sector: A case analysis of universal credit. *International Journal of Information Management*, 37(4), 350–356.
- Permyakova, L. (2014). RIAC: Digital diplomacy: areas of work, risks and tools. Accessed from http://russiancouncil.ru/en/inner/?id_4=864#top, Accessed date: 23 July 2017.
- Raj, T., & Attri, R. (2011). Identification and modelling of barriers in the implementation of TQM. *International Journal of Productivity and Quality Management*, 8(2), 153–179.
- Ramzan, N. (2013). *Social Media Retrieval*. London: Springer.
- Singh, R. K., Garg, S. K., & Deshmukh, S. G. (2007). Interpretive structural modelling of factors for improving competitiveness of SMEs. *International Journal of Productivity and Quality Management*, 2(4), 423–440.
- Sivarajah, U., Irani, Z., & Weerakkody, V. (2015). Evaluating the use and impact of Web 2.0 technologies in local government. *Government Information Quarterly*, 32(4), 473–487.
- Stauffer, D. (2005). *Information and communication technology for peace: The role of ICT in preventing, responding to and recovering from conflict*. New York, NY: United Nations.
- Talib, F., Rahman, Z., & Qureshi, M. N. (2011). An interpretive structural modelling approach for modelling the practices of total quality management in service sector. *International Journal of Modelling in Operations Management*, 1(3), 223–250.
- Thomas, J., & Harden, A. (2008). *Methods for the thematic synthesis of qualitative research in systematic reviews*. Social science research unite: Institute of Education, University of London, BioMed Central.
- Todhunter, J. P. (2013). The domestic fruits of diplomacy: Mediation and presidential approval. *International Negotiation*, 18(2), 195–217.
- Tung, S. L., & Tang, S. L. (1998). A comparison of the Saaty's AHP and modified AHP for right and left eigenvalue inconsistency. *European Journal of Operational Research*, 106(1), 123–128.
- Wang, Y. (2008). Public diplomacy and the rise of Chinese soft power. *The Annals of the American Academy of Political and Social Science*, 616(1), 257–273.
- Wichowski, A. (2013). Social diplomacy: or how diplomats learned to stop worrying and love the tweet. Retrieved from <http://ediplomacy.tumblr.com/post/47278955198/social-diplomacy-how-diplomats-learned-to-stop>, Accessed date: 5 April 2017.
- Wu, W. W. (2012). Segmenting critical factors for successful knowledge management implementation using the fuzzy DEMATEL method. *Applied Soft Computing*, 12(1), 527–535.
- Zaharna, R. S. (2007). The soft power differential: Network communication and mass communication in public diplomacy. *The Hague Journal of Diplomacy*, 2(3), 213–228.
- Hamad Al-Muftah** is a Doctoral candidate in Digital Diplomacy at the University of Bradford, UK. His research interest is public and digital diplomacy. Hamad holds an MBA from the University of St. Thomas in Houston Texas, a masters in Computer and Information Networks and a Bachelor degree in Telecommunication Engineering, both from the University of Essex, UK. He is currently the Deputy Ambassador of the Embassy of the State of Qatar in London. Hamad also served in Houston Texas as the Deputy Consulate General and within the Ministry of Foreign Affairs in Doha as a computer Network Engineer.
- Vishanth Weerakkody** is a Professor of Information Systems Management and Governance at University of Bradford. Prior to his academic career, he spent several years in industry working in multinational organisations. His research focus is centered on public sector policy making, process transformation and digital government implementation, adoption and diffusion. He has published over 150 peer reviewed articles on these themes and holds several R&D projects funded by the European Commission, ESRC and Qatar Foundation. He is the Editor-in-Chief of the International Journal of Electronic Government Research.
- Nripendra P. Rana** is an associate professor and deputy head of Department of Business in the School of Management at Swansea University, UK. With an academic and professional background in Mathematics and Computer Science and with PhD in Information Systems, his current research interests focus primarily upon adoption of emerging and cutting-edge technology, e-government, m-government, e-commerce and m-commerce systems. His work has been published in leading academic journals including European Journal of Marketing, Information Systems Frontiers, Government Information Quarterly, Production Planning & Control, Journal of Business Research, Public Management Review, Annals of Operations Research, International Journal of Production Research and Computers in Human Behavior. He has also presented his research in some of the prominent international conferences of information systems across the world.
- Uthayasankar Sivarajah** is a Reader in Technology Management and Circular Economy and the Head of Logistics, Supply Chain and Technology (LogiST) Research Centre in the School of Management at University of Bradford, UK. Prior to this role, he was a Lecturer in Operations and Information Systems Management and a Senior Research Fellow at the Business School in Brunel University London. His current research interests include exploring the emergent role of digital technologies for a circular economy and the use of technology by governments. He is an investigator of several multi-million-pound R&D projects funded by the European Commission (FP7, H2020, Marie Curie) addressing societal challenges surrounding themes such as Energy Efficient Smart Cities, Green Data Centres, Social Innovation and Participatory Budgeting. He actively publishes in leading peer-reviewed journals such as Journal of Business Research, Information Systems Frontiers, Computers in Human Behaviour and Government Information Quarterly and is also invited member of editorial advisory board of journals. His research has been featured in leading press/media/blog publications such as Computer Weekly, LSE British Politics and Policy, PublicFinance, UKauthority etc. He is a member of British Academy of Management (BAM) and Association for Information Systems (AIS). He is also a Fellow of the UK Higher Education Academy (FHEA).
- Zahir Irani** is the Dean of the Faculty of Management and Law at the University of Bradford. Professor Irani has held several senior management positions at Brunel University London, the most recent of which being the Dean of College (Business, Arts and Social Sciences - CBASS) which he set up following an organisational restructuring from eight schools into three colleges. Prior to this role, he was seconded full-time to Whitehall, where he was a Senior Policy Advisor at the Cabinet Office during part of the coalition Government. He is however most proud of being Head of the Brunel Business School, which in 2013 was awarded the Times Higher Education Business School of the Year under his leadership. He completed a BEng (Hons) at Salford University before then accepting a research position in industry where he finished his Master's degree by research. He has a PhD in investment evaluation and undertook his leadership development at the Harvard Business School. He has an extensive list of 3 and 4 star publications in information systems, management decision making, eGovernment and more recently food security within a circular economy. He has significant grant income from national and international funding councils such as EPSRC, ESRC, EU (FP7, H2020, Marie Curie), Qatar Foundation (QNRF). Professor Irani has a sector leading H-index of over 65.